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Swiss Federal Electricity Commission ElCom

Market Transparency 2019

ElCom Report

Berne, May 2020

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Foreword by Matthias Finger

In relation to market transparency, the first REMIT cases were a major focus of attention in the European Union (EU), primarily for the gas sector. These cases showed that energy trading (and trading in general) always operates in a certain grey area. It is the aspiration of most traders to “outsmart the market”. At the same time, however, it is difficult to assess what is still permitted and which actions may be deemed to constitute manipulation of the market price. However, the cases that were exposed and published once again show how important transparency and integrity are in the energy market.

In Switzerland, market manipulation and insider trading are not yet prohibited. However, ElCom has a statutory mandate to monitor the Swiss electricity market and to identify misconduct by market participants. The fact that ElCom is fulfilling this mandate can be seen by studying the cases presented in this report. The main aim of this report is to uncover opportunities for manipulation and close loopholes in the market.

As part of its market monitoring activities, ElCom has to date received nine suspicious transaction and order reports (STORs) from organised marketplaces such as exchanges and brokerage platforms. These STORs were processed and analysed in detail within ElCom, and the issues to be clarified were discussed with the market participants concerned. Discussions in this context are highly informative and instructive: Market participants can see that ElCom is actually working with the reported data and conducting investigations. Conversely, ElCom recognises the motives behind the respective trading activities from the perspective of market participants. The aim of such discussions is to resolve the circumstances and to ensure that the conspicuous behaviour referred to is not repeated in this form in future.

In relation to data reporting, it should be noted that due to the current legal situation, ElCom still only receives data on the trading activities of Swiss market participants in the EU as well as the Swiss exchange data from EPEX Spot. The fact that ElCom does not have the complete data reports at its disposal still poses the risk that Switzerland could become an “ethical sink” with regard to the wholesale electricity market.

In order to bring more transparency to the market, ElCom publishes a weekly spot and futures market report. But there is also room for improvement here. A look at the figures Switzerland reports to the European Network of Transmission System Operators for Electricity (ENTSO-E) regarding electricity generation of photovoltaic power plants shows that it is declining continuously, despite the fact that increasing numbers of photovoltaic systems are being connected to the grid in Switzerland. The reason for these “incorrect” figures is that the reported values do not represent the actual photovoltaic generation in Switzerland; they only represent that which is included in the Balance Group for Renewable Energies (RE-BG). Any system that does not receive subsidies from feed-in remuneration at cost is not subject to the obligation to market the energy produced via the Balance Group for Renewable Energies (RE-BG) and therefore cannot be reported. In addition, as of 1 January 2018, electricity generated by new plants above 100 kW must be marketed directly. This might give the impression that Switzerland is producing ever less electricity by means of photovoltaic systems. Particularly in times like these, when supply security and precise capacity planning are high priorities, it would be desirable to have a detailed overview of the actual electricity production from renewable energies in Switzerland. ElCom is working on ensuring that these figures are reported and published.

1 Market surveillance in Switzerland: Facts and figures

Based on Article 26a of the Electricity Supply Ordinance of 14 March 2008 (StromVV; SR 734.71), companies that have their registered office or are domiciled in Switzerland, which participate in a wholesale energy market within the European Union and which are obliged under Regulation (EU) No. 1227/2011 on Wholesale Energy Market Integrity and Transparency (REMIT) to provide information to the authorities of the EU or its member states must provide the same information to ElCom at the same time and in the same format. This includes a corresponding application or registration with ElCom (Art. 26a para. 4 of the Electricity Supply Ordinance).

A list of market participants currently registered with ElCom can be found on ElCom's website under the heading “Market Surveillance”. It shows that at the end of 2019, some 66 market participants that have their registered office or who are domiciled in Switzerland were recorded for reporting purposes under Article 26a of the Electricity Supply Ordinance. The total number of registrations consequently remained unchanged compared to 2018. This is due to the fact that last year the same number of market participants (six in each case) registered and deregistered, see Figure 1.

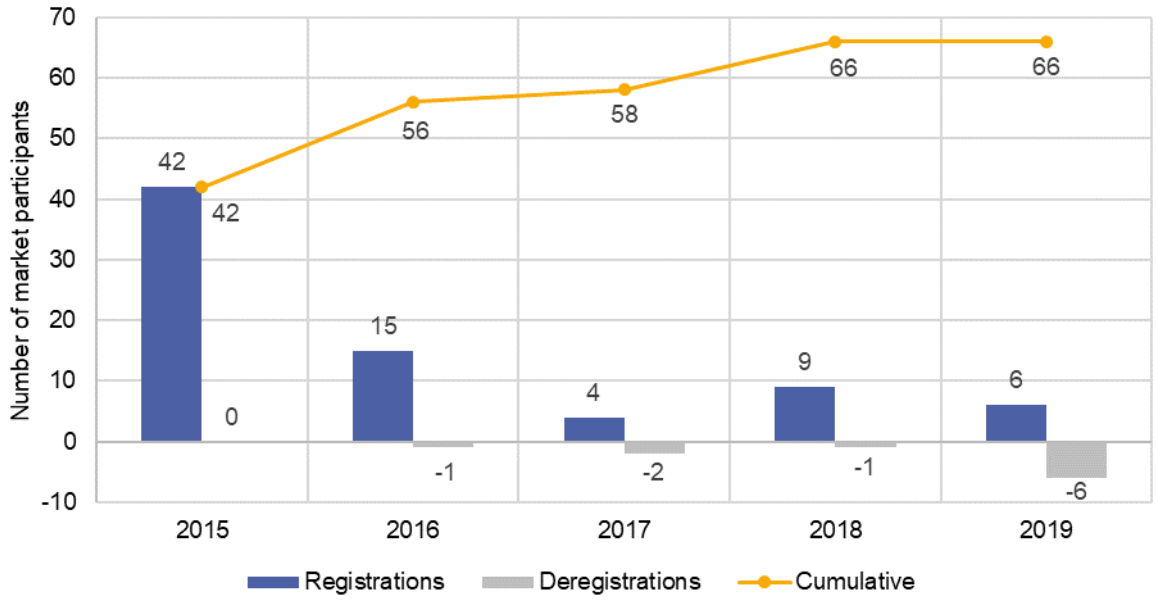

Figure 1: Number of Swiss market participants registered with ElCom

The new registrations are largely the result of the annual survey, in which the withdrawal of market participants that have their registered office or who are domiciled in Switzerland from the Centralized European Register of Market Participants (CEREMP) of the Agency for the Cooperation of European Energy Regulators (ACER) is compared with the list from ElCom's registration tool. Those market participants who have not yet registered with ElCom are requested in writing to submit a statement on this matter. These are generally companies that trade exclusively in commodities other than electricity: primarily natural gas, crude oil, liquefied natural gas (LNG), liquefied petroleum gas (LPG) or financial products based on these. Only a few market participants were unaware of the corresponding legal obligations. The latter then registered with ElCom and reported the data subject to reporting requirements.

Some of the deregistrations were initiated by companies that had previously registered under REMIT in preparation for future participation in the electricity wholesale market but had never traded in electricity as a commodity (an activity subject to the obligation to register) or only intended to do so in the future. The others were market participants who had ceased trading activities and were no longer active on the wholesale electricity market. Some of these were identified during the analysis with regard to the completeness of the reported data, others were identified during the 2019 survey on algorithmic trading conducted by ElCom, see Section 3.3.

Despite the new registrations and deregistrations, the distribution of market participants by country where the initial registration under REMIT took place has not changed significantly compared to the previous year. Most of the companies based in Switzerland that are deemed to be subject to reporting obligations to ElCom under REMIT and, correspondingly, under Article 26a ff. of the Swiss Electricity Supply Ordinance, are still registered with the German Federal Network Agency (BNetzA). This comes to a total of 39 companies: one more than at the end of 2018. The number of wholesale electricity companies that have their registered office in Switzerland and are registered with the British regulatory authority (the Office of Gas and Electricity Markets (Ofgem)) remains unchanged at seven, five are registered with the French regulator (the Commission de régulation de l'énergie (CRE)), three are registered with the Austrian authority (Energie-Control GmbH (E-Control)), three are registered with the Dutch authority (the Autoriteit Consument & Markt (ACM)), one is registered with the Polish authority, (the Urząd Regulacji Energetyki (URE)) and one with the Spanish authority (the Comisión Nacional de Energía (CNE)). The number of registrations of Swiss market participants with the Italian regulatory authority (the Autorità di Regolazione per Energia Reti e Ambiente (ARERA)) have fallen by one. The market participant that was registered with the Irish authority (the Commission for Regulation of Utilities (CRU)) has deregistered and therefore does not appear in this year's overview. However, one Swiss company is still listed there. This company only conducts trading activities within Switzerland but has registered voluntarily with ElCom. Figure 2 provides an overview of the distribution of Swiss market participants by country of registration.

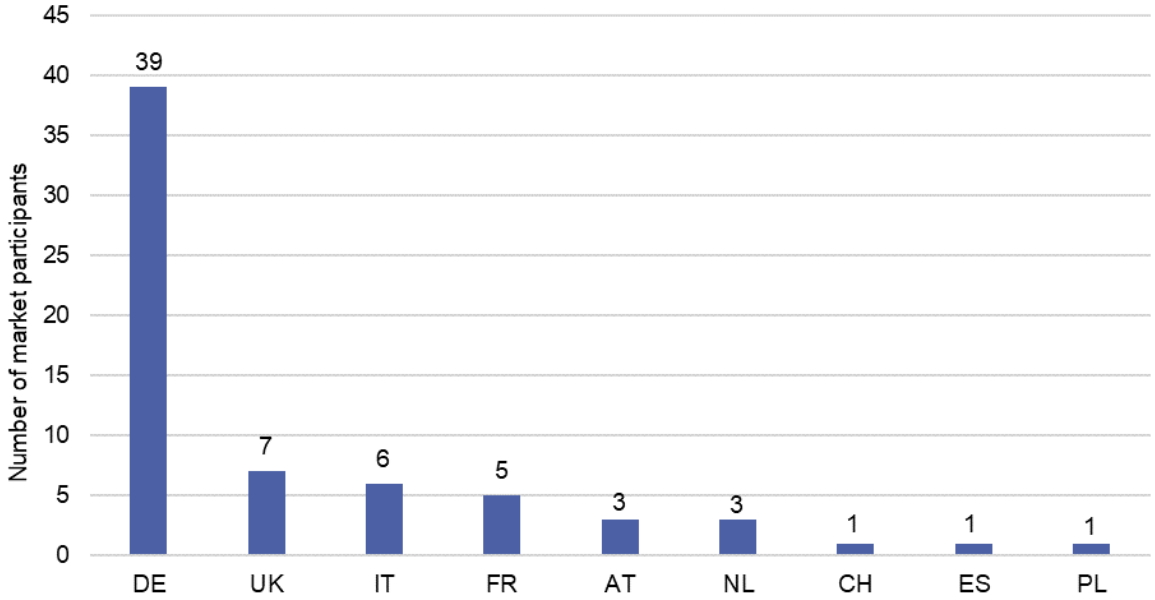

Figure 2: Number of Swiss market participants registered with EU regulators

Swiss market participants provided information on energy trading transactions carried out on EU markets via seven registered data suppliers (known as registered reporting mechanisms (RRMs)), which are linked to the ElCom database (see Table 1). With Total Gas & Power Limited there is one more RRM than in 2018. Two more RRMs are in the process of being connected to ElCom's systems and will be activated for data transmission in 2020.

No	RRM	ACER Code
1	EEX European Energy Exchange AG	B0000104M.DE
2	EPEX SPOT SE	B0000258F.FR
3	Equias B.V.	B00001014.NL
4	JAO S.A.	B0005876N.LU
5	Total Gas & Power Ltd.	A0000208K.UK
6	Trayport Ltd.	B00001100.UK
7	Webware Internet Solutions GmbH	B0001064H.DE

Table 1: List of RRMs connected to ElCom as of 31 December 2019

As in previous years, ElCom received the fundamental data and publications on insider information via its own interfaces with the European Network of Transmission System Operators for Electricity Transparency Platform (ENTSO-E TP)[1] and the European Energy Exchange Transparency Platform (EEX TP). Market participants who publish their reports on insider information on sites other than the EEX TP are required to inform ElCom immediately upon doing so.

ElCom's analyses also incorporate additional information from various other sources. This includes, for example, settlement prices, reference data such as coal, gas and CO_2 price, data from Meteo Schweiz, information on reservoir levels and other case-related information.

Looking at the number of standard and non-standard contracts reported by market participants via the RRMs, it is clear that the upward trend recorded since the start of reporting has been confirmed in 2019 (see Figure 3). A total of almost 39 million transactions (orders and trades) were reported in 2019, which represents almost 70 percent more reports than in the previous year. This significant change on 2018 can be explained largely by the increase in reports from short-term trading. The number of orders and trades on the intraday market alone has more than doubled. Approximately 10 million transactions were recorded in 2018, while almost 22 million were recorded in 2019. In addition, data on border capacity reservations in intraday trading was backloaded in 2019. This also contributed to an increase in the number of reports by about two million. The use of algorithms in intraday trading could be another reason for the sharp increase in data reports.

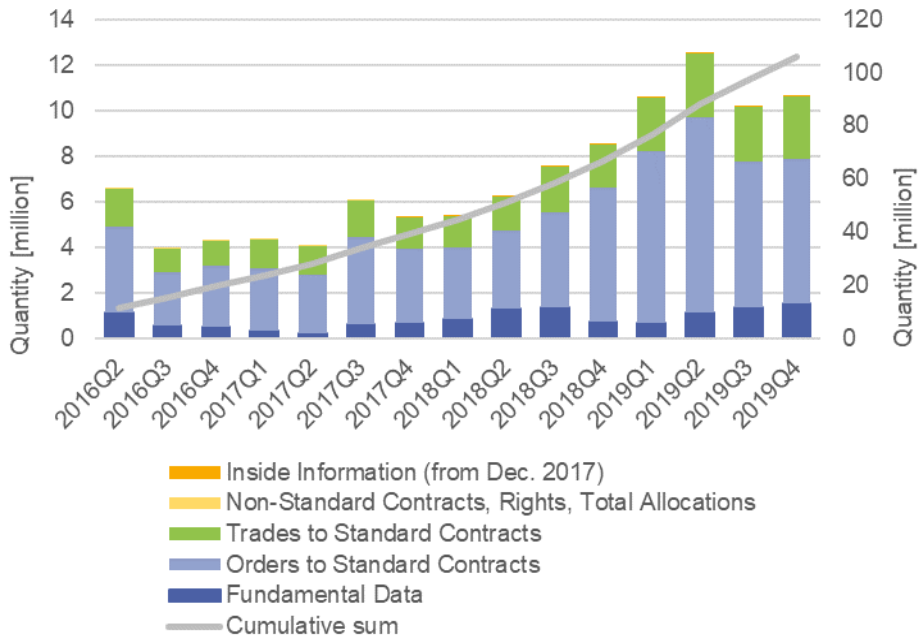

Figure 3: Number of data reports made to ElCom 2016-2019

A significant proportion of the transaction data reports (approximately 85 percent) concerned standard contracts. A slight change in the orders-to-trade ratio from 2.5:1 to 3:1 can be observed. As in the previous year, almost 90 percent of standard contracts were processed on the spot market. The futures and forwards markets therefore continue to represent less than ten percent of the total number, see Figure 4.

[1] The ENTSO-E platform only collects data on power plants with a production capacity greater than 100 MW.

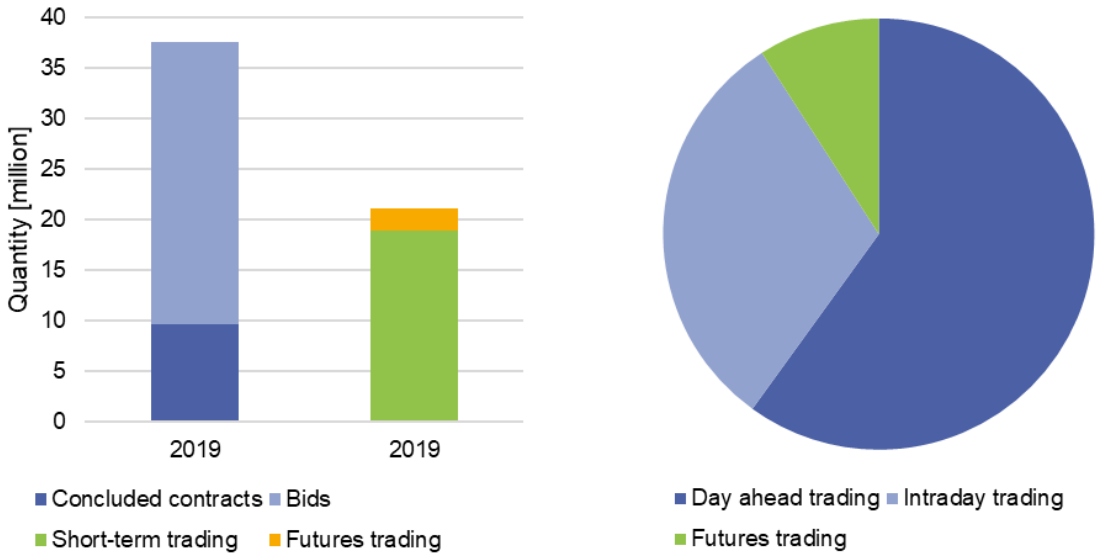

Figure 4: Standard contracts reported for 2019
Bar chart (left): Distribution of orders and trades and short-term/futures trading; Pie chart (right): Distribution of day ahead short-term/intraday short-term/futures trading

The number of non-standard contracts concluded changed only slightly compared to the previous year and shows a slightly declining trend with 3,200 reports in 2018 compared to 3,002 reports in 2019.

The volume of fundamental data again increased. In 2019 ElCom received a total of 4.7 million reports, which represents half a million more than in 2018. The fundamental data primarily includes production data for electrical energy from power plants of all kinds and production from renewable energies. ElCom's monitoring activities also take into account import and export capacities at the respective borders, as well as planned and unplanned power plant outages.

In 2019, Swiss market participants traded on 58 organised market places (OMPs). This represents 13 more than in the previous year. Most of these platforms are based in the UK (21), followed by France (8) Germany (5) and the Netherlands (4). The two marketplaces included under “Other” are OMPs located outside the EU, see Figure 5.

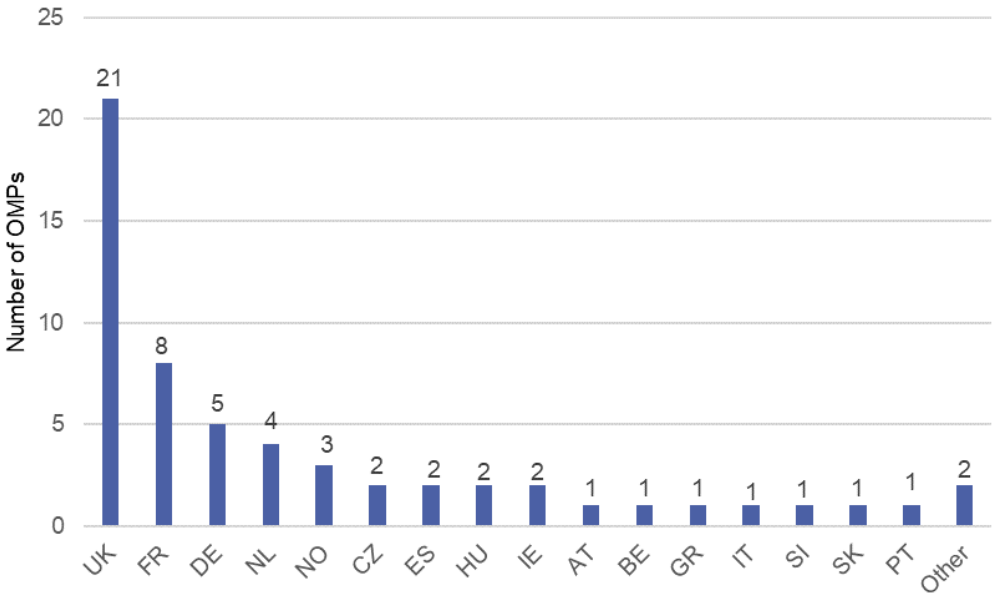

Figure 5: Territorial distribution of organised marketplaces

The majority of transactions were concluded on exchanges, including the national exchanges of EU countries. Slightly fewer transactions than on the exchanges were concluded via the numerous brokerage platforms. Just under two percent of trading was conducted on organised trading facilities (OTFs) (see Figure 6).

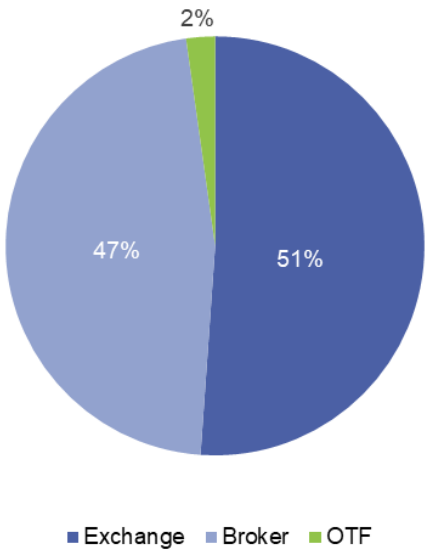

Figure 6: Distribution of organised marketplaces by type

It is only possible to observe insignificant changes compared to the previous year in the distribution of trading activities of Swiss wholesale electricity companies by place of supply. Italy and Germany continue to be the largest target markets. The reason for the high number of transactions in Italy continues to be the way in which the Italian market is designed (there are several bidding zones and several daily auctions). This generates a correspondingly larger number of transactions. France's share is smaller and the UK's is smaller still.

2 Market overview

ElCom continued to publish spot and futures market reports in 2019. Each week, it shows and comments on the current status of electricity prices and their development in Switzerland and neighbouring countries (France, Germany and Italy) over the past few weeks. While spot market reports focus on hourly and weekly contracts, and explain the most important fundamental data underlying the corresponding price movements, futures market reports focus on longer-term products such as annual, quarterly and monthly contracts. The role of CO_2, gas and coal (the most important price drivers) is also highlighted. Those changes and anomalies in price movements during 2019 which ElCom considers to be significant are summarised in the following section.

2.1 Spot market reports: Annual review 2019

There were some notable movements with regard to the developments on electricity spot markets in 2019. At 40.92 EUR/MWh, the average daily price for the Swiss day-ahead auction 2019 was approximately 3 EUR/MWh higher than the German average (37.67 EUR/MWh). The average price for the French day-ahead auction 2019 was 39.45 EUR/MWh. January was the most expensive month, with an average price of 62.33 EUR/MWh for base electricity supply in Switzerland (49.39 EUR/MWh in Germany, 61.15 EUR/MWh in France). June proved to be the cheapest month with an average price of 31.90 EUR/MWh (32.52 EUR/MWh in Germany, 29.26 EUR/MWh in France). Prices were also exceptionally low in February. Sustained mild temperatures kept the Swiss price at an average of 48.76 EUR/MWh.

Table 2 (below) shows the average daily prices of the EPEX Spot day-ahead auction by supply period and country of delivery. It also shows the differences between the Swiss price and the price in the neighbouring countries of Germany and France. As Table 2 shows, Swiss prices were above the French level for all the supply periods shown. The price difference (spread) typically ranged between 0 and 2 EUR/MWh. December proved an exception. In this month Swiss prices were on average 4 EUR/MWh higher than French prices.

Swiss prices remained significantly higher than German prices in winter 2019. The largest spread was registered in January (12.94 EUR/MWh). The situation changed in the third quarter. Listings on the German market overtook Swiss prices. August was the month with the highest price difference (almost 3 EUR/MWh).

		Prices in delivery in EUR/MWh by country of delivery					Last EEX settlement price before delivery	Last settlement price minus price in delivery
Delivery period	Product supplied	CH	DE	FR	CH-DE	CH-FR	CH	CH
2019	Base	40.92	37.67	39.45	3.25	1.47	60.57	19.65
Q1	Base	48.96	40.88	47.23	8.08	1.73	67.17	18.21
Q2	Base	36.22	35.80	34.88	0.43	1.35	38.78	2.56
Q3	Base	36.38	37.45	35.53	-1.06	0.85	37.69	1.31
Q4	Base	42.22	36.59	40.28	5.62	1.94	56.71	14.49
Jan 19	Base	62.33	49.39	61.15	12.94	1.18	70.94	8.61
Feb 19	Base	48.76	42.82	46.62	5.94	2.14	61.49	12.73
Mar 19	Base	35.77	30.62	33.85	5.15	1.92	43.97	8.20
Apr 19	Base	38.66	36.96	38.08	1.71	0.58	37.30	-1.36
May 19	Base	38.07	37.84	37.21	0.22	0.85	38.60	0.53
Jun 19	Base	31.87	32.52	29.26	-0.64	2.62	37.00	5.13
Jul 19	Base	37.88	39.68	37.66	-1.80	0.22	33.82	-4.06
Aug 19	Base	33.87	36.85	33.39	-2.98	0.48	36.82	2.95
Sept 19	Base	37.43	35.75	35.54	1.67	1.88	38.47	1.04
Oct 19	Base	39.99	36.96	38.61	3.03	1.38	47.91	7.92
Nov 19	Base	45.94	41.00	45.94	4.94	-0.01	47.06	1.12
Dec 19	Base	40.85	31.97	36.46	8.89	4.39	51.60	10.75

Table 2: Base prices in supply of traded wholesale electricity products by supply period and country of delivery[2]
Data source: EEX

Table 2 shows the baseload prices for traded wholesale electricity products according to supply period and country of delivery. The table also shows the last EEX settlement price for Switzerland before delivery for each electricity trading product. This corresponds to the last futures market price expectation for the corresponding trading product. A greater deviation between the traded futures market price and the effective settlement price for the day-ahead auction indicates that the market had different expectations for this trading product than the prices resulting from the Swiss day-ahead auction.

The spot prices in the winter quarters were significantly lower than those for the corresponding futures market products. February and December in particular recorded levels that failed to meet and fell below expectations on the futures market. These low prices were partly due to mild temperatures and somewhat higher production levels from renewable energies.

Figure 7 shows that Swiss spot prices were at a high level at the beginning of 2019 and then tended to level off. In comparison to the previous months, prices were higher in July (due to a heat wave) and lower in December.

[2] Basis: Average daily prices for the EPEX Spot day-ahead auction for the corresponding supply period.

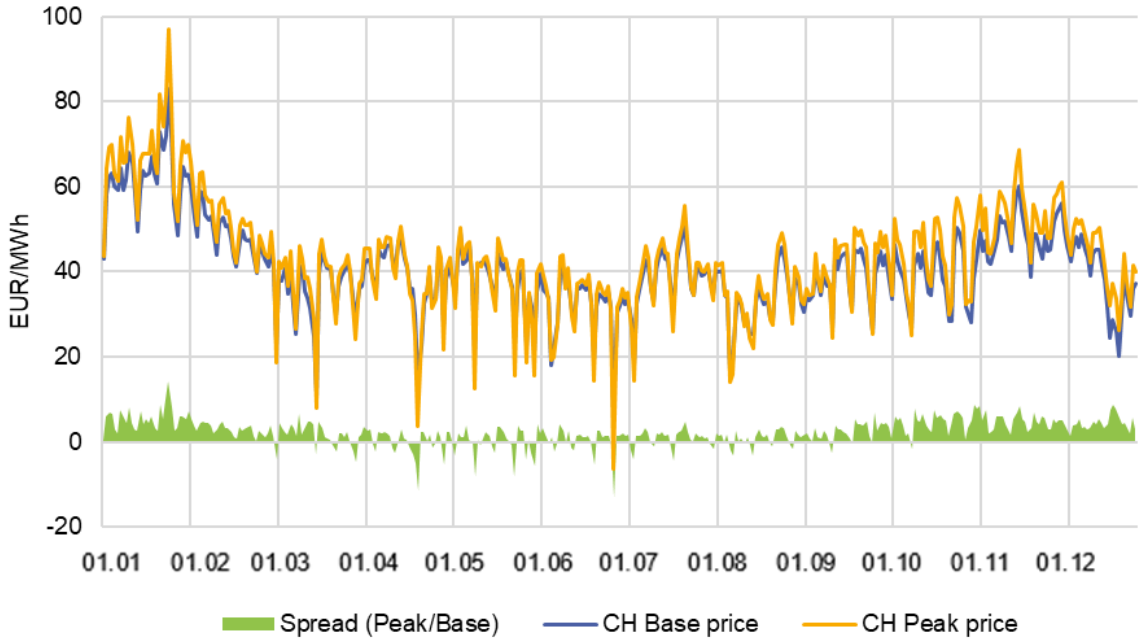

Figure 7: Swiss base and peak day-ahead prices 2019
Data source: EEX

A comparison of day-ahead price developments in the three markets of Switzerland, Germany and France can be found in Figure 8.

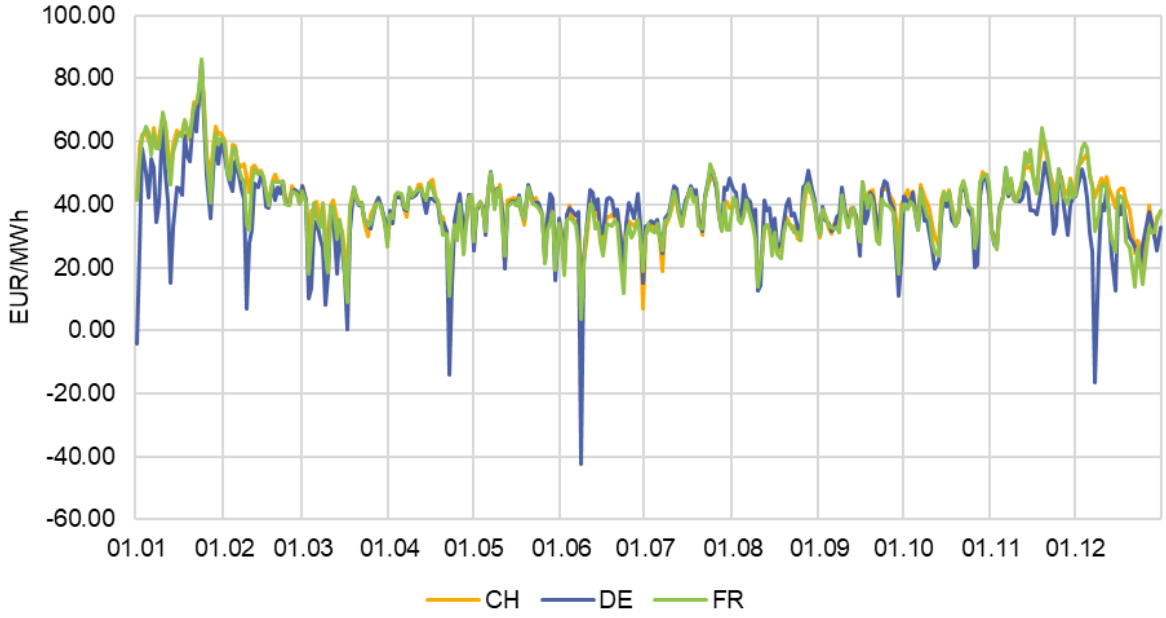

Figure 8: Day-ahead base prices for Switzerland, Germany and France
Data source: EEX

The price difference between Germany and Switzerland was highest in January. If the load in Switzerland and France is considerable due to low temperatures, renewable energy generation in Germany cannot prevent the Swiss electricity price from skyrocketing. The available import capacities are then fully utilised. Winter storms sometimes lead to considerable electricity generation of wind power plants in Germany, which pulls the German price down.

The frequency of negative day-ahead auction prices for base products in Germany in 2019 is also worth mentioning. The base price[3] in Germany was negative on the following four days: 1 January 2019 (New Year's Day), 22 April 2019 (Easter Monday), 8 June 2019 (Whit Saturday) and 8 December 2019 (Sunday), when it was -4.3 EUR/MWh, -14.01 EUR/MWh, -42.24 EUR/MWh and -16.38 EUR/MWh respectively. These low prices also had a dampening effect on prices on the Swiss market. However, cross-border capacity bottlenecks ensured that base prices in Switzerland did not slide into negative territory.

The main reason for the negative prices was an overproduction of electricity. The lower load due to the public holidays, coupled with high electricity generation of wind and solar power plants, led to complete coverage of the electricity demand by renewable energies during certain hours. Power generation from thermal plants exacerbated the overproduction on these days. Figure 9 shows the cumulative generation from wind and solar as well as the load for the four negative base price days in Germany.

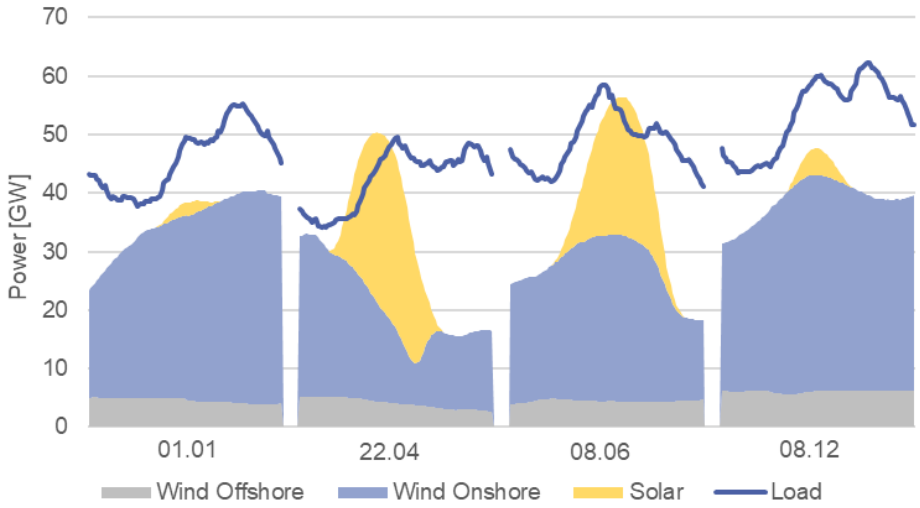

Figure 9: Day-ahead forecast: cumulative generation from wind and solar vs. load in Germany
Data source: ENTSO-E

Electricity demand in Switzerland in 2019 followed the typical trend over the year: high demand in the winter months due to greater demand for heating and lighting, lower demand in the summer (see Figure 10).

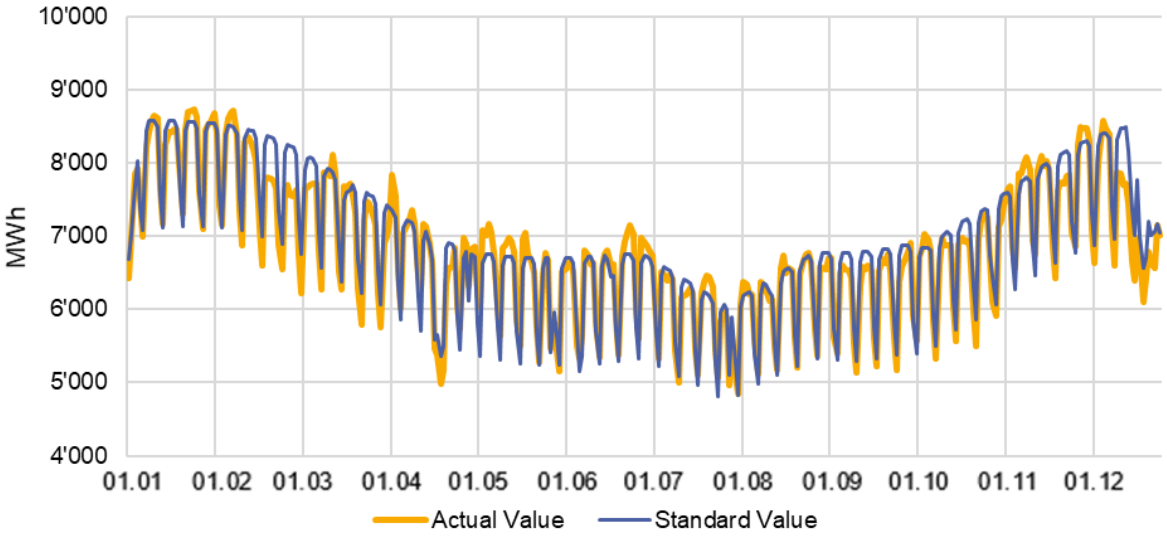

Figure 10: Daily average load in Switzerland, 2019
Data source: Refinitiv Power Research

[3] The base price is the average of the 24 hour prices from the day-ahead auction.

Compared to 2018, where there was a cold spell in February, the load in the same month in 2019 was significantly below normal.[4] This was due to the mild temperatures. As in 2018, there was a heat wave in summer 2019. In particular, the load at the end of June was above the typical levels for the month. As Figure 10 shows, demand was also above the normal level in May and January. This was particularly reflected in the spot prices for January, which were comparatively high (see Figure 7).

Figure 11 shows a typical picture for the commercial flows for 2019: exports to Italy (IT) throughout the year, imports from Germany/Austria (DE & AT) and France (FR) especially in the winter months. In summer there were imports from France and exports to Germany.

An export surplus (commercial flows) of approximately 4.7 TWh was achieved in 2019. Most of the exports went to Italy (19.9 TWh). Switzerland received 13.6 TWh from France and 2 TWh from Austria. In 2019, commercial exports to Germany exceeded imports (0.4 TWh). In 2019, (commercial) net electricity was imported for 4,257 hours (49 percent). Electricity was exported from Switzerland for 4,503 hours (51 percent).

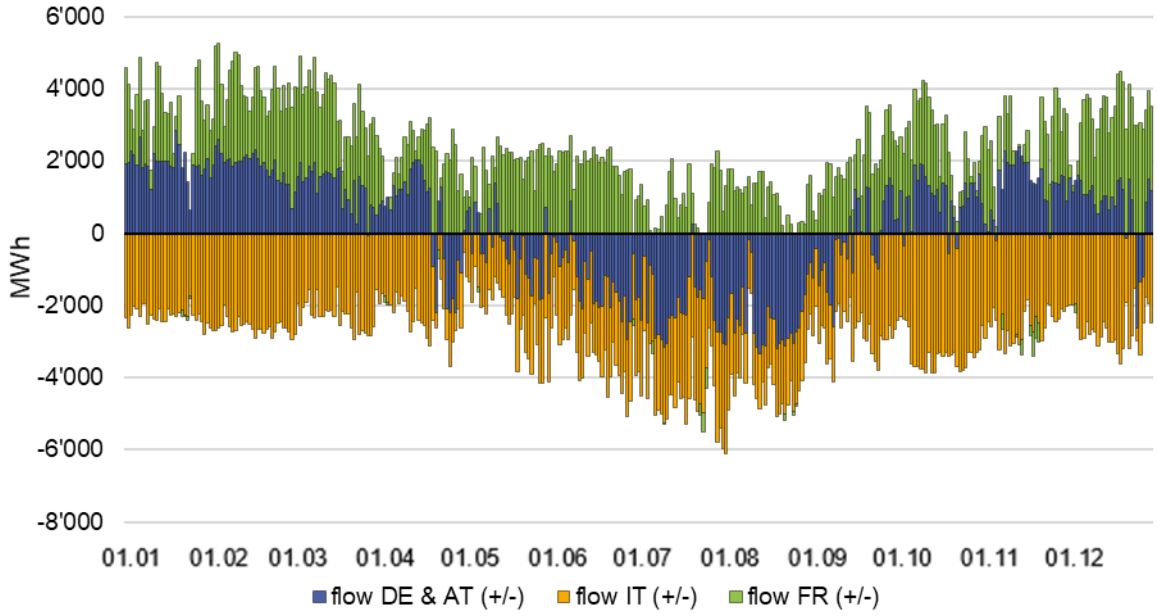

Figure 11: Daily average of Switzerland's net commercial flows with neighbouring countries
Exports from Switzerland are shown as a negative figure, while imports into Switzerland are shown as a positive figure
Data source: ENTSO-E

Most of Switzerland's electricity production in 2019 (excluding wind and solar) was generated by nuclear power plants. The reservoirs and the pump storage power plants made a substantial contribution. According to ENTSO-E, electricity production from nuclear power plants amounted to 25.7 TWh, run-of-river power plants generated 1.9 TWh, pump storage power plants 7.7 TWh and storage power plants 11.9 TWh.

2019 was characterised by increased outages at nuclear power plants (see Figure 12). For example, the Gösgen nuclear power plant was unexpectedly taken off the grid in the night from Saturday, 2 February to Sunday, 3 February 2019. On 24 April 2019, a reactor shutdown occurred at the Leibstadt nuclear power plant. This was automatically triggered by a fault in the inlet pressure regulator. On 26 April 2019, the nuclear power plant was back online, but shortly afterwards, in the night of 12 May 2019, the reactor was shut down again. As on 24 April 2019, the cause identified was a fault in the inlet pressure regulator.

[4] The term "normal" refers to a demand under normal weather conditions.

At the beginning of June, scheduled maintenance work began at the Gösgen and Leibstadt nuclear power plants. These had a significant impact on Swiss electricity production. Shortly after recommissioning, the Gösgen nuclear power plant had to be taken off the grid again after a turbine trip. The plant was off-grid between 26 July 2019 and 11 August 2019. The reason for this was a short circuit in the switchgear building.

The annual maintenance of the Beznau 2 nuclear power plant began at almost the same time as the recommissioning of the Gösgen nuclear power plant on 10 August 2019. A few days earlier, on 6 August 2019, a malfunction at the Beznau 1 nuclear power plant, in which the 220 kV grid connection was lost (probably as a result of a lightning strike), led to an automatic reactor shutdown and an unplanned outage between 01:35 and 12:00.

After a few months without incidents, the year ended with a shutdown at one of Switzerland's nuclear power plants. The Leibstadt nuclear power plant was out of action between 28 December and 31 December 2019. The cause of the reactor scram (emergency shutdown) was identified as a technical malfunction in the non-nuclear part of the power plant.

The end of the year was also marked by an unusual event. On 20 December 2019, the Mühleberg nuclear power plant, which has an installed capacity of 373 MW, was decommissioned and taken off the grid. The Mühleberg nuclear power plant had operated for 47 years and 43 days. It will only be possible to assess the effects of this shutdown from 2020.

The nuclear power plants were not only affected by unplanned and planned outages in the course of 2019. The heat wave in summer 2019 made it necessary to reduce the output of some of the plants[5]. It was for this reason, for example, that Axpo reduced the output of the Beznau nuclear power plant by 100 MW on 23 July 2019. On 24 July 2019, this was further reduced to 365 MW (half the total output). During the night of 25 July 2019, the output was reduced again, this time to 100 MW. The reason for the reduction was a ruling issued by the Swiss Federal Office of Energy (SFOE), according to which Axpo is obliged to reduce the output of the power plant if the water temperature of the River Aare reaches 25 degrees Celsius.

The Mühleberg nuclear power plant was also affected by a reduction on these days. According to the Swiss Cooling Water Concession, this nuclear power plant must reduce its output when the average daily temperature of the River Aare temperature exceeds 20.5 degrees Celsius. In order to ensure compliance with this regulation, electricity production was cut by 10 MW from a total of 373 MW during the night of 23 July 2019 and by a further 15 MW during the night of 24 July 2019.

Since both Leibstadt and Gösgen nuclear power plants are cooled by cooling towers, they were not required to restrict their output during this period.

[5] SUTTER Michael, nuclear power plants must reduce output because of heat, in: Energate Messenger (24 July 2019).

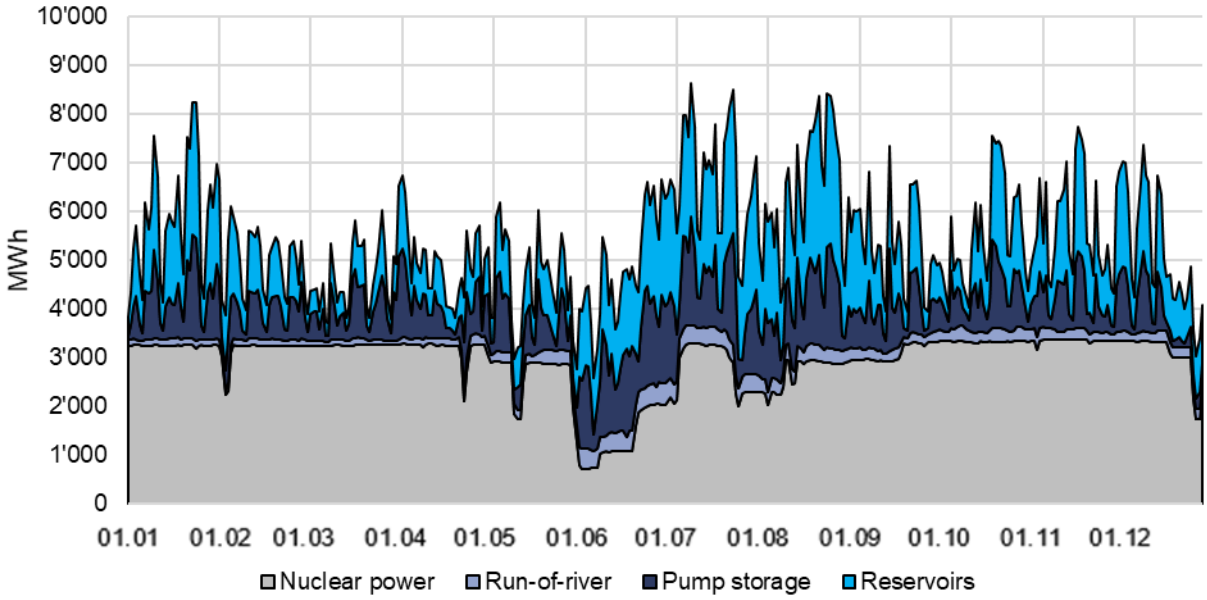

Figure 12: Daily average electricity production in Switzerland by type of production
As the contribution from new renewable energies to current electricity production in Switzerland is very low, these are not shown in Figure 12, and are instead shown in
Figure 16.
Data source: ENTSO-E

French nuclear power plants were also increasingly affected by the cooling water issue during this period. As in Switzerland, in France nuclear power stations make the largest contribution to electricity production (see Figure 13). According to ENTSO-E, their share of total French electricity generation was 377.7 TWh. 54.1 TWh were produced from hydropower. The contribution of the gas power plants amounted to 37.8 TWh.

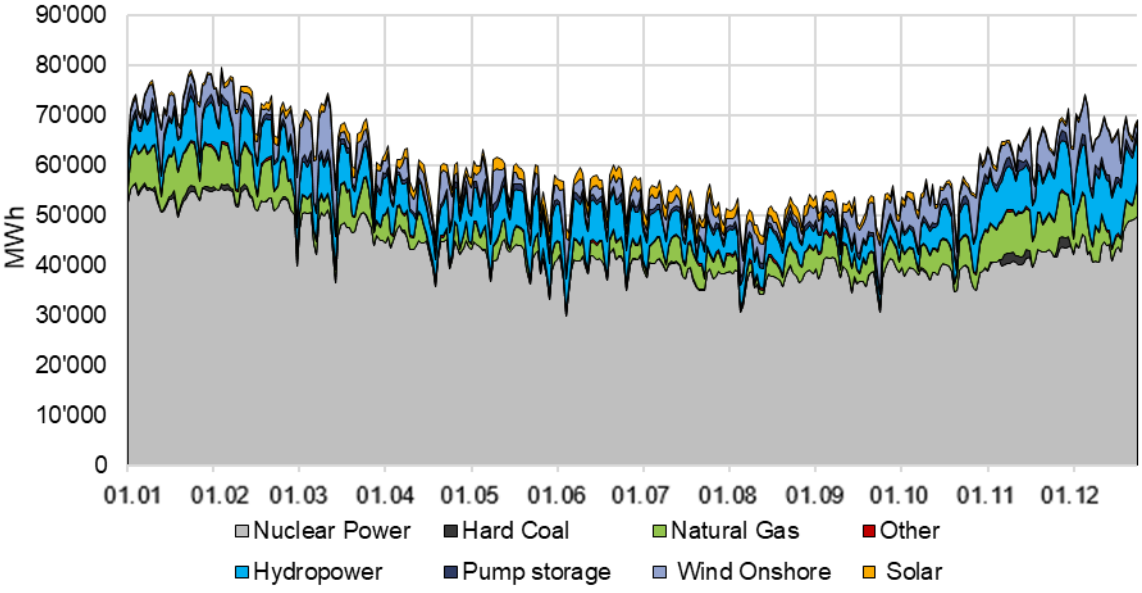

Figure 13: Daily average of current electricity production in France by type of production
Data source: ENTSO-E

In Germany, wind (123.8 TWh), lignite (102.9 TWh), nuclear power (71 TWh) and hard coal (44.9 TWh) accounted for the largest share of electricity generation (see Figure 14). The various power plants and the different marginal costs, as well as the limited cross-border flow capacities are one reason for the sometimes (and in winter particularly) pronounced price differences between Germany and Switzerland (see also Figure 8).

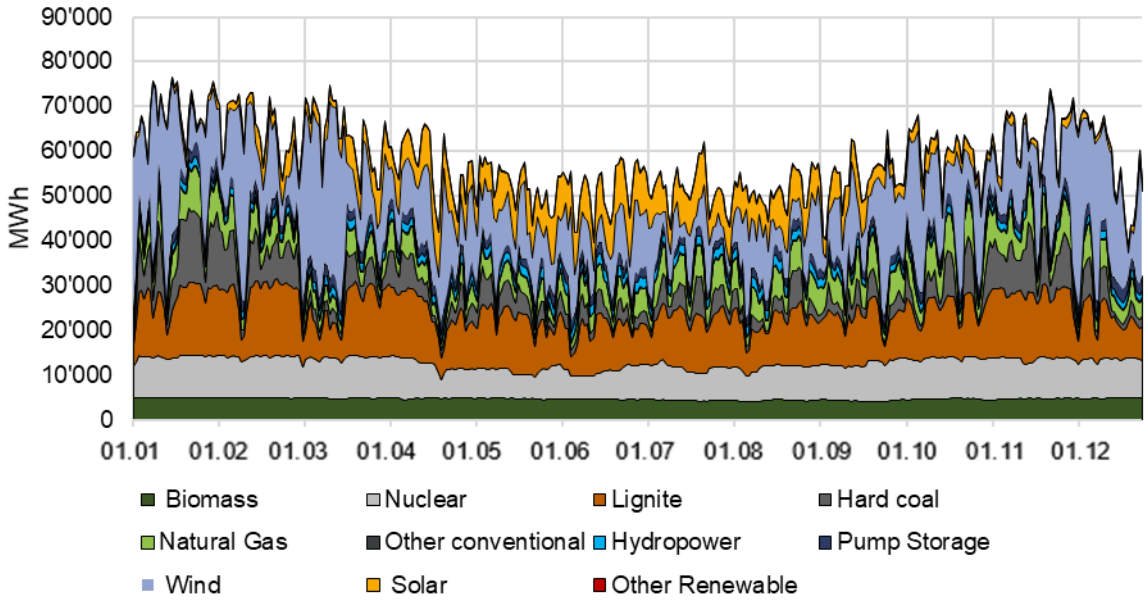

Figure 14: Daily average electricity production in Germany by type of production
Data source: ENTSO-E

In the winter quarters in particular, the daily average of wind and solar power production in Germany exceeded 40 GWh several times (see Figure 15). In the case of high generation from renewable energies and low load due to public holidays, negative prices were—as observed above—increasingly common in Germany last year.

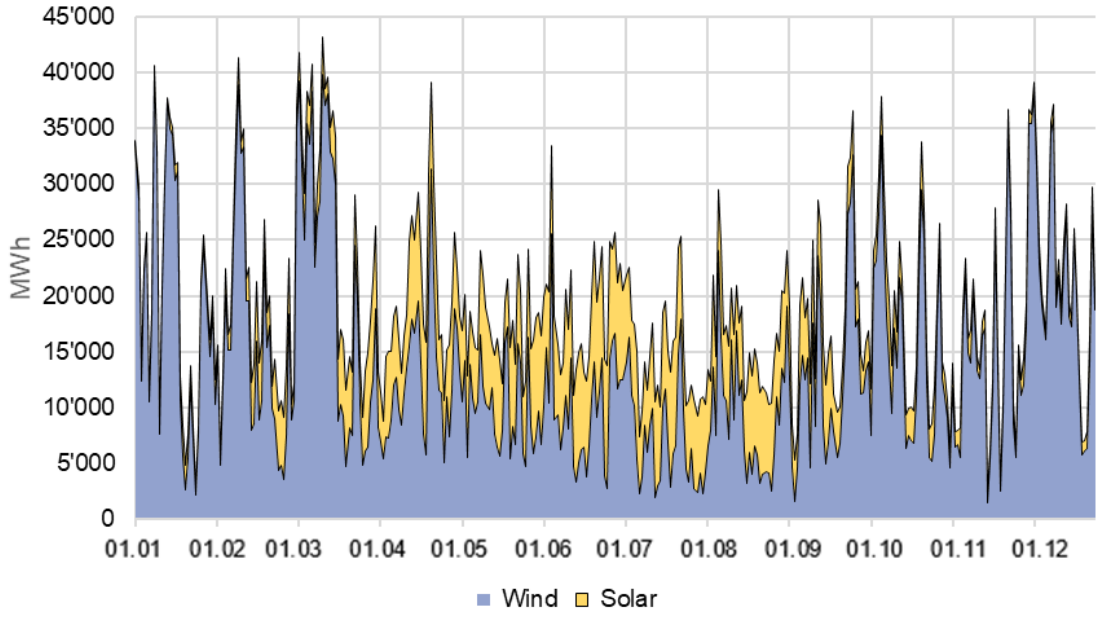

Figure 15: Daily average of current wind and solar energy production in Germany
Data source: ENTSO-E

In comparison to Germany, wind and solar energy production in Switzerland is very low (see Figure 16).[6]

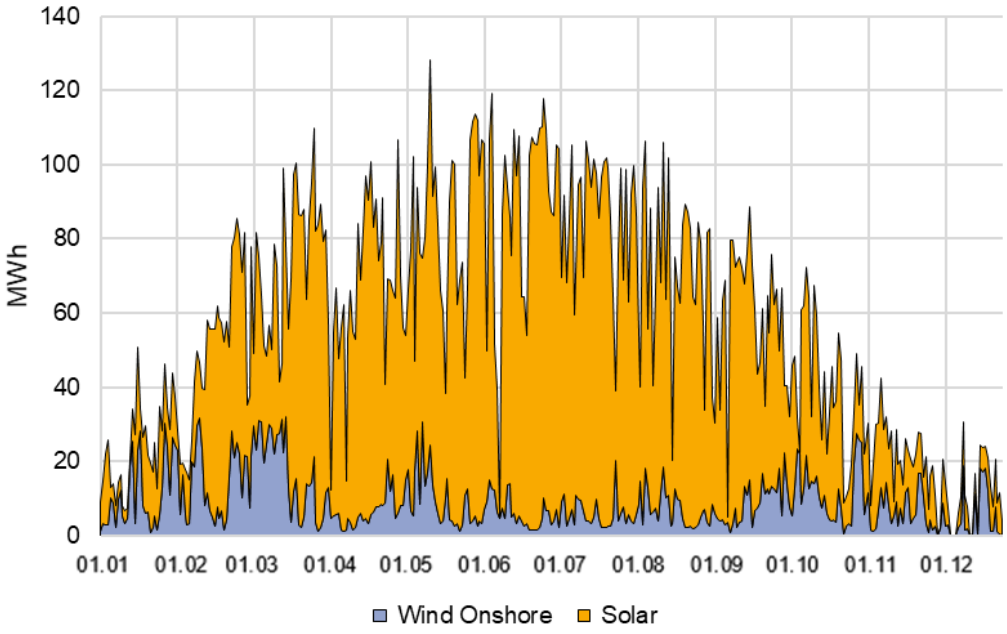

Figure 16: Daily average production from renewable sources in Switzerland
Photovoltaic data from the Balance Group for Renewable Energies
Data source: ENTSO-E.

Swiss reservoirs were at their lowest level in May. The highest level was recorded at the end of October: 8.19 TWh of available stored energy (see Figure 17).

[6] The solar data includes only the data provided by the Balance Group for Renewable Energies. The actual PV feed-in in Switzerland is actually significantly higher.

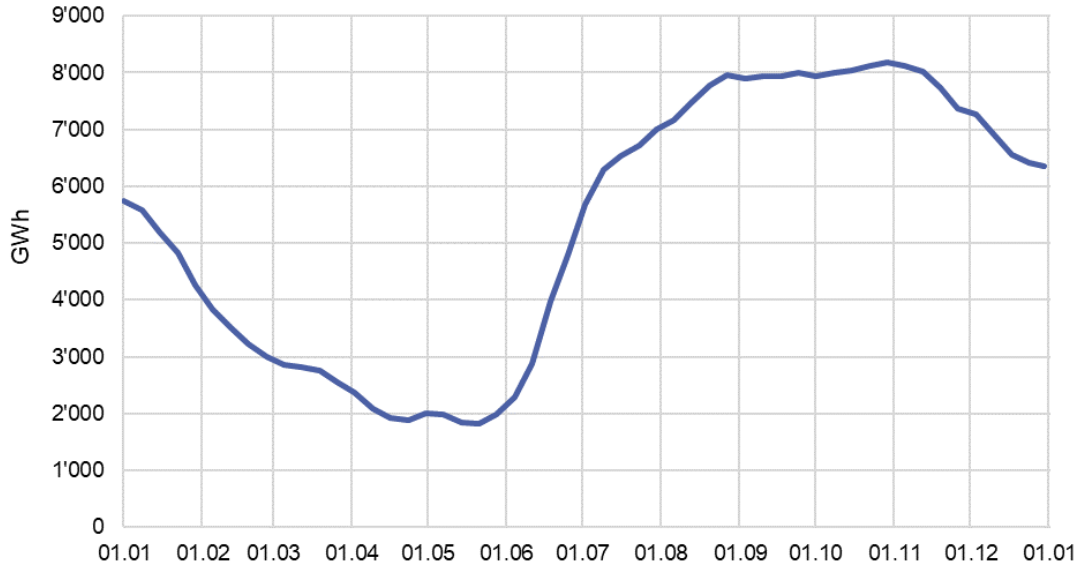

Figure 17: Levels at Swiss reservoirs 2019
Data source: SFOE

2.2 Futures market reports: Annual review 2019

With regard to the front year, electricity prices in Switzerland in 2019 showed a parallel development to prices in the neighbouring countries of Germany, France and Italy. The electricity price for the calendar year 2020 in Switzerland (as the country to which the electricity was supplied) was 55.85 EUR/MWh at the beginning of the year and ranged between 50 and 56 EUR/MWh in the first half of the year. At the end of June, the Swiss front year was listed at 53.69 EUR/MWh, about 2 EUR/MWh lower than at the beginning of the year. In July, it climbed as high as 57.53 EUR/MWh. However, it then reduced until the end of the year (especially in December) to close the year at 45.86 EUR/MWh.

Figure 18 (next page) provides an overview of the development of electricity prices in 2019 for the calendar year 2020 for the places of supply Switzerland, Germany, France and Italy. There was clearly a marked increase in electricity prices in July and September. From July onwards, the heat wave and the low electricity generation from renewable energies led to increased thermal production and consequently to higher demand for gas, coal and correspondingly CO_2 certificates. In July there were further interruptions to Norwegian gas exports, which caused gas prices to rise. The announcement of the cancellation of surplus certificates boosted CO_2 prices even further. These prices rose rapidly. The high temperatures, drought and low river levels raised concerns in connection with the cooling water issues experienced by the coal-fired power plants and the coal supplies across the Rhine (which had been restricted as early as 2018) and caused an additional increase in electricity prices.

The strong upward movement in mid-September can be explained by a report from EDF, the largest French energy company. EDF informed the French regulatory authority of deviations from technical standards in the manufacture of nuclear reactor components.[7] According to the initial statement, at least five nuclear power plants were affected and the worst-case scenario would involve shutdown. Electricity prices rose sharply within a short period of time, and the spread between France and Switzerland suddenly reversed so that electricity deliveries in the fourth quarter of 2019 were traded in France at prices above Swiss prices for a short period of time. Shortly afterwards, however, the all-clear was given. Prices recovered and fell again after it was announced that shut down of power plants would not be necessary.

[7] See https://www.edf.fr/sites/default/files/contrib/groupe-edf/espaces-dedies/espace-medias/cp/2019/20190910-ecarts-composants-fr.pdf (accessed 07/04/2020) and https://www.edf.fr/groupe-edf/nos-energies/nucleaire/non-qualites-et-ecarts-de-fabrication/point-sur-l-ecart-relatif-au-referentiel-technique-de-fabrication-de-composants-de-reacteurs-nucleaires-par-framatome (accessed 07/04/2020). Both pages only available in French.

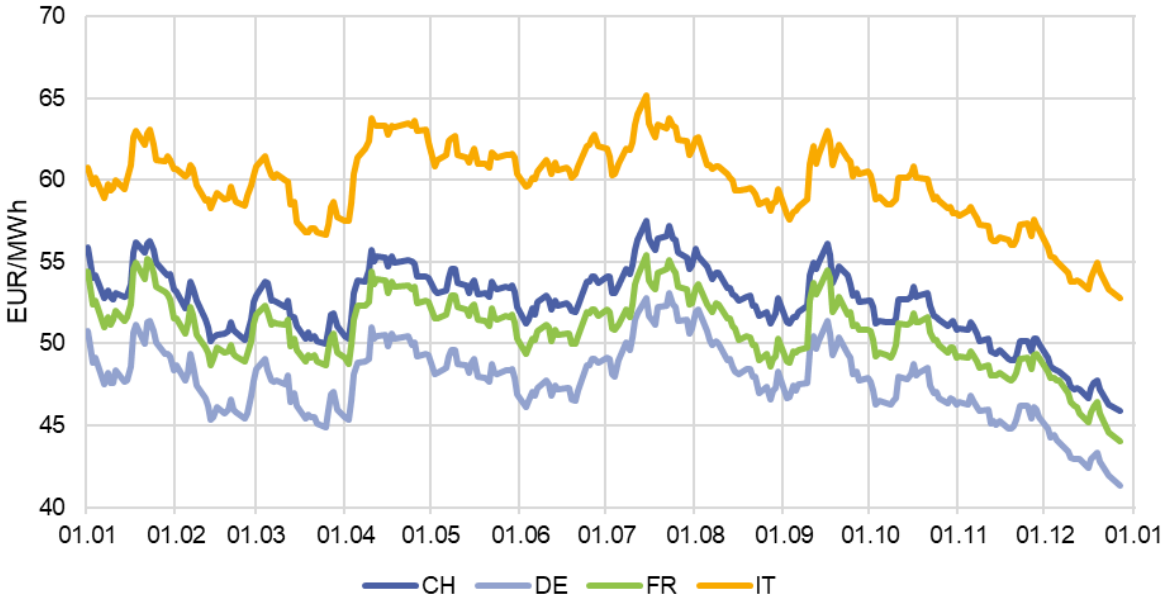

Figure 18: 2019 price trend for year-ahead base electricity contracts 2020
Data source: EEX

The overall lower electricity price for the front year can be attributed to the falling price development for coal and gas, which are important commodities for the electricity price. The price of coal continued its downward trend in 2019. While the year started with coal prices above USD 100/tonne, by the end of 2019 they were only slightly below USD 55/tonne. Generally high inventories, coupled with lower demand for coal, which was further reduced by the gas-coal switch, put pressure on the price of this commodity.

The gas price for the front year (2020) also followed a downward trend in 2019 and this trend intensified towards the end of the year in particular. While the TTF[8] price for 2020 was still just under 20 EUR/MWh at the beginning of the year, it was only 13.6 EUR/MWh at the end of the year. At the beginning of the year, the gas front year was traded above the gas trading products for the supply periods 2021 and 2022. The spread then reversed in the last quarter, so that the gas front year closed significantly lower than gas supplies for 2021 and 2022. Full gas storage facilities and LNG imports caused prices to fall. Temporary interruptions to Norwegian gas supplies only led to short-term upward price corrections.

Although the CO_2 price reached a low of EUR 18.82 per tonne at the beginning of the year (18 February 2019), it has since followed an upward trend. However, it did not rise strongly enough to compensate for the price movements of coal and gas, which meant that the electricity price for the front year as a whole fell. Fears of a hard Brexit in early 2019 caused CO_2 prices to fall. The prospect of a softer exit of the UK from the EU and finally the extension of Brexit until the end of October boosted CO_2 certificate prices. Market uncertainty due to the resignation of the British Prime Minister at the end of May and the trade war between China and the USA put an end to this upward trend.

The announcement of the planned cancellation of surplus certificates in emissions trading in connection with the phasing-out of coal power in Germany led to higher prices for CO_2 certificates in July. From August onwards, the end of the heat wave and the escalation in the trade war between China and the USA caused a downward movement. Low gas prices also favoured a switch from coal to gas, which also led to reduced demand for CO_2 certificates. The topic of Brexit was also back on the agenda. Prices tended to level off until the end of the year.

[8] TTF: virtual trading point in the Dutch gas network and reference price for the gas market in the Netherlands; one of the most important trading points for natural gas in Europe due to its high trading volume.

Figure 19 shows the price trend in 2019 for the 2020 product for CO_2 (EUA[9] 2020), gas (NCG[10] 2020) and coal (rolling month ahead for the ARA[11]region).

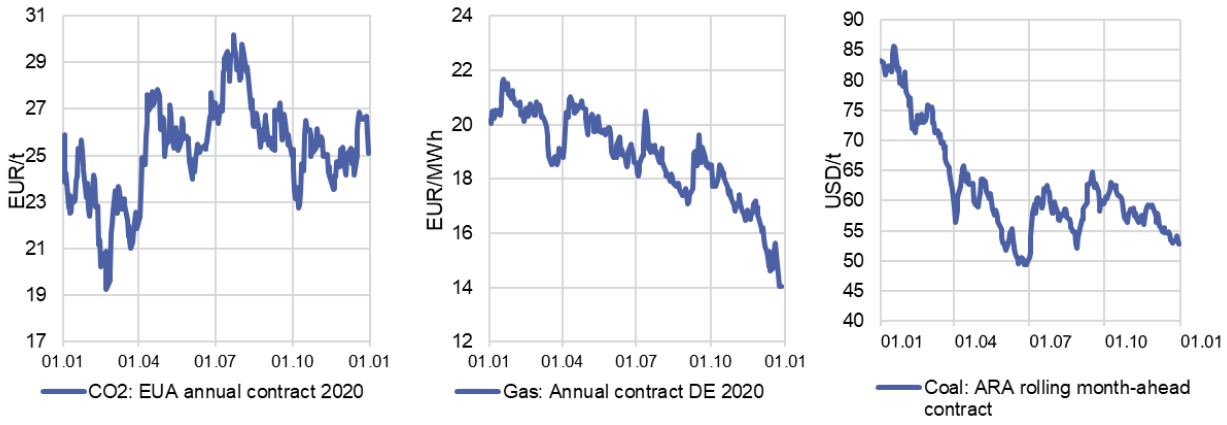

Figure 19: CO_2, coal and natural gas price developments for 2020 contracts
Data source: EEX

3 ElCom's key market monitoring activities

3.1 Analyses and statistics

With regard to market transparency and market surveillance, ElCom's work in 2019 continued to focus on monitoring the Swiss wholesale electricity market and analysing the activities of Swiss market participants in the European Union. ElCom received two suspicious transaction and order reports during the course of 2019 (see Figure 20). These STORs are transmitted to ElCom by the trading surveillance authorities of the organised marketplaces in the event of unusual behaviour on the part of Swiss market participants. The information from the STORs is examined in detail and, if necessary, analysed with additional information available at ElCom. Depending on the results of these analyses and in order to clarify any questions, direct contact is made with market participants.

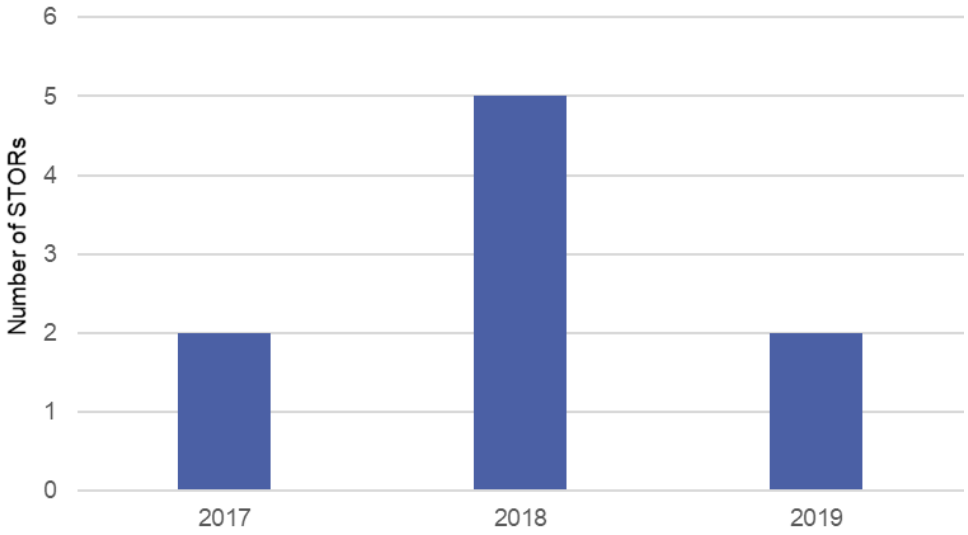

Figure 20: Overview of the STORs received by ElCom

[9] EUA: European emission allowances.
[10] NCG: Reference price for the German gas price from the market area operator NetConnect Germany.
[11] ARA: Reference price for thermal coal at the transhipment terminal in the Amsterdam-Rotterdam-Antwerp triangle, Europe's main coal market.

In addition to the STORs, topic-related *ad-hoc* analyses were also carried out, as they had in the previous year. Some of these were related to the introduction of XBID and the resulting low level of liquidity on the Swiss intraday market. One of the focal points was to detect any capacity hoarding on Swiss borders and trading in very small quantities.

A further topic addressed by ElCom in 2019 was the use of algorithms on the Swiss wholesale electricity market and the use of such algorithms by Swiss market participants on EU wholesale electricity markets. A survey on this subject was conducted among the companies registered with ElCom. The survey also included two foreign electricity traders who actively participate on the Swiss market. The evaluation of the survey is presented in Section 3.3. ElCom has drafted a report on algorithmic trading based on the findings of the survey. This will be presented at the Market Surveillance Workshop 2020 and will then be published on the ElCom website.

3.2 Impact of the introduction of XBID reporting on data quality

Good data quality is essential for informative results from monitoring activities. For this reason, ElCom has been working continuously on improving the completeness, accuracy and timely transmission of data subject to the obligation to report since the start of the 2015 reporting period. This work was continued in 2019.

In order to ensure the completeness of the data, extensive backloading took place in 2019. However, the main event in terms of data quality is closely related to the introduction of XBID and concerned time stamps, which are one of the parameters of intraday trading reports.

When XBID was implemented in June 2018, a centralised platform was created on which market participants from all countries participating in XBID can conduct intraday trading within the framework of the cross-border capacities available between countries. Orders and trades are entered on local marketplaces, but merged on the central platform.

Since REMIT was not yet operational at the beginning of the development work for XBID, the REMIT reporting rules were not sufficiently taken into account when implementing XBID. As a result, some of the reported orders had time stamps for after the corresponding trade and an incorrect status (“cancel” instead of “update”). Since it is very important in the context of market surveillance to be able to trace exactly when a bid was placed and a transaction completed, automated market surveillance is impaired by this fact. This problem affects not only Switzerland, but also all other countries where XBID trading is monitored. For this reason, not only ElCom, but also EU national regulatory authorities (NRAs) are working to resolve this problem.

The nominated electricity market operators (NEMOs) responsible for reporting have identified the problem. It is unclear when the incorrect time stamps will be corrected.

3.3 Survey and communication on algorithmic trading

In August 2019, ElCom conducted a survey on the topical subject of algorithmic trading. One of the focal points of the survey was the algorithms in the Swiss electricity market and their use by Swiss market participants on the wholesale electricity markets of the European Union. The survey also asked questions about their underlying risk controls and governance as well as the development, testing and implementation phases of trading algorithms.

There are a variety of reasons for using trading algorithms within the energy industry. Trading algorithms are primarily used to automatically close an open position, which in the case of a portfolio of renewable energies might result from a new wind or solar forecast. On the demand side, too, smart meters allow near-real-time measurement of consumption and updated demand forecasts can be optimised by trading algorithms directly on the intraday market. The main catalysts for using algorithmic trading in this case are the reduction of balancing energy costs and optimisation of the electricity position also outside normal office hours if the cost of 24/7 shift operation is too high.

Another reason for using trading algorithms is to generate profits. The growing range of short-term tradable electricity products (hourly, half-hourly and quarter-hourly products), as well as the different marketplaces has a twofold effect. It not only increases the workload for traders; it also opens up arbitrage opportunities between products (e.g. buying the hourly product vs. selling the four quarter-hour products) or between different marketplaces.

Trading algorithms can also be used for speculative portfolio optimisation. However, this presupposes that the company has good pricing models and is prepared to take certain risks. Another option is offered by algorithms that automate market making and match internal orders before they are sent to the market. This reduces the trading volume and consequently the exchange and brokerage fees.

The evaluation of the survey served as a basis for ElCom to assess the presence of trading algorithms on the Swiss wholesale electricity market. It also helped to understand how market participants deal with the risks arising from algorithmic trading and what possible measures market participants need to take or have taken to maintain the required level of compliance and ensure market integrity. The analysis of the survey formed the basis for drafting the ElCom communication on algorithmic trading.

ElCom contacted a total of 61 market participants[12] as part of the survey. Two of them are based abroad, but are strongly active on the Swiss spot markets. A total of 46 of the market participants completed the questionnaire. Six of them did not complete the questionnaire because they were, according to their statements, no longer active on the wholesale electricity market. Nine of the market participants surveyed failed to provide ElCom with any feedback.

Figure 21 shows that eight of the companies use trading algorithms. Three of them had developed these themselves. Algorithms are most frequently used in intraday trading and primarily on the German electricity market (see Figure 22 and Figure 23).

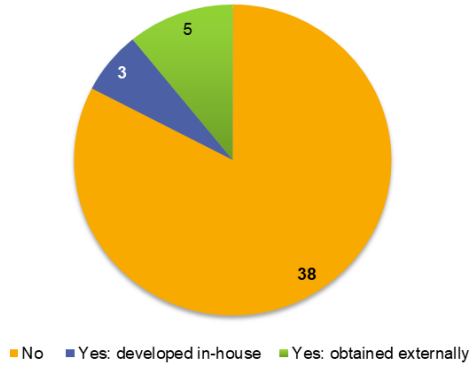

Figure 21: Number of market participants using trading algorithms, broken down by “make/buy”

[12] The discrepancy between the number of market participants contacted and the number mentioned in the first section can be explained by new registrations and deregistrations in the course of the year before the survey.

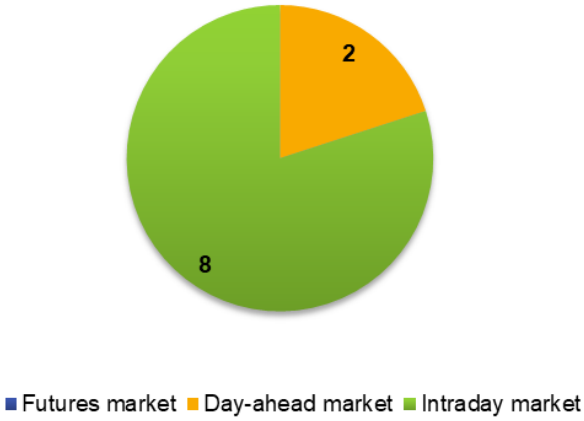

Figure 22: Number of market participants using trading algorithms, broken down by market

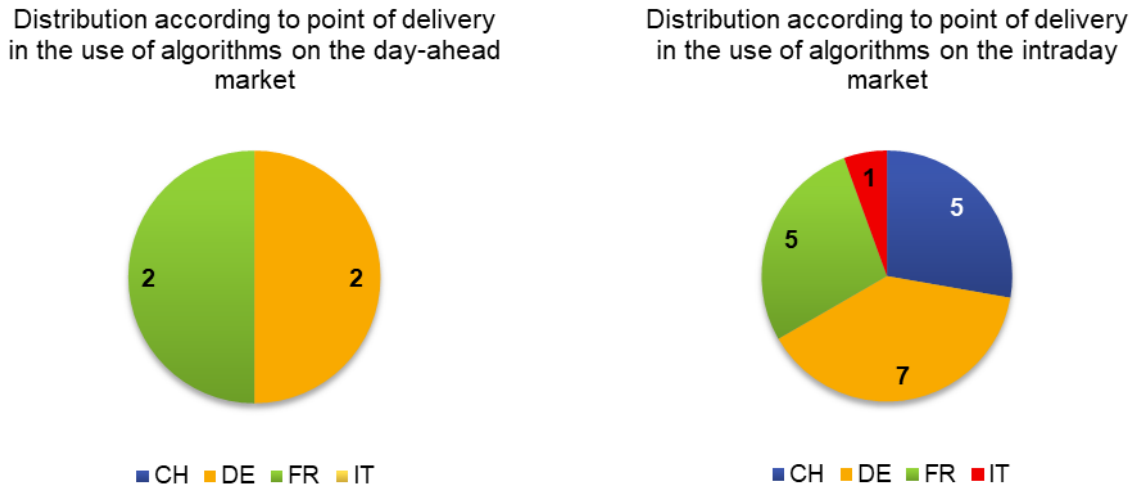

Figure 23: Use of trading algorithms according to delivery point

The analysis in connection with the development phase, test phase, validation phase and documentation of trading algorithms indicated that there is definitely potential for optimisation among the companies. For example, at a company that uses trading algorithms it represents best practice for all units to adopt and internally apply in a uniform manner, guidelines or specifications for the development and testing of algorithms. These guidelines should not be limited to the process of developing new algorithms; it should also clearly define the process of changing existing algorithms. If the algorithms are procured externally, these internal specifications should help to set minimum requirements and critical questions to the third-party company. These guidelines should be consistent with the internal guidelines and reflect the company's appetite for risk and behavioural expectations. Such guidelines were available within the companies that develop algorithms themselves. However, this was rarely the case with companies that procured algorithms externally.

During the test phase, differences were also identified between the companies that develop algorithms themselves and those that procure algorithms externally (see Figure 24 and Figure 25).

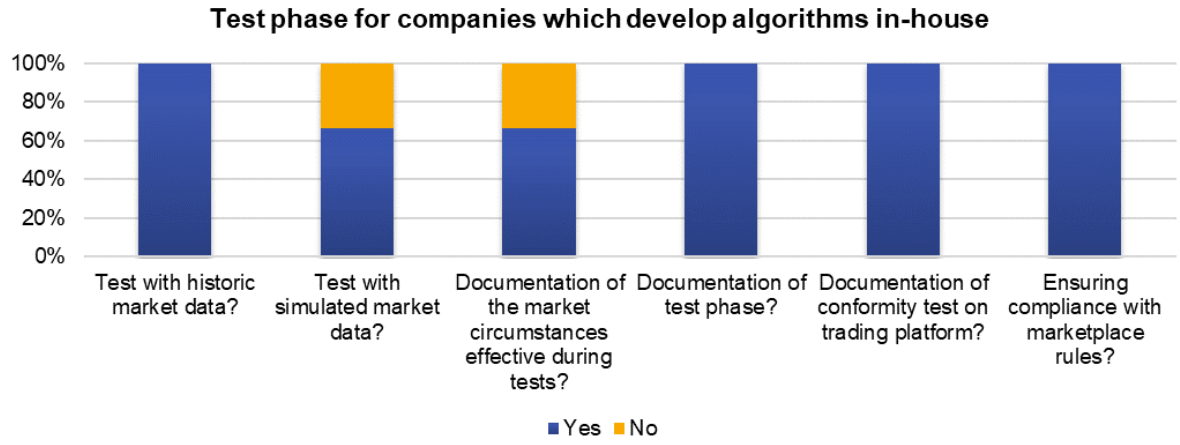

Figure 24: Answers to key questions regarding the test phase at companies that develop algorithms in-house

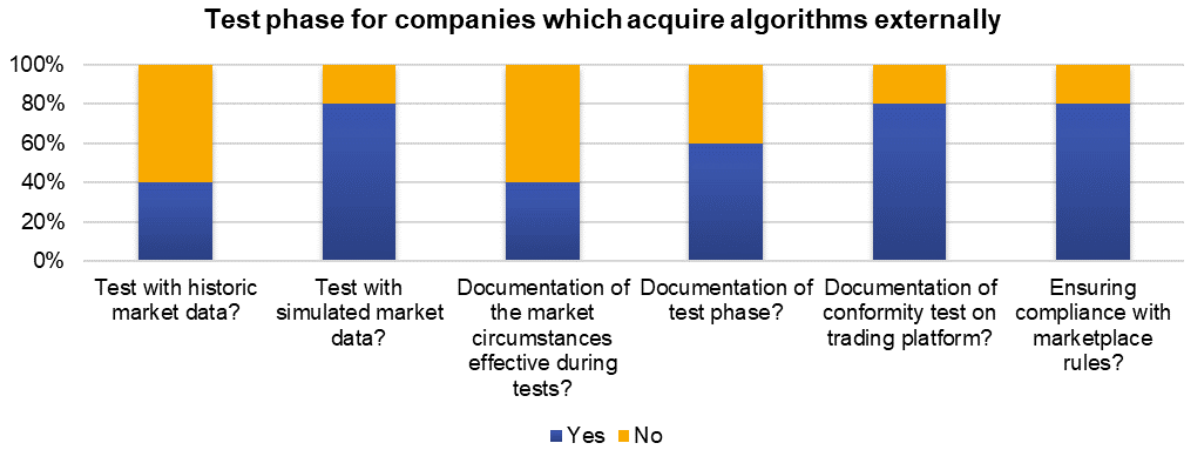

Figure 25: Answers to key questions regarding the test phase at companies that procure algorithms externally

All companies should implement appropriate risk controls in order to identify and reduce potential trading risks associated with algorithmic trading. This is both in the interest of the company itself (operational errors caused by out-of-control algorithms can result in high costs) and in the interest of ensuring market integrity for those marketplaces where the algorithms are actively used.

It is worth noting pre-trade controls at this juncture. These are controls that take place before an order is submitted to a marketplace. These are summarised in points 1 to 6 in Figure 26 (below). Figure 26 also shows that risk controls are well established among companies that use trading algorithms.

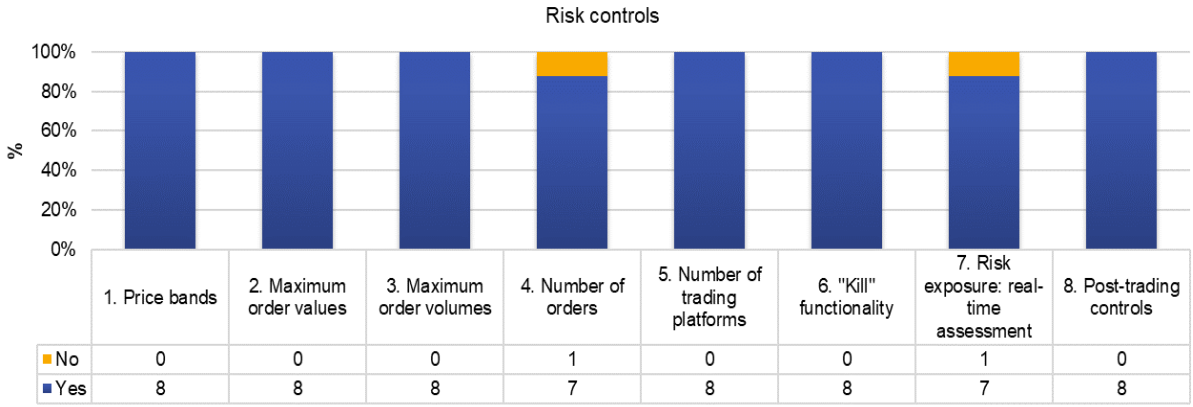

Figure 26: Establishment of appropriate risk controls in the company

Furthermore, a strong governance framework with appropriate guidelines, clear, formalised instructions and effective risk management is essential in order to reduce the risks associated with algorithmic trading strategies.

It is essential that companies take into account the impact of their trading activities on market behaviour and the impact on overall market integrity. This is especially true because energy markets sometimes have significantly lower liquidity than securities markets.

It is not the task of the regulator to test each algorithm before it is rolled out productively. However, considering the rapidly changing landscape and programming options with such algorithms, the question arises whether algorithms should in future be certified before they are used productively. Certification of algorithms should ensure that a particular algorithm complies with one or more specifications. An algorithm should be checked to determine whether it meets the documented requirements (validity, completeness, consistency and accuracy) and whether the standards, market practices and applicable market rules are met. The role of the regulator would then be to develop, in consultation with industry, guidelines, standards and expertise on algorithmic trading in order to strike a balance between innovation, market security and integrity.

3.4 Analysis of cross-border intraday trading

With the introduction of XBID in June 2018, implicit cross-border intraday trading between Switzerland and Germany and between Switzerland and France was discontinued. Traders must proceed in two steps for importing and exporting electrical energy on the intraday market: The required cross-border capacity must be reserved and the energy trading transactions must be concluded.

The cross-border capacities required for a particular day can be reserved from 6:00pm on the previous day (for the border between Switzerland and Germany) and from 9:05pm on the previous day (for the border between Switzerland and France). The first come, first served principle applies. The capacities are free of charge. Reservations can be made up to one hour before the start of the supply period.

Once reserved, capacity can be cancelled by reserving capacity in the opposite direction. This creates the risk of capacity hoarding. Traders reserve capacity in order to keep open the option of cross-border energy transactions. If prices develop unfavourably, the reserved capacity is returned by reserving capacity in the opposite direction. The blocked capacity is therefore not available to other market participants. ACER has published a guidance note in this regard. This guidance note classifies hoarding as behaviour of relevance to REMIT.[13]

[13] Guidance Note 1/2018 - Transmission Capacity Hoarding (Published: 22/03/2018): Guidance on the application 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.

ElCom evaluated the data for the Swiss-German border for the year 2019 in order to gain a better understanding of the behaviour of market participants. The following questions arose during the detailed analysis:

How often do market participants reserve intraday capacity in both directions? How much capacity is reserved in the opposite direction?

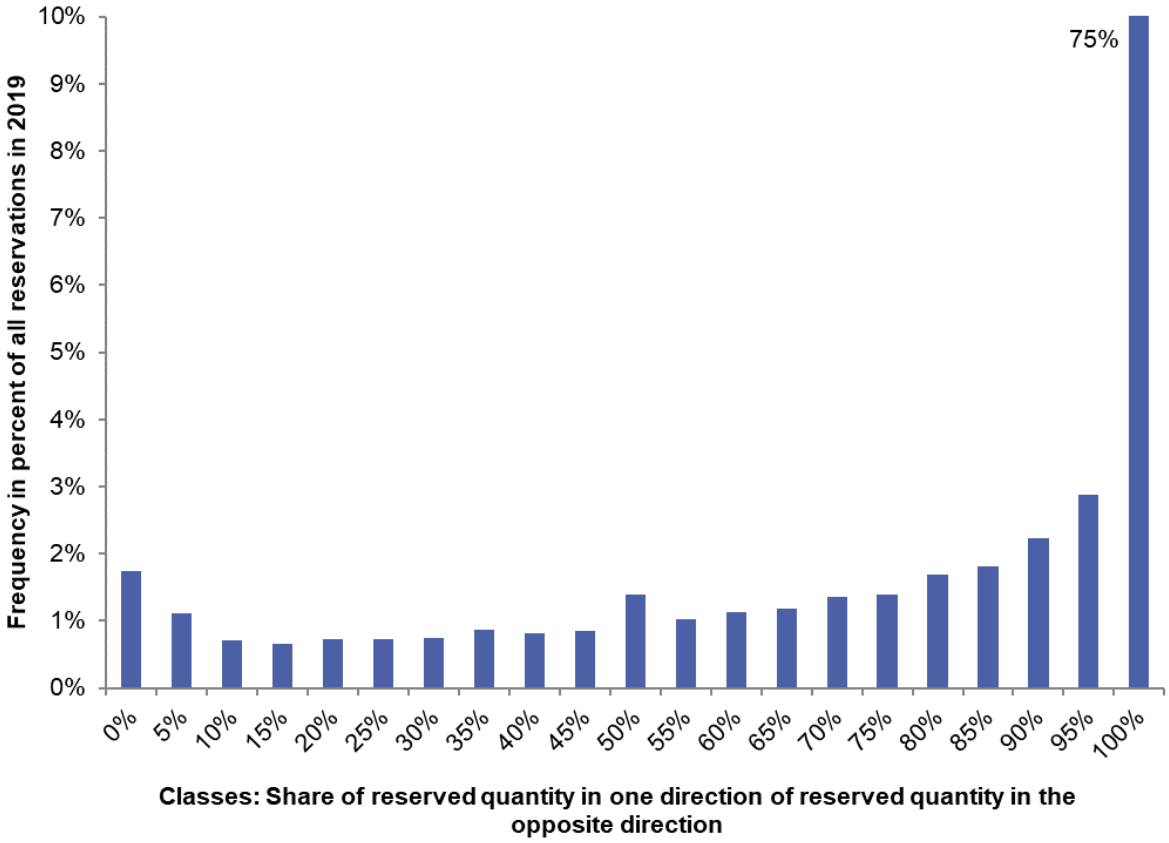

Figure 27: Analysis of reservation behaviour in both directions
How much larger is the reserved capacity than the reserved capacity in the opposite direction? 100% = reserved capacity in one direction only, 0% = reserved capacity is identical in both directions

Across all market participants and all supply periods, over 75 percent of the capacity reservations was in one direction only. In just over one percent of the reservations, the reserved capacity was the same in either direction or the deviation from the reserved capacity in one direction was less than five percent. In eleven percent of the reservations, the reserved capacity in one direction was 50 percent or more than the reserved capacity in the opposite direction. This means that hoarding can be excluded in many cases. However, there remain several hundred cases where virtually the same amount of capacity was reserved in both directions.

How much of the total reserved capacity for a supply period and in a particular direction of transport is reserved in the first 30 minutes after the reservation platform opens at 6:00pm the day before?

The earlier the capacity is reserved, the greater the probability that capacity is still available. If capacity can be reserved, an option is available for the transport of electrical energy in intraday trading.

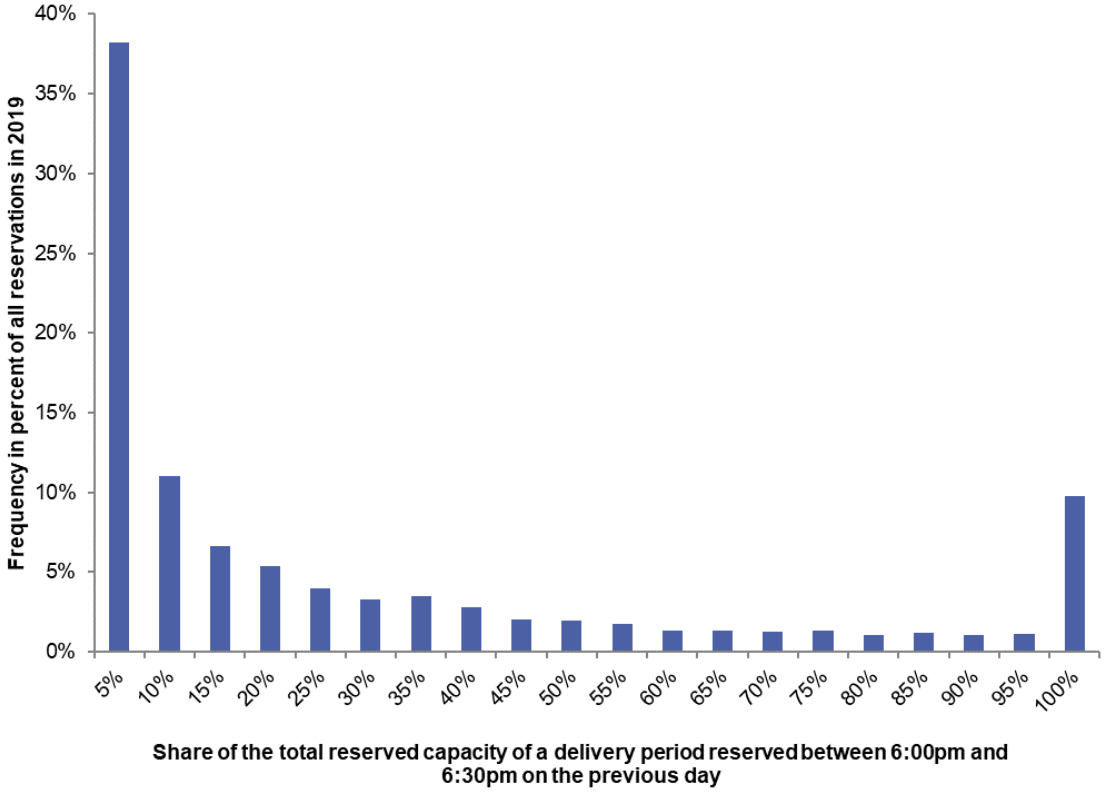

Figure 28: Analysis of reservation behaviour shortly after the reservation platform opens.
100 percent means that the entire capacity for a supply period is reserved between 6:00pm and 6:30pm. 0-5 percent means that only 0-5 percent of capacity for a supply period is reserved between 6:00pm and 6:30pm.

In just over ten percent of cases, the entire capacity of a supply period is reserved between 6:00pm and 6:30pm. In more than one third of all cases, only five percent or less of the total capacity reserved up to the supply period is reserved during this period.

This indicates that most decisions on intraday trades have not been taken at 6:00pm the previous day; it is more common to wait for price developments on the markets and developments in fundamental parameters (e.g. wind and solar electricity production or demand).

The price difference between Germany and Switzerland from the day-ahead auction also plays a role on determining the time of reservation. The day-ahead auction takes place the day before at 11:00am (Switzerland) and 12:00 midday (Germany). If a significant price difference between the two countries can be identified at this point in time, the probability of earlier reservations for intraday cross-border capacity is higher, as traders can expect that the price ratios (and hence the direction of flow) of electricity on the intraday market will not change.

Over the year, prices tend to be higher in Switzerland in winter and higher in Germany in summer (see also Figure 8):

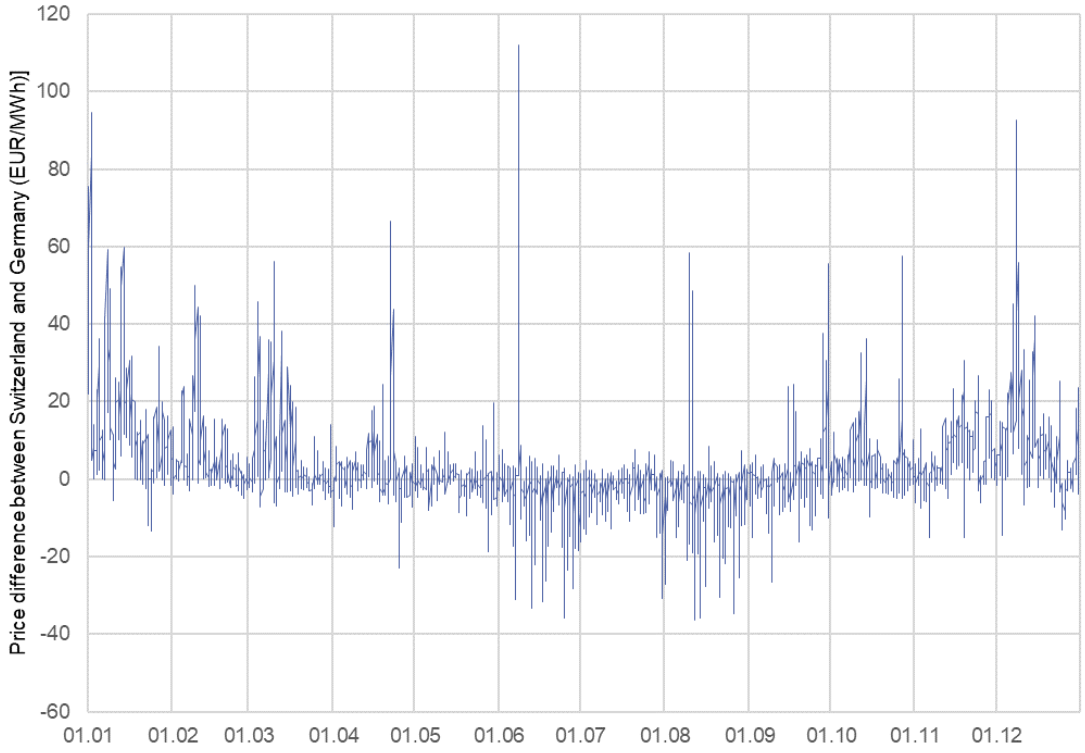

Figure 29: Price difference Switzerland vs. Germany in the day-ahead auction for hourly products 2019
Data source: EPEX Spot

If the price differences are correlated with the share of cross-border capacity reserved between 6:00pm and 6:30pm, the following picture emerges:

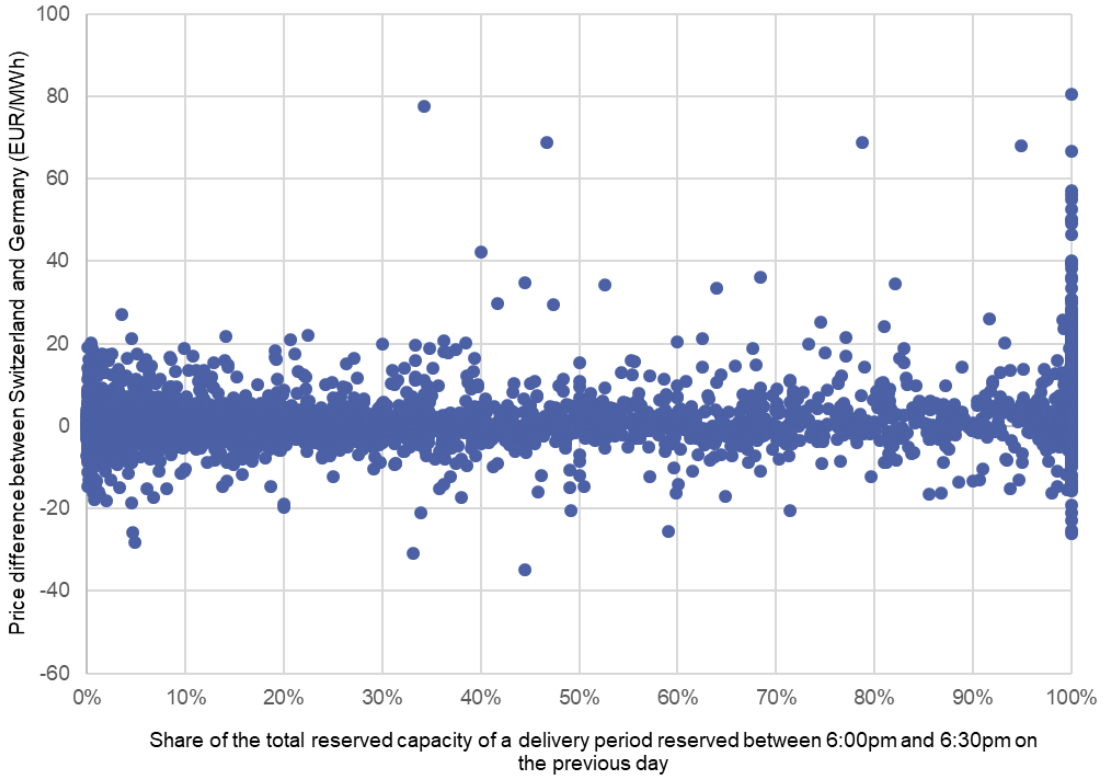

Figure 30: Correlation between the price difference between Switzerland and Germany and early reservation

The general expectation would be that a higher spread would lead to more capacity being reserved in the first 30 minutes after the platform opens. This is not apparent as a trend, except in the case of reservations of the entire capacity (100%) for importing electrical energy into Switzerland (with a positive price difference on the graph. This means that energy in Switzerland is more expensive than in Germany and is therefore imported from Germany to Switzerland).

If one compares reservation shares of 30-80 percent with shares of 0-10 percent, there is a tendency to reserve less capacity in the first 30 minutes despite a higher price difference (up to 20 or -20 EUR/MWh).

How shortly before the delivery period is the capacity reserved?

A reservation can be made a maximum of 30 hours before supply, as the reservation platform opens at 6:00pm the day before for all supply hours for a day.

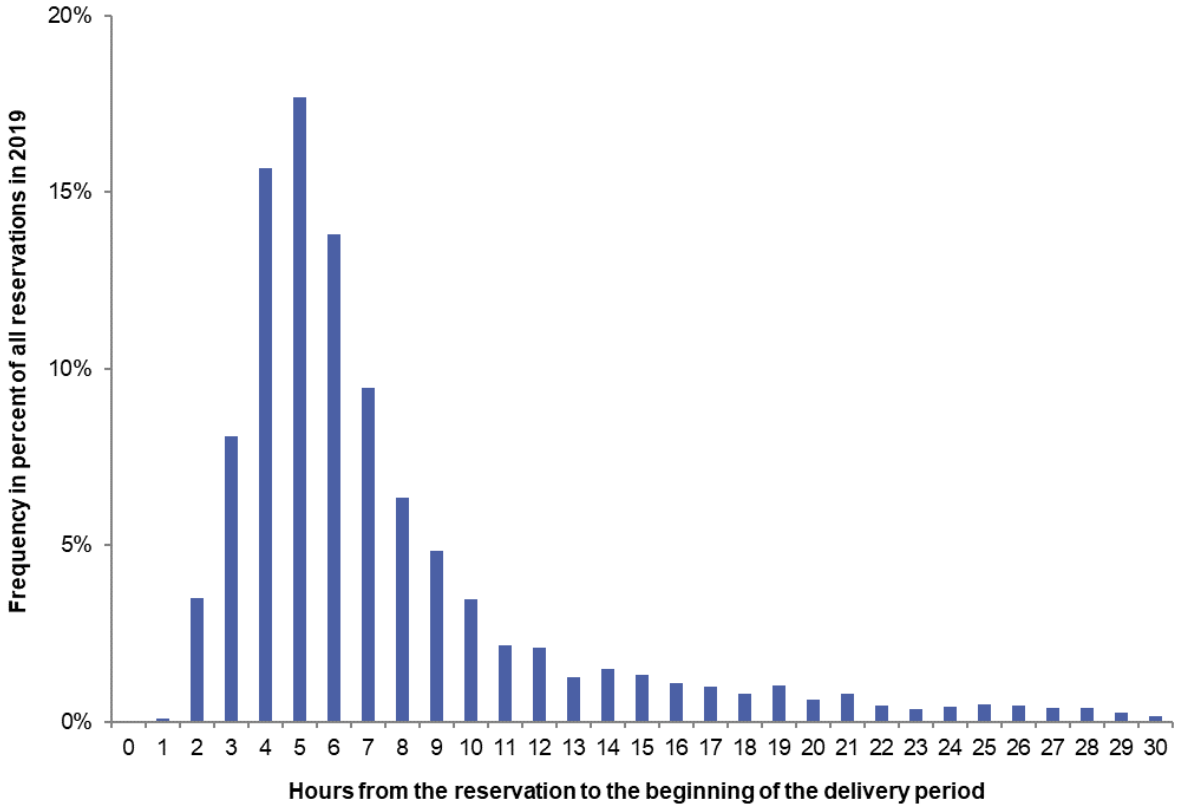

Figure 31: Distribution of the reservation times compared to the start of the delivery period

In 70 percent of the reservations, the time from the reservation of capacity to the start of the delivery period is between three and nine hours, with the greatest frequency occurring four to six hours before the delivery period.

What is the seasonal difference in the period between reservation and the start of the delivery period?

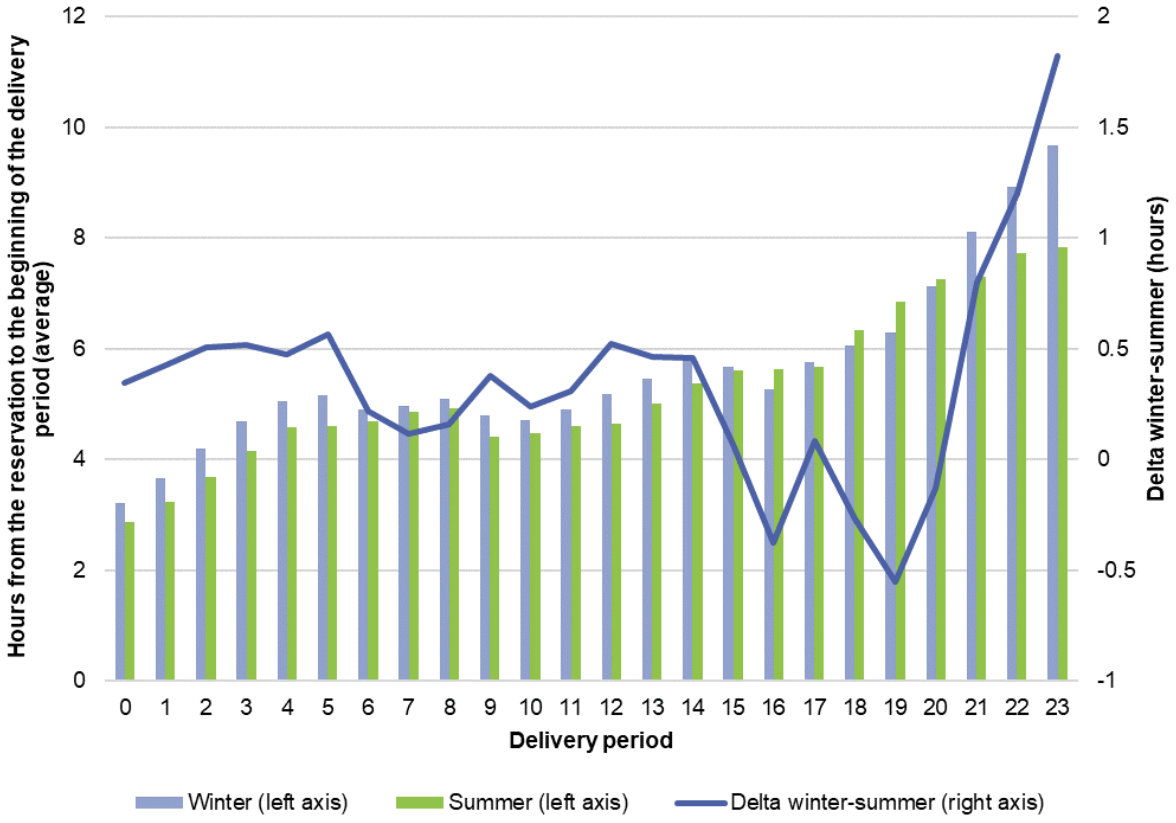

Figure 32: Seasonal differences in the time span from the reservation to the beginning of the delivery period
Per delivery period. On the x-axis are the 24 delivery periods; delivery period 0 corresponds to the hour midnight-1am.

For most delivery periods, capacity is reserved earlier in winter (October to March) than in summer. In summer, forecast deviations are greater, as more solar energy is produced. The time span from reservation to delivery period is therefore shorter. This is particularly evident in the high solar intensity hours from 11:00am to 2:00pm. Conversely, the time span is less in winter in the hours from 6:00pm to 7:00pm. These are hours with high demand, especially in the winter months, which is why reaction to fluctuations is quicker.

The price difference between Germany and Switzerland from the day-ahead auction also plays a role. If the difference is large (usually in winter), capacity tends to be reserved earlier on the intraday market, as the probability that the direction of flow on the intraday market follows the day-ahead market is greater.

How is the volume related to the time of reservation?

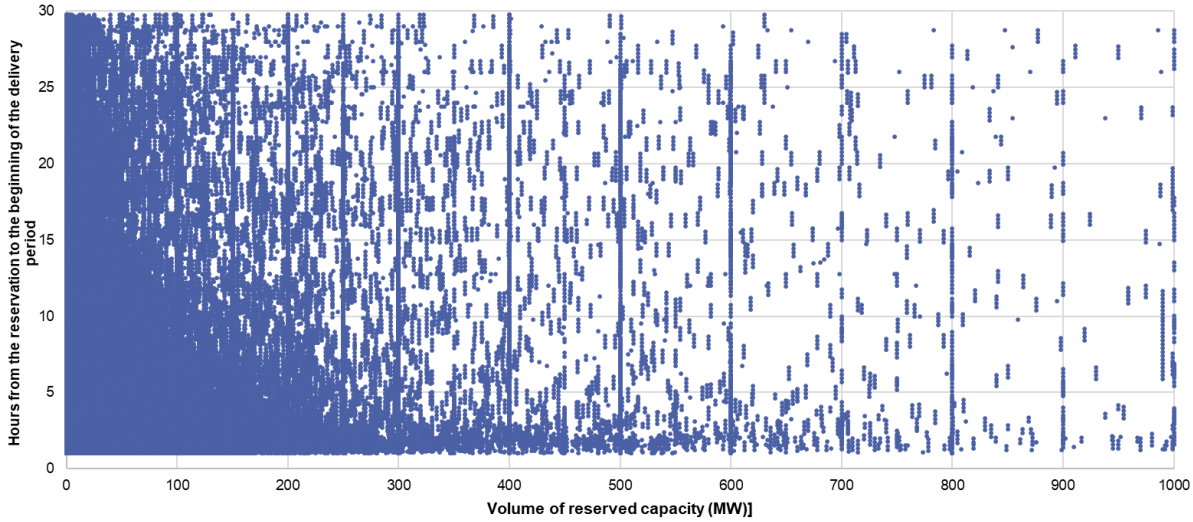

Figure 33: Hours from reservation to the beginning of the delivery period according to reserved volume

Only small volumes tend to be reserved long before the delivery period. This suggests that the risk of large capacity reservations long before the start of the delivery period is generally considered too high. Nevertheless, there are a few large reservations.

Which volumes are reserved and how often?

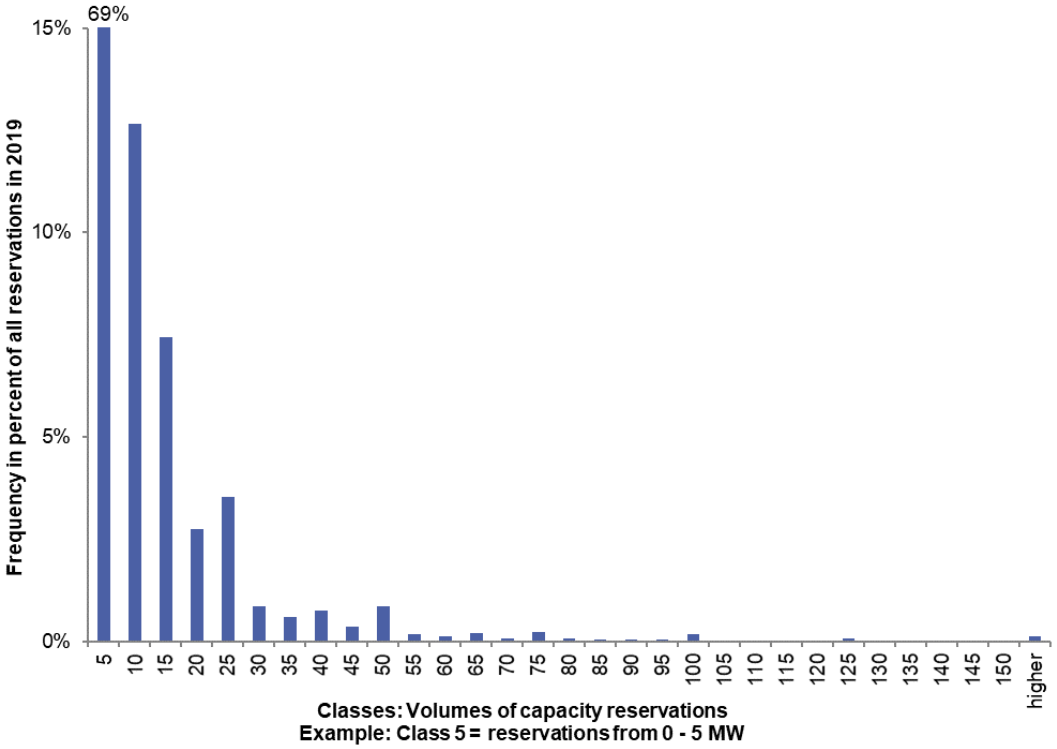

Figure 34: Frequency of reservation volumes

In most cases, the volume of reservations is 5 MW or less. In over 80 percent of cases they are smaller than 10 MW. This suggests that intraday cross-border trading is often used to offset short-term open positions. Such positions can arise if it becomes apparent that forecasts for wind and solar production or for demand are incorrect. Another reason can be outages or reduction of the electricity generation of a power plant.

The Swiss-German border is actively managed with regard to intraday trading. For the most part, only capacity in one direction is reserved, which rules out hoarding. Reservations are usually made on the day in question, usually four to six hours before the start of the delivery period. Reservations made shortly after the reservation platform opens at 6:00pm the day before tend to be the exception. This is a further indication that the market is functioning properly and that hoarding is not occurring over a long period of time. There is a tendency not to reserve large capacities at an early stage. Reservations of large capacities are also rare, with reservations of up to 10 MW being the most typical. This indicates the management of open positions that have arisen in the short term, such as those that may arise from the correction of forecasts for solar and wind power electricity generation or demand.

Nevertheless, problematic behaviour on the part of market participants may occur in individual cases. ElCom investigates such cases and contacts the market participants if necessary.

3.5 Analysis of possible manipulation of a market index

The Swiss intraday market index (IDM CH) is calculated for each day and for each hour. The price is calculated as a volume-weighted price from all transactions that take place on the Swiss intraday market for the corresponding hour. If no trades have been settled on the intraday market during this period, the IDM CH Index takes the same price as the day-ahead market price (hourly reference price established in the day-ahead auction on the previous day for the corresponding hour). If only a single transaction of 0.1 MWh takes place on the EPEX Spot platform for one hour, this transaction determines the IDM CH Index for the hour, regardless of the extent to which this price deviates from the day-ahead market price or the extent to which it represents trading activity on the Swiss intraday market.

Trading volumes on the Swiss intraday market have fallen sharply since the introduction of XBID in June 2018. Illiquid markets are more susceptible to market manipulation, as greater price effects can be achieved with few resources. Greater deviation between prices on the continuous intraday and day-ahead markets can be observed on certain days. The hourly intraday market prices in Switzerland on these days differed from the intraday market prices to the same extent in the surrounding countries. A “plateau” trend in prices was also observed on the Swiss intraday market. This rather unusual price trend for this market gave rise to more detailed analysis. The evaluation of the transactions showed that certain market participants executed orders with exceptionally small volumes (0.1 MWh) at prices significantly above the reference price of the day-ahead market during periods of very low liquidity on the intraday market in Switzerland.

The analysis of the fundamental data on power plant outages, possible load changes, deviations in renewable energies and cross-border flows did not reveal any conspicuous changes for the corresponding days that would explain the price deviations between the Swiss day-ahead and intraday markets and the price difference with regard to the surrounding countries.

The analysis of the market participants' orders showed that the number of orders with a trading volume of 0.1 MWh had increased significantly after the introduction of XBID, even though the trading volume clearly decreased.

The existence of contracts with distribution customers indexed to the Swiss intraday market was confirmed by individual market participants. This is therefore an incentive to influence the intraday market index in a certain direction. This does not, however, mean that every minimal-volume order or trade constitutes a suspected attempt to influence or manipulate the market, because market participants are sometimes forced to smooth out even the smallest quantities from distribution and production positions. In an illiquid market, this is then settled at the price available at that moment, which may then sometimes deviate significantly from the last trade or the last reference price for that hour.

Figure 35 and Figure 36 show the influence of a market participant's trading activity on the IDM CH Index for various supply days. The blue line represents the day-ahead market index in EUR/MWh (left axis). The intraday market index is shown in EUR/MWh (left axis) by the orange dotted line. The red stars show the price in EUR/MWh (left axis) at which the market participant concluded the intraday trade. If the market participant concluded several transactions per hour, several stars are shown. The bars represent the cumulative volume traded per hour by the market participant (in MWh, right-hand axis), with each individual transaction per hour colour-coded in chronological order. The figures in the bars represent the cumulative volume after each transaction. If the red star is close to or exactly on the orange dotted line, the trading activity of the market participant has significantly determined the IDM CH Index.

The differences between the day-ahead market price and the intraday market index were significant in certain hours for the delivery days in Figure 35 and Figure 36. A 760 percent increase over the day-ahead price was observed in just a single hour on the intraday market.

In view of the circumstances, ElCom has sought discussion with the relevant market participants and has drawn the attention of EPEX Spot to the necessity of introducing a threshold for the transaction volume within the calculation of the volume-weighted average price for the determination of the Swiss intraday market index. The Swiss intraday market index should only be calculated when the threshold value is achieved. Otherwise, it is equated to the day-ahead market index. This measure is intended to ensure that the Swiss intraday market index once again shows a fair value that reflects trading activity on the Swiss intraday market and is not subject to the pronounced fluctuations that can be triggered by non-market-based minimal-volume transactions.

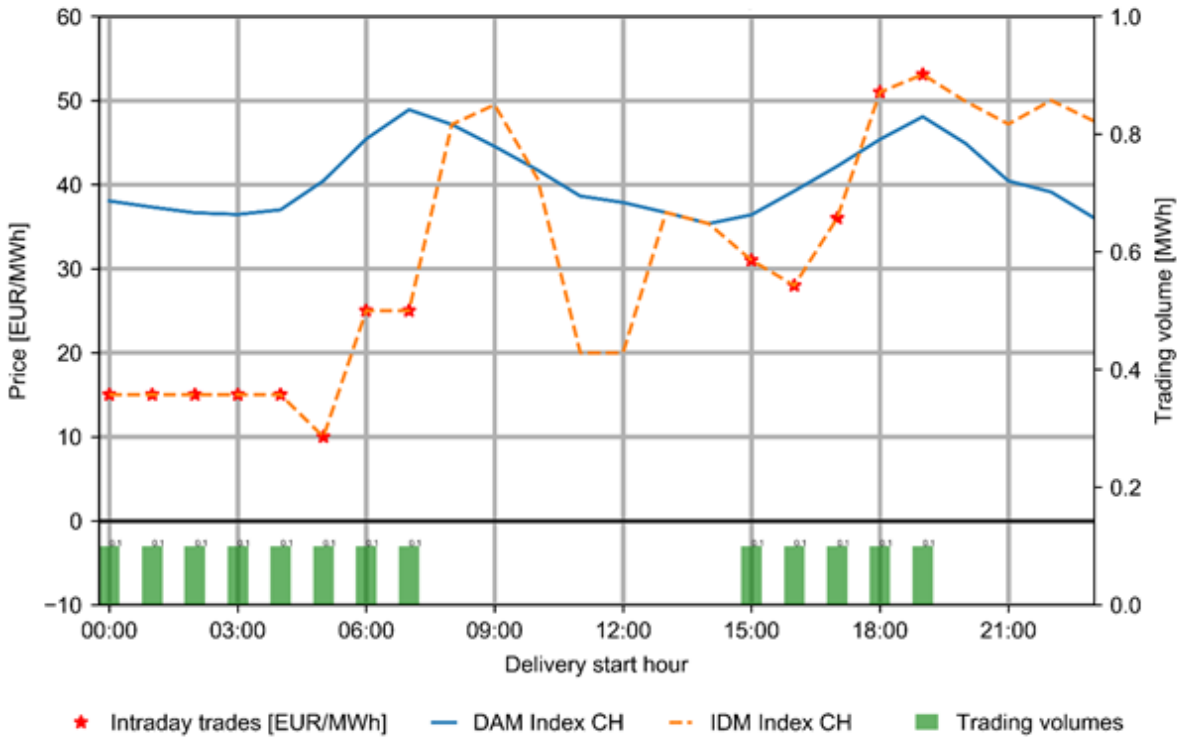

Figure 35: Day-ahead market index (DAM Index CH) vs. intraday market index (IDM Index CH)
Hourly intraday transactions for a market participant in EUR/MWh (star), hourly cumulative volume of the market participant (bar)

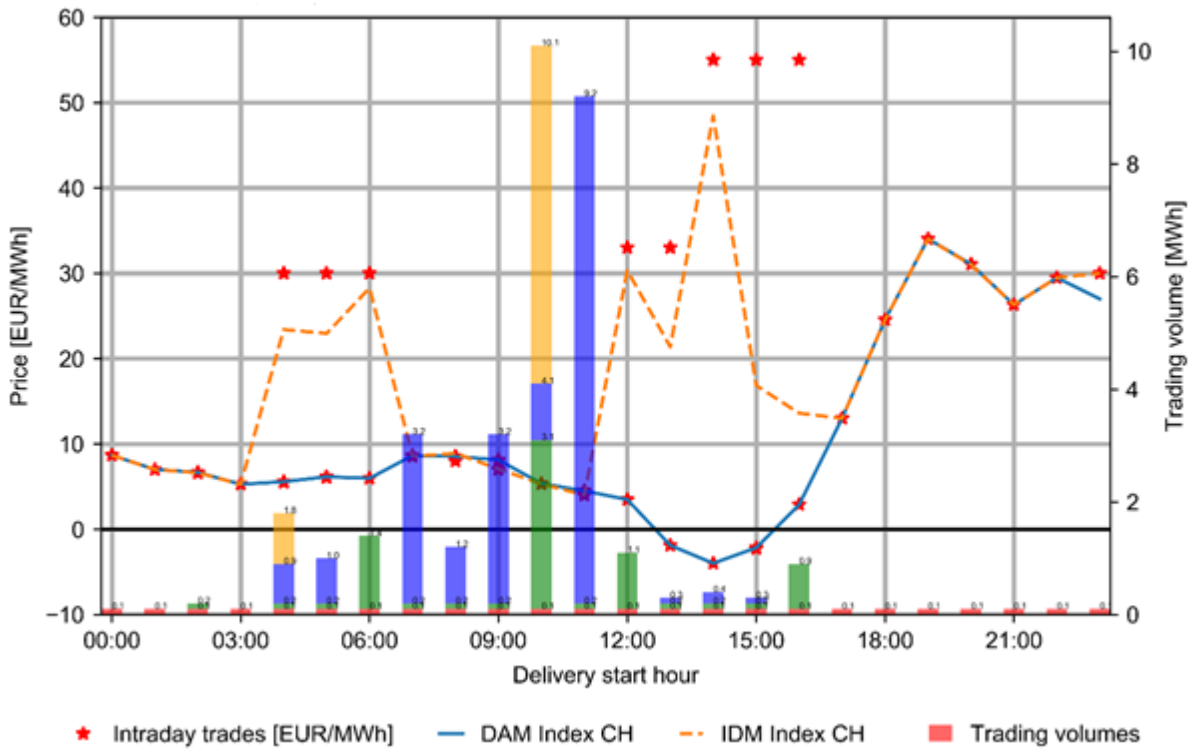

Figure 36: Day-ahead market index (DAM Index CH) vs. intraday market index (IDM Index CH) Hourly intraday transactions for a market participant in EUR/MWh (star), hourly cumulative volume for the market participant (bar)

3.6 Analysis: intraday trading vs. balancing

Since 2017, ElCom has received several STORs which, once the relevant market participant has been activated on the French balancing market, have had a significant impact on the price of trading activities by market participants on the French or Swiss intraday markets.

The most important characteristics of both markets are presented in Table 3 below.

French Balancing Market (BM)	Intraday Market (IM)
• TSO ensures that demand matches supply in real time • If the system is strained (supply<demand), the TSO will activate the bids (cheaper ones first) • Pay-as-bid • Prices on BM higher than on the IM to reward flexibility **→ Trading transactions (price and volume) visible only to the TSO and the market participant whose bid has been activated**	• All market participants are in competition with each other • Continuous trading • TSOs may not trade on the IM, except to compensate for network losses • The IM does not really reflect the temporary asymmetry of the system **→ Trading transactions (price and volume) are visible to all market participants on the IM**

Table 3: French balancing market vs. intraday market

A similar pattern was observed in all cases: The French network was already very strained on the relevant days at the affected hours, which led to the activation on the balancing market by the French TSO. The market participant that was awarded the contract on the French balancing market purchased the

required energy (in part or in full) on the intraday market (France or Switzerland) instead of providing the energy by means of its own power plant capacity. Purchases on the intraday market triggered by the relevant market participant led in some cases to significant price changes on the intraday market in both France and Switzerland.

Balancing market calls should generally be provided by means of flexible power plant capacity in order to relieve the French grid and market. The prices on the balancing market are generally higher than on the intraday market in order to give market participants an incentive to maintain or reserve a certain power plant capacity for the balancing market.

A power plant optimiser is confronted with strategic decisions on a daily basis:

- The optimiser can offer its power plant for Day D on the energy exchange's day-ahead auction on D-1 (day-ahead market) at marginal costs or higher.
- If this D-1 power plant has not sold energy because the hourly price on the exchange is lower than its marginal costs, the power plant operator still has the option of offering its power plant on the intraday market on Day D.
- However, as long as cross-border capacity is available, the power plant optimiser can also offer its power plant on the French balancing market.

However, there are various consequences if the market participant itself then procures the quantity requested on the French balancing market on the intraday market instead of making the flexible power plant capacity available:

- The already strained French market will be strained even more by additional purchases on the Swiss or French intraday market. Since the intraday markets in Switzerland and France are strongly correlated, purchases on the Swiss intraday market indirectly lead to straining of the French intraday market.
- The market participant receives a flexibility margin via the balancing market. However, the market participant is not responsible for this flexibility itself. This flexibility is provided indirectly by the participants on the French or Swiss intraday market, which is not the role of the balancing market.
- The market participant may engage in insider trading. Only the market participant and the French transmission system operator know the quantity, price and time of the activation on the balancing market. The information is precise, not public and could have a pronounced impact on the price for the corresponding hours on the intraday market. The market participant is then prepared to use the information and to procure the corresponding quantity on the intraday market up to the balancing market price (which is usually significantly higher than the intraday market price). Other market participants lack this knowledge and are therefore not aware of the fair system price that results from special conditions on the balancing market.
- The market participant could possibly be accused of cross-market manipulation. The intraday market does not reflect temporary imbalances in the system. Balancing market prices are higher than intraday market prices to reward flexibility.
- Closing the open position on the balancing market via the intraday market may lead to manipulation of the intraday market by sending misleading price signals: the higher the price difference between the two markets, the more motivated the market participant is to push up the intraday market price.

ElCom regards this is as a problem of market design. In principle, it should not be possible for the same product to be traded simultaneously on two different markets (balancing and intraday markets) where different market participants interact and different rules apply. On the balancing market, the TSO is always on one side, while on the intraday market there are market participants on both sides. In addition, on the intraday market, transactions with price and volume are visible to everyone at all times, whereas on the balancing market, transactions are non-public information. This different market constellation leads to different prices and provides an incentive for arbitrage by traders.

In order to counteract this problem, the French network operator adapted the *Règles relatives à la Programmation, au Mécanisme d'Ajustement et au Recouvrement des charges d'ajustement*[14] on 1 August 2018 and introduced a new article (Article 4.2.1.2.1). However, this only applies to those market participants that are considered to be *EDA Points d'Échange*. These are market participants who are active on the French balancing market but which are based abroad.

The new rule states:

"An EDA (entité d'ajustement) Point d'Échange is defined as a group of plants located outside mainland France and capable of meeting a request from RTE to supply or receive a certain amount of electricity within a given period of time via an exchange point, i.e. via a physical connection to an interconnector. Consequently, the activation of the bid of an EDA Point d'Échange may not result in that participant on the balancing market buying (for production bids) or selling (for consumption bids) the corresponding quantity of electricity on the French intraday market, either in the form of an explicit flow or an implicit nomination."

Despite the new regulation, certain Swiss market participants have continued to exploit price differences on both markets, thereby making an arbitrage profit. ElCom investigated the trading activities of these market participants for the corresponding supply hours.

4 Other ElCom activities relating to market surveillance

4.1 Cooperation in Switzerland and abroad

As market surveillance and market integrity are still new topics for energy regulators, the thematic exchange with the market surveillance departments of other regulatory authorities is of great importance. Annual meetings with the market surveillance authorities of other regulatory authorities continued in this context in 2019. Job rotation also took place with one of the foreign regulatory authorities. ElCom welcomes the intensification of the exchange in the form of such a one-week job rotation with the surveillance departments of other regulatory authorities.

Since the beginning of 2019, ElCom has been excluded from participating as an observer in the various round tables organised by ACER on the implementation of the REMIT Regulation. Exchange with ACER is limited to one informal, bilateral meeting per year between representatives of ElCom's Market Surveillance Section and staff from ACER's Market Integrity and Transparency (MIT) and Market Surveillance (MS) departments. This meeting focuses on the discussion of operational issues.

Another way of obtaining information at EU level on the implementation of the REMIT Regulation, which is relevant for ElCom's application of Article 26a ff. of the Swiss Electricity Supply Ordinance is to participate in ACER's annual Market Integrity and Transparency Forum. This forum will discuss various aspects of market surveillance and market integrity as well as the progress made in implementing REMIT in the EU.

Participation in the CEER Market Integrity and Transparency Working Group (CMIT) also provides a platform for the exchange of information on current REMIT-related topics. ElCom holds one of the Chairs in this working group and continued its activities in 2019. In addition to contributing to the proposal on how to deal with third countries (a topic on which CEER will draft a guidance document for regulators), ElCom played an active role in a comprehensive analysis of the implementation and extent of market surveillance activities in the EU. The results of this survey confirm that in most EU member states the application of REMIT at national level is progressing, but that this varies depending on the regulatory authority.

[14] https://clients.rte-france.com/htm/fr/offre/telecharge/20190901_MARE_Section-1.pdf 01/09/2019. Only available in French.

Since market surveillance has been established in the financial sector for some time and there are certainly overlapping areas, two meetings were also held with the Swiss Financial Market Supervisory Authority (FINMA) to exchange methodological experience.

At the initiative of a number of large companies, an exchange of views on current issues relating to the implementation of REMIT, the application of Article 26a of the Electricity Supply Ordinance and the monitoring of the Swiss wholesale electricity market again took place in 2019. Apart from this, direct contact with Swiss market participants was mainly limited to dedicated individual meetings. This was generally triggered by conspicuous features in the market behaviour of the respective companies. Such behaviour was observed by ElCom and was not necessarily self-explanatory or comprehensible despite sound analyses. These discussions served both to clarify the causes of such conspicuous trading patterns and to point out alternatives to avoid activities suspected of constituting market manipulation or which could indicate trading based on insider information. Some of ElCom's analyses have identified gaps in the internal compliance processes of certain market participants and led to measures within these companies to close these gaps.

4.2 Other activities related to market surveillance

In May 2019, the market surveillance workshop was held for the fifth time. The main focus of the event this year was again the various aspects of market surveillance in the energy industry in Switzerland and Europe. The workshop included presentations on a number of analyses carried out by ElCom. Representatives of the German and Danish regulatory authorities also provided insights into cases they had dealt with. The workshop also addressed the impact of Brexit on the energy markets in Europe, which was a hot topic at the time. The presentation was not limited to the theoretical interpretation of Brexit; the practical side was also highlighted by discussing the challenges Brexit poses for compliance from the perspective of a Swiss company.

ElCom's first market transparency report was also presented during the workshop and was subsequently published on the ElCom website. The report was not limited to an overview of ElCom's main market surveillance activities; instead it provided the wider public with an insight into the content and results of analyses presented in the form of examples, using existing data reported by Swiss market participants. A review presented the annual development of spot and forward market prices as well as electricity production in Switzerland, Germany and France by production type. The basis for this evaluation is the weekly spot and futures market reports which ElCom has published since 2018. These were also presented at ElCom's numerous information events.

5 Monitoring of Swiss market participants by foreign regulators

5.1 Applicable legal basis

Although the principle of territoriality does not allow foreign authorities to directly contact Swiss market participants (i.e. market participants that have their registered office or who are domiciled in Switzerland), unless otherwise stipulated (e.g. international treaty), this happens frequently in practice. According to Article 271 paragraph 1 of the Swiss Criminal Code (SCC; SR 311.0), persons who carry out activities on behalf of a foreign state on Swiss territory without lawful authority (i.e. in particular providing information) are liable to prosecution. Informal requests from foreign authorities for voluntary disclosure of information without threat of legal consequences (e.g. simple questionnaires) are generally tolerated. However, such requests must be reported to ElCom. Even in such cases, legal norms other than criminal law must be observed (e.g. data protection and official/professional confidentiality).

EU regulatory authorities regularly send requests for information directly to the relevant market participant. A distinction is made between two different cases in the event of such contact:

- Request for non-sovereign information (e.g. general questionnaire, etc.)
- Request for information of a sovereign nature (e.g. questionnaire on STORs, etc.)

Swiss market participants are themselves responsible for compliance with all legal requirements when passing on data. ElCom must be informed of any request and, if data is transmitted to foreign regulatory authorities, of the data in question.

5.2 The Vitol case

On 5 October 2018, the Dispute Settlement and Sanctions Committee of the *Commission de régulation de l'énergie* (CRE) imposed a fine of EUR 5 million on Vitol for market manipulation (infringement of Article 5 REMIT) on the *Point d'échange de gaz - Sud* (PEG Sud), a virtual gas marketplace in southern France, in the period from 1 June 2013 to 31 March 2014.

The Vitol Group is an energy group based in Geneva. It was founded in Rotterdam in 1966 and now has around 40 branches worldwide. Vitol specializes in physical trading, logistics and distribution. The company sells more than seven million barrels of crude oil and related products every day. It has been active on the natural gas market in Europe, Asia and America for almost 20 years. It has also been active on the electricity market with an annual volume of around 1,000 TWh in Europe and the USA. Although it is not listed on the stock exchange, Vitol is one of the largest companies in Switzerland in terms of turnover. According to a report in the Financial Times, Vitol reported a profit of 1.7 billion US dollars for the 2018 financial year.[15]

According to the CRE's decision, Vitol demonstrated the following *modus operandi* in its trading activities on the Powernext trading platform for gas trading products with day-ahead, intraday and weekend supply periods between June 2013 and March 2014 in 65 cases covering 54 trading days:

- At the beginning of the trading day (particularly before 3:00pm), when liquidity is very low, sell orders were placed in the order book and further orders were placed during the course of the day at ever lower prices. The number of sell orders decreased again from 4:00pm (the time when market liquidity is at its highest).
- When the prices had fallen, Vitol made larger purchases.
- Finally, as soon as the purchases had been made, Vitol cancelled its sell orders and ended the day as a net buyer.

Due to the stacking of sell orders, Vitol accounted for the bulk of the quantities available for sale on the relevant days. In the case of buy orders, however, Vitol used iceberg orders (buy orders with hidden quantities), so that Vitol's visible purchase volume appeared small compared to the rest of the market. Despite the considerable number of sell orders placed, Vitol made significant purchases. By having Vitol's orders show larger quantities for sale as well as for purchase, the approach suited the ends of sending contradictory signals to the market in terms of supply and demand. Other market participants were given the impression that supply was quite high.

In most of the cases mentioned above, the approach observed could have an impact on pricing. Placing a large number of sell orders on the market at a time of low liquidity can significantly affect pricing for the day. This influence on prices is particularly important in a market with low liquidity, such as the PEG Sud market, and on a trading platform such as Powernext, where orders are placed anonymously. Market participants cannot know if the different orders come from the same market participant or if these stacks are a development of competition on this side of the order book. Competing sellers may be provoked into placing orders at ever lower prices and buyers may be tempted to take action to benefit from lower prices.

The subsequent cancellation of sell orders also indicates that Vitol did not intend to actually execute these orders. Although cancelling orders (an action that can be executed on electronic trading platforms such as Powernext) is a generally permissible practice, the provisions of Article 1.2.3.3 of the Powernext Market Rules state that orders placed "shall have no purpose other than execution". In particular, Article 1.2.3.4 states that "[...] Members are strictly forbidden to [...] enter orders with no economic justification [...]"

[15] see https://www.cash.ch/news/top-news/groesstes-unternehmen-der-schweiz-vitol-hat-halbjahresgewinn-nahezu-verdoppelt-1403321 (accessed on 07/04/2020). Only available in German.

The CRE decision found that Vitol's conduct was, firstly, liable to send misleading signals to the market as to the supply and demand of PEG Sud (infringement of Article 2, para. 2 (a)(i) REMIT) and, secondly, in the absence of evidence to the contrary from Vitol, that Vitol's conduct did not follow rational economic logic (actions which included the cancellation of sell orders when prices were rising).

The incidents at PEG Sud in the period between 1 June 2013 and 31 March 2014 were deemed as market manipulation, for which Vitol was fined EUR 5 million. This was the first penalty imposed in France under REMIT. Vitol has appealed against the decision, which is why the case has not yet been definitively closed.

6 ElCom focus on digitalisation

6.1 Developments in the energy industry

The European energy sector is undergoing fundamental changes. In addition to the ongoing transition to a sustainable and green energy industry, a second wave of technological change has affected the energy sector: digitalisation, which brings new opportunities but also new challenges for network operators, market participants and regulatory authorities.

Trends such as digitalisation, decentralisation and decarbonisation are shaping the image of the modern energy industry. Digitalisation has the potential to

- Increase the productivity of the current energy system
- Allow new products and services that change the demand for electricity
- Promote new platforms and marketplaces that change the sector.

In this context, digitalisation influences energy consumption in buildings, the use of energy for transport and the products we will buy in the future. Digital development is based on the availability of ever larger quantities of digital data and information, data transmission capacities, and ever more powerful hardware and software for processing this data.

The energy sector is changing rapidly. This is primarily due to the energy system transformation in Germany. The rise of renewable energies underlines the need for increasing flexibility to ensure the right balance between supply and demand at all times. At the same time, the development of new uses such as electric vehicles and personal use requires more intelligent and flexible electricity networks.

Traditional electricity companies will therefore have to adapt their business models through decentralisation (generation, use, storage and trading of electricity outside their control) and the development of new solutions, business models and market participants who do not necessarily own electricity-related assets.

Digitalisation not only enables new products and services; it also creates space for new platforms and marketplaces that change the way resources are used and business is conducted.

The influence of digital platforms and markets could take on ever greater dimensions in the energy industry. Platforms create transparency, offer market access, perform a coordinating function and create new value. As a result, wholesale markets may be supplemented or replaced by a variety of local markets.

6.2 CEER paper: Dynamic regulation to enable digitalisation

It is against this background that the Council of European Energy Regulators (CEER) has identified digitalisation as one of its key strategic areas. Rather than being a goal *per se*, digitalisation is a useful tool to achieve the overall goal of a flexible and sustainable energy system that ultimately benefits energy consumers.

How will digitalisation manifest itself in the complex energy systems that have developed over decades? What does digitalisation mean for the consumer? What is the role of energy regulators in stimulating change in a way that benefits consumers? These are crucial issues that have been addressed in this report.

According to CEER, the core elements of a sustainable regulatory strategy for digitalisation in the energy sector are as follows:

- Giving the right price-signals: Generation, consumption and network data needs to be given a clear market value to incentivise prosumers and their intermediaries to profit from using their data to optimise their production and consumption behaviour.
- Encouraging distribution system operators (DSOs) to use flexibility: A great deal of the value in data comes from DSOs making efficient use of the information to increase the system efficiency.
- Empowering consumers: The value of digitalisation is not realised by the installation of a smart meter, but from using it to ensure more efficient consumption.
- Making data accessible and useful: Data needs to be collected and made available not only to network operators but also to current and potential market participants:
- Data needs to be secure, in line with cybersecurity and data protection requirements.

In order to promote innovation, it is particularly important for regulatory authorities to develop best-practice approaches in order to enable the testing of new products and business models (“sandboxes”), taking into account the overall systemic approach.

6.3 Regulatory aspects in Switzerland

It is essential that the regulatory and legal framework evolves to accompany the changes in the energy sector. It is becoming increasingly difficult to make medium-term forecasts, but it is also becoming increasingly difficult for regulatory authorities to take the most appropriate decisions.

Digitalisation, however, is not driven by politics; it is driven by technological developments and the market itself. It is therefore difficult to predict which technology and innovation trends the energy industry will follow. This poses a challenge for policy makers and regulatory authorities to keep pace with change and ensure that policy and regulation do not act as a barrier to innovation, while ensuring supply security for consumers. This means moving from static regulation to adaptive and agile regulation. It is no longer sufficient to focus on the efficient use of existing infrastructure and new investments. Regulations must also take into account disruptive innovations and transformation of infrastructure. It is therefore prudent for regulatory authorities to consider taking more of a learning approach, promoting trials and pilot projects and being open to the removal of obstacles.

Digitalisation requires new skills and abilities on the part of regulators, especially in the areas of information technology, big data, data science and artificial intelligence. Ongoing analyses of the regulatory compatibility of digital services are therefore likely to be necessary in the regulated area. In the future, data may become the most valuable asset in the industry. In order to optimally exploit these opportunities, regulatory authorities need access to key information, although they should not be overloaded by endless amounts of data. In future, much of the information that regulatory authorities currently collect from the companies they regulate will be available in other ways. Regulatory authorities must continue to develop, and the necessary legal foundations must be created to deal with digitalisation and the associated innovations.

In future, a sector-specific regulator will no longer be sufficient to handle the development of digitalisation. Only a holistic view of these very complex developments will allow fair, non-discriminatory use of the entire infrastructure on a meta-level.

7 Outlook

The further development of new technologies and progressive digitalisation will lead to electricity markets changing and developing ever more rapidly. The exciting topics that will occupy the Swiss energy industry in the coming years include:

- A possible distribution problem with the network access remuneration due to the regulation governing personal use of electricity
- The implementation of a central data hub
- The introduction of statutory measures for innovative solutions in the form of sandboxes.

Furthermore, ElCom continues to consider it essential that the appropriate foundations, including penal provisions for greater transparency, be created at the legislative level in order to effectively counter any misconduct in wholesale electricity trading in connection with Switzerland.

As the link between Swissgrid and decentralised producers/consumers, distribution network operators will also face new requirements and responsibilities. This applies in particular to the increasing flexibility of the distribution network. To achieve this, distribution network operators will have to cooperate more closely with other network operators in the future. Customers (and above all prosumers) will also be given more rights.

The way in which energy is traded in the short term will change in future. The trend is towards flexible trading platforms for intraday market access, which make it easy and inexpensive to market renewable energies successfully (even at short notice) and increase the profit from the marketing of generation- and consumption-side flexibility for customers. In the future, trading will increasingly be offered as a service and will be based on real-time data, self-learning models and state-of-the-art technologies.

Algorithmic and high-frequency trading is already a reality in financial trading and has triggered regulatory action by financial regulators. Algorithmic and high-frequency trading is also already present in energy trading. These developments and the need to adjust or compensate for short-term flexibility in ever shorter periods of time will cause algorithmic trading to become increasingly important. Particularly from the point of view of market transparency and integrity, it will become increasingly important to establish specific guidelines for algorithmic trading.

Recent developments in blockchain technology may also allow new forms of peer-to-peer trading in the near future. This means that ElCom will have to deal with the new regulatory challenges posed by these technologies.

Furthermore, the implementation of the planned Gas Supply Act (GasVG) will have an impact on ElCom's market surveillance activities. Swiss market participants that trade gas in the EU will be obliged to report their offers and trades to ElCom in the same way as market participants on the electricity market. ElCom must establish the necessary expertise in the gas market in order to improve tracking of gas price developments and in order to allow more thorough analysis of the interaction between the electricity and gas markets.

Plans for the first major projects for the industrial production of green hydrogen from renewable energies were already underway in the EU in 2018. In 2019, the topic gained a great deal of momentum. A large number of ideas and initiatives have emerged from local projects throughout Europe. Hydrogen, which is the lightest chemical element, can play an important role in the energy supply of the future and in reducing greenhouse gas emissions.

Based on the current state of knowledge, it can be assumed that it is not possible to guarantee Switzerland's long-term supply security simply by adding renewable energy plants. Hydrogen produced from renewable sources could constitute a key element in this regard. ElCom will continue to monitor the development of this new technology.

7.1 Glossary

ACER	Agency for the Cooperation of Energy Regulators
ACM	Autoriteit Consument & Markt (Dutch regulator)
ARA	Reference price for thermal coal delivered to one of the coal terminals in Amsterdam, Rotterdam or Antwerp
ARERA	Autorità di Regolazione per Energia Reti e Ambiente (Italian regulator)
AT	Austria
BNetzA	Bundesnetzagentur (German regulator)
CEER	Council of the European Energy Regulators
CEREMP	Centralised European Register of Energy Market Participants
CMIT	Market Integrity and Transparency Working Group
CNE	Comisión Nacional de Energía (Spanish regulator)
CRE	Commission de régulation de l'énergie (French regulator)
CRU	Commission for Regulation of Utilities (Irish regulator)
DE	Germany
E-Control	Energie-Control GmbH (Austrian regulator)
EDA	Entité d'ajustement (participant on the balancing market)
EDF	Électricité de France SA
EEX TP	European Energy Exchange Transparency Platform
EEX	European Energy Exchange (European electricity exchange for futures contracts)
ElCom	Swiss Federal Electricity Commission
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSO-E TP	European Network of Transmission System Operators for Electricity Transparency Platform
EPEX Spot	European Power Exchange (European electricity exchange for spot and intraday trading)
EU	European Union
EUA	European emission allowances
FINMA	Swiss Financial Market Supervisory Authority
FR	France
GME	Gestore dei mercati energetici (Italian energy exchange)
GWh	Gigawatt hour
IDM CH	Swiss intraday market index
IT	Italy
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
MIT	Market integrity and transparency
MW	Megawatt
MWh	Megawatt hour
NCG	Reference price for the German gas price from the market area operator NetConnect
NEMO	Nominated electricity market operators
NRA	National regulatory authority
Ofgem	Office of Gas and Electricity Markets (British regulator)
OMP	Organised marketplace
OTF	Organised trading facility
PEG-Sud	Point d'échange de gaz-Sud
REMIT	Regulation on Wholesale Energy Market Integrity and Transparency
RRM	Registered reporting mechanism
RTE	French transmission system operator
SFOE	Swiss Federal Office for Energy
STOR	Suspicious transaction and order report
StromVV	Swiss Electricity Supply Ordinance
TTF	Virtual trading point in the Dutch gas network and reference price for the gas market in the Netherlands
TWh	Terawatt hour
URE	Urząd Regulacji Energetyki (Polish regulator)
XBID	Cross-border intraday