Market Transparency 2020

ElCom Report

Bern, May 2021

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Foreword

The COVID-19 pandemic had a marked influence on ElCom's market surveillance activities in 2020. Despite the extraordinary situation, ElCom maintained seamless operation of the secure room. In view of the somewhat large increase in relation to cybercrime during the pandemic, it is pleasing that security requirements were consistently met. Two situational studies were developed in addition to the usual evaluations and reports.

A study published in May 2020 on the impact of the COVID-19 pandemic on European load showed, based on evaluations of ENTSO-E's load data (January to April 2020 inclusive), that the various pandemic measures led to a reduction in load in all European countries. This was especially true in countries where industry was largely shut down. The energy industry in Switzerland was less affected by the decreased load resulting from the pandemic-related shutdown than it was in France, Italy or Spain. In Switzerland, consumption decreased by around 10% on working days. This compares to a decrease of around 20% on 2019 in Spain (between 10–25% when demand-modelled), around 25% in Italy (between 20–30% when demand-modelled) and around 17% in France (between 12–16% when demand-modelled).

The analysis of negative prices for Switzerland, France and Germany between 1 January 2015 and 31 May 2020 was published in June 2020. The low spot prices in the first half of 2020 and the increased incidence of negative prices as a unique feature of the wholesale electricity market have prompted more in-depth analysis for the period from January to May 2020 and with reference to previous years. It has become apparent that the number of hours with negative prices increased in the various markets in recent years. This is also the case in Switzerland. These seem to occur mainly in March, April and May. A combination of a lower load, an increase in run-of-river water due to melting snow, and imports of cheap electricity from Germany cause negative prices to occur. This study was updated in December 2020 and published in January 2021.

It remains to be seen how the situation will develop in reaction to the pandemic. Published in the spirit of market transparency, regular spot and future market reports allow a good overview of the market situation at any time. It is pleasing to note at this point that the quality of the solar data on the ENTSO-E transparency platform, which ElCom uses to prepare the weekly spot market report, was greatly improved due to an extrapolation initiated by ElCom and conducted by ProNovo. Today, the published production volumes are much closer to the actual volume produced. ElCom would also welcome the publication of the actual volume of electricity generated from renewable energies in the form of aggregated production in Switzerland on a daily basis, with hourly resolution, on a platform provided for this purpose, and the creation of the legal basis for this. Up-to-date data is indispensable for monitoring the Energy Strategy 2050.

The dip in the Swiss intraday market which resulted from Switzerland's exclusion from the European Cross Border Intraday Market (Single Intraday Coupling (SIDC), formerly the Cross Border Intraday (XBID) is not pleasing. The result of this is that cross-border capacity is again explicitly allocated, which is why it is not possible to make a consistent optimal use of it.

I hope you enjoy the rest of this report and it gives you an interesting insight into ElCom's market surveillance activities.

Sita Mazumder

1 Market surveillance in Switzerland: Facts and figures

Based on Article 26a of the Electricity Supply Ordinance of 14 March 2008 (ESO; SR 734.71), market participants (legal entities or individuals) which have their registered office or who are domiciled in Switzerland, participate in a wholesale energy market within the European Union and are obliged under Regulation (EU) No. 1227/2011 on Wholesale Energy Market Integrity and Transparency (REMIT)[1] 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 also includes registering with ElCom (Art. 26a para. 4 ESO) and transmitting the corresponding registration data.

At the end of 2020, 78 Swiss energy companies were registered with ElCom. The change compared to 2019 is due to 12 new registrations. In contrast to previous years, no company deregistered last year (see Figure 1).

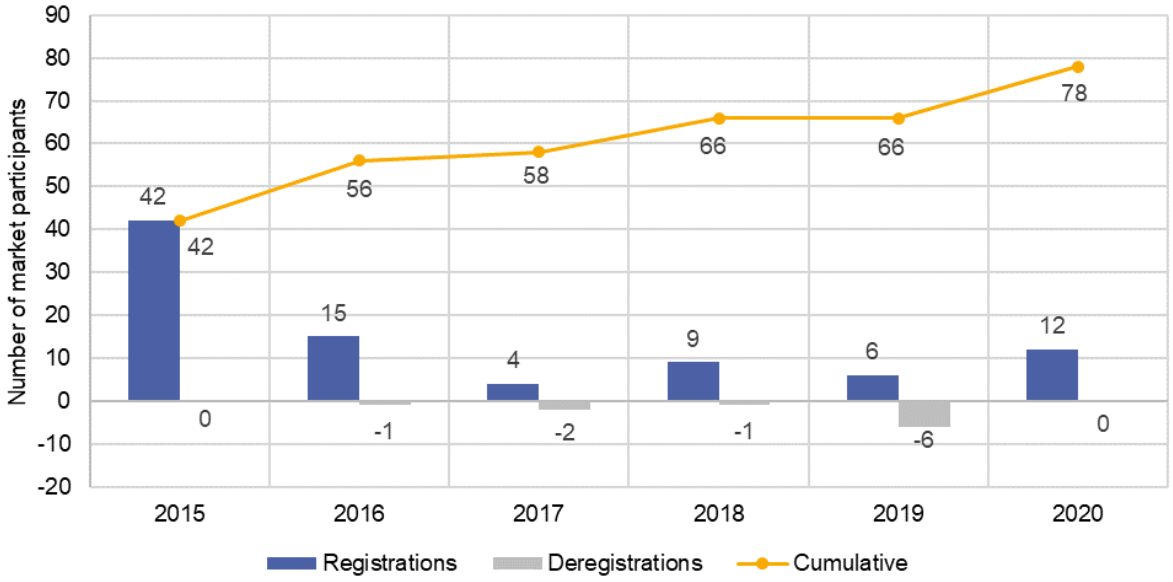

Figure 1: Number of Swiss market participants registered with ElCom as of 31/12/2020[2]

As in the previous year, the new registrations are largely the result of the annual survey, in which the withdrawal of market participants which 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 which are registered with ACER but not yet with ElCom are requested in writing to submit a declaration regarding this situation and, insofar as the legal requirements are fulfilled, to register with ElCom for reporting purposes.

The majority of the discrepancies identified can be attributed to companies which 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 commodities) and are therefore not required by law to provide ElCom with information on their transactions on the EU trading markets, or to register with ElCom for this purpose. Of those active on the wholesale electricity market which were contacted, few were unaware of the corresponding legal obligations and had failed to register with ElCom. They accordingly completed the necessary registration and mandatory reporting.

[1] Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency, EUR-Lex - 32011R1227 - EN - EUR-Lex (europa.eu), dated 1 February 2021
[2] If no data source is indicated, these are ElCom's own data-based evaluations.

With regard to the distribution of market participants according to the country where the initial registration under REMIT took place, the German Federal Network Agency (BNetzA) remains, as in previous years, in first place with a total of 44 companies from Switzerland (five more than in 2019). This is followed by the British regulator, the Office of Gas and Electricity Markets (Ofgem), with nine, the Italian Autorità di Regolazione per Energia Reti e Ambiente (ARERA) with eight and the French Commission de régulation de l'énergie (CRE), with six market participants from Switzerland. Five Swiss market participants are registered with the Austrian Energie-Control GmbH (E-Control) and three are registered with the Dutch Autoriteit Consument & Markt (ACM). As in the previous year, one market participant was registered with the Polish Urząd Regulacji Energetyki (URE) and one was registered with the Spanish Comisión Nacional de Energía (CNE). There also remains one company which only conducts trading activities within Switzerland but has registered voluntarily with ElCom (see Figure 2).

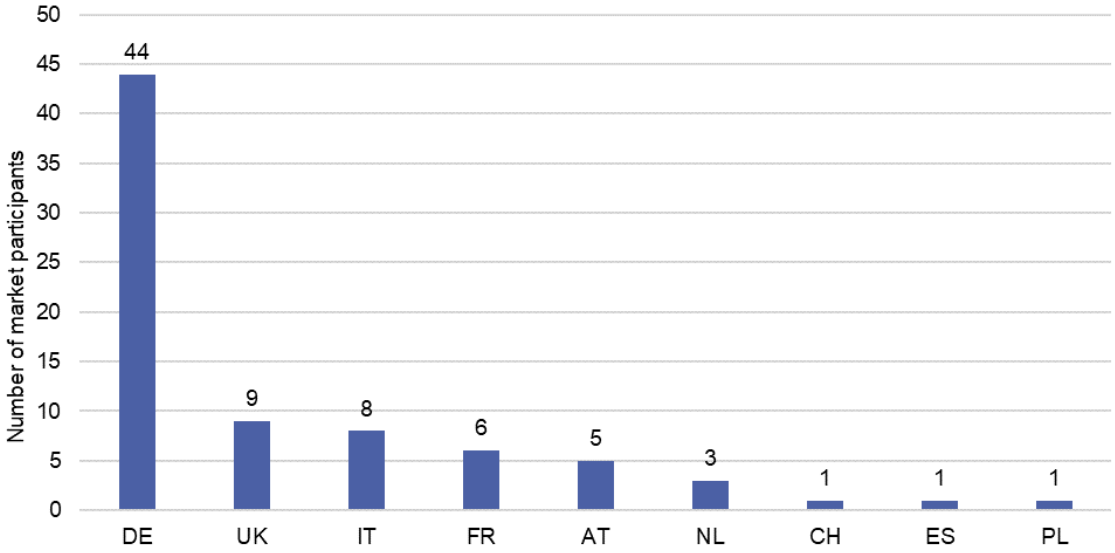

Figure 2: Number of Swiss market participants registered with EU regulators

It is likely that the distribution of registrations above will change in 2021 as a consequence of the United Kingdom (UK) leaving the EU. Based on the negotiating position established by the EU and the UK, the post-Brexit trade agreements exclude the UK from the European internal energy market. As a result, data on transactions on the UK electricity market are no longer subject under REMIT to reporting to the EU authorities and consequently to ElCom. From 1 January 2021, companies with their registered office or place of registration in the UK under REMIT will also have to register with another EU regulatory authority and will also have to re-register with ElCom using the ACER code issued in that country. Ten of the 78 market participants registered with ElCom are affected by this change. Their re-registration has already begun.

The market participants which have their registered office or who are domiciled in Switzerland provided information on energy trading transactions carried out on EU markets exclusively via external registered data suppliers (known as registered reporting mechanisms [RRMs]), which are linked to the ElCom database. After Seeburger AG and the Austrian energy exchange, EXAA, completed the connection process in 2020, there are now nine RRMs which have been commissioned by Swiss market participants to transmit data to ElCom (see Table 1). An overview of the RRMs connected to ElCom is published on the ElCom website.

Nr.	RRM	ACER Code
1	EEX European Energy Exchange AG	B0000104M.DE
2	EPEX SPOT SE	B0000258F.FR
3	Equias B.V.	B00001014.NL
4	EXAA Abwicklungsstelle für Energieprodukte AG	B0000114T.AT
5	JAO S.A.	B0005876N.LU
6	Seeburger AG	B0000112P.DE
7	Total Gas & Power Ltd.	A0000208K.UK
8	Trayport Ltd.	B00001100.UK
9	Webware Internet Solutions GmbH	B0001064H.DE

Table 1: List of RRMs connected to ElCom as of 31 December 2020

In connection with the European Commission's decision of 17 December 2020, according to which ACER will co-finance its market surveillance activities from 1 January 2021 by charging annual ex-ante fees, the RRMs will pay an annual contribution as well as a fee due upon their initial registration with ACER. This amount also includes a transaction rate-based fee component which is to be adopted by market participants. This new regulation also affects companies which have their registered office in Switzerland. The settlement of the REMIT fee between the company and the RRM(s) of its choice depends on the individual bilateral agreements. ElCom will continue not to charge any fees.

While the data on trading transactions were reported via the RRMs, ElCom received as in previous years the fundamental data and publications on inside information via its own interfaces with the European Network of Transmission System Operators for Electricity Transparency Platform (ENTSO-E TP) and the European Energy Exchange Transparency Platform (EEX TP). Market participants which have stated they publish their reports on inside information on sites other than the EEX TP should inform ElCom immediately whenever they publish such information. This option will no longer be valid from 1 January 2021, when the new ACER regulation on the reporting of inside information comes into force.[3] In order to ensure effective and timely publication of inside information, inside information in wholesale electricity (and gas) trading will have to be published exclusively on a dedicated transparency platform (known as an inside information platform [IIP]), from the beginning of 2021, which is to meet minimum requirements defined in advance by ACER. A list of approved IIPs with which market participants can register is published on the REMIT portal.

Swiss market participants are free to choose the IIP on which they publish events subject to the reporting obligation as long as the platform of their choice meets the ACER requirements for effective disclosure of inside information and appears on the ACER list.

ElCom only accepts IIPs listed with ACER for the reporting of inside information. After deciding on the transparency platform of their choice, market participants must update the relevant details in the ElCom registration tool. ElCom will then organise the transmission of inside information from these IIPs to its own IT system.

From 1 January 2021, reporting via the company's own website or via social media can be used as an additional source for the publication of inside information, but is no longer sufficient or effective. The market participant must guarantee the identity of the information in both places of publication.

The reporting of inside information is dealt with in detail in Section 3.2.

[3] ACER Guidance, 5th Edition, https://documents.acer-remit.eu/category/guidance-on-remit/ and the ACER FAQ on REMIT fundamental data and inside information reporting, https://documents.acer-remit.eu/wp-content/uploads/REMIT_24th_edition_QA_v1.pdf, dated 16 December 2020

In addition to the data subject to the reporting obligation, the Market Surveillance Section also obtains further information such as the settlement prices for electricity, gas and CO_2 from EEX and the coal prices from Reuters. These are used as a reference in the analyses. Data on the levels of reservoirs in Switzerland and other information, some from public sources such as MeteoSwiss, are also retrieved and incorporated into the studies and analyses.

In 2020, the 78 Swiss market participants reported 44.8 million transactions (trades and orders) via the nine RRMs. This once again confirmed the increasing data volume trend from previous years. The almost 15% rise can largely be explained by the increased use of automated trading systems. The larger number of reports in the first quarter of 2020 is again due to corrective reports.

A larger increase was recorded in fundamental data. Around 1 million (almost 22%) more reports were registered than in 2019. However, this change is due to the adjusted settings for the retrieval of fundamental data, which are defined in advance by ElCom.

There was also a major change in inside information in 2020. Almost a third fewer events were reported than in the previous year.

An overview of the data reported since the start of the reporting obligation in 2015 can be found in Figure 3.

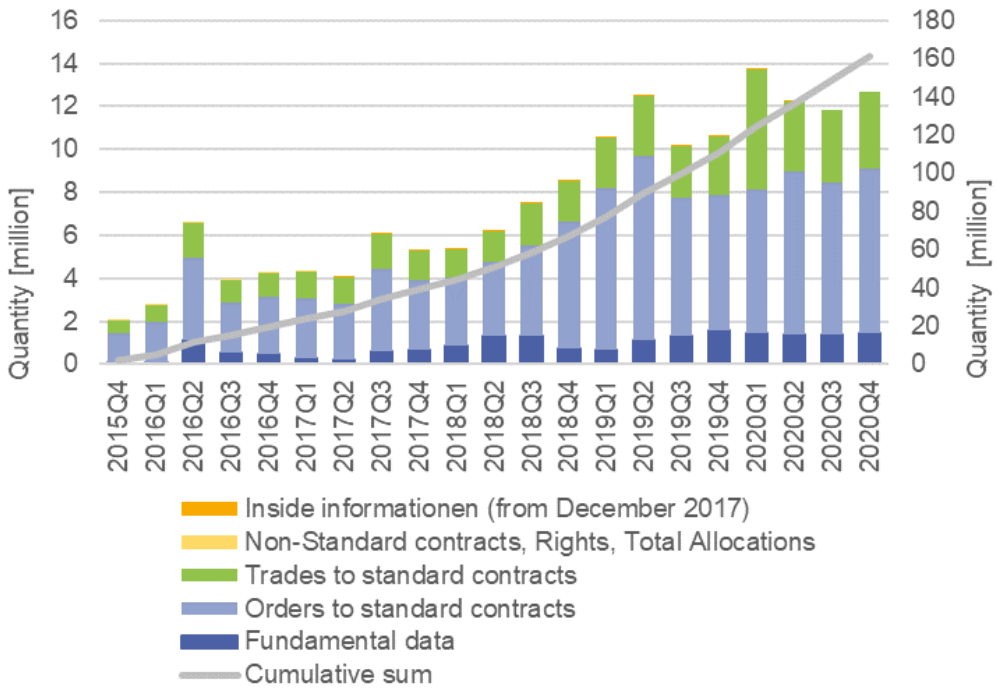

Figure 3: Reported data since the beginning of the reporting obligation

In 2020, standard contracts again made up the majority of transaction reports, at just under 90%. At 94%, the majority of the data here comes from short-term trading. Only 6% of the reports concern futures trading, including futures and forwards (see Figure 4). Most futures transactions are concluded via brokerage platforms or via the EEX exchange.

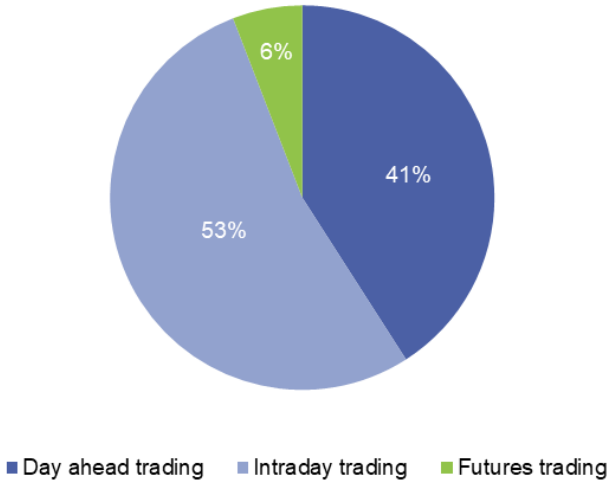

Figure 4: Distribution of standard contracts by spot and futures trading

The number of organised marketplaces on which Swiss market participants traded in 2020, including the national energy exchanges of the EU member states, remained unchanged compared to the previous year. Most of these platforms are based in the UK (21), followed by France (eight) Germany (five) and the Netherlands (four).

More than half of the transactions concluded via an OMP took place on an exchange. This is mainly due to short-term trading, the majority of which is handled via the EPEX SPOT exchange. The high, still increasing granularity of trading on this platform, which offers 15, 30 and 60-minute products, naturally also accounts for the higher number of reported transactions. Slightly less than 50% are reports of transactions concluded via brokerage platforms. Only 2% are OTF trades, i.e. trades executed via organised trading facilities (OTF).

In 2020 there was also almost no deviation in the distribution of the trading activities of Swiss wholesale electricity companies by place to which the electricity is supplied compared to the previous year. The largest target markets are still Italy and Germany. France's share is smaller and the UK's is smaller still. More details can be found in Section 2.

2 Market overview

In 2020, ElCom continued to publish spot and futures market reports, and expanded both reports to include additional useful information. 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 2020 which ElCom considers to be significant are summarised in the following section.

2.1 Spot market reports: Annual review 2020

2020 was marked by the COVID-19 pandemic, which had a strong impact on spot market prices. The reduction of economic activities during the lockdown phase in spring also significantly reduced the demand for energy. This in turn led to lower spot prices for a longer period of time. The fact that this was not expected at the beginning of the year is evident from Table 2.

		Durchschnitt der Spotpreise an der Day Ahead Auktion in EUR/MWh nach Lieferland					Letzter EEX Settlementpreis vor Kurzfristhandel (=Referenzpreis Terminmarkt)	Letzter EEX Settlementpreis minus Durchschnitt der Spotpreise an der Day Ahead Auktion
Lieferperiode	Lieferprodukt	CH	DE	FR	CH-DE	CH-FR	CH	CH
2020	Base	34.00	30.47	32.20	3.53	1.80	48.03	14.03
Q1	Base	34.27	26.57	29.42	7.70	4.85	47.02	12.75
Q2	Base	19.88	20.26	18.00	-0.38	1.88	20.09	0.21
Q3	Base	37.99	36.12	39.03	1.86	-1.05	34.07	-3.92
Q4	Base	43.71	38.77	42.17	4.94	1.54	47.74	4.03
Jan 20	Base	42.55	35.03	38.01	7.52	4.55	45.12	2.57
Feb 20	Base	34.13	21.92	26.25	12.21	7.89	38.69	4.56
Mär 20	Base	26.12	22.46	23.81	3.66	2.31	33.53	7.41
Apr 20	Base	17.22	17.09	13.45	0.13	3.77	16.79	-0.43
Mai 20	Base	16.86	17.60	14.86	-0.73	2.00	19.42	2.56
Jun 20	Base	25.65	26.18	25.79	-0.53	-0.14	20.95	-4.70
Jul 20	Base	32.81	30.06	33.41	2.75	-0.60	33.14	0.33
Aug 20	Base	35.51	34.86	36.75	0.65	-1.24	32.94	-2.57
Sep 20	Base	45.90	43.69	47.20	2.21	-1.30	43.51	-2.39
Okt 20	Base	38.25	34.00	37.91	4.25	0.34	42.92	4.67
Nov 20	Base	41.46	38.79	40.11	2.67	1.34	40.73	-0.73
Dez 20	Base	51.36	43.52	48.42	7.84	2.94	50.88	-0.48

Table 2: Daily average prices of the EPEX SPOT day-ahead auction vs. last traded EEX futures market price by supply period and country to which the electricity is supplied

The annual product, the product for the first quarter and the monthly product for March (marked red and light red in the table above) were traded at a significantly higher price early rather than later on the spot markets in delivery. However, trading adjusted to the new situation for the other quarterly products and from the monthly product for April onwards. Deviations between futures trading and spot trading were significantly smaller from then on.

Swiss prices were higher than German and French prices over the entire year. The differences were roughly the same as in 2019. February was striking in that German prices were significantly below Swiss prices. The reason for this is the exceptionally high wind feed-in in Germany this month. The above-average supply of wind energy pushed the German spot price down.

The day-ahead base and peak prices showed the usual annual pattern with higher prices in winter and lower prices in summer. They were comparatively high at the end of November and beginning of December. The reasons for this were, in addition to very low wind generation in Germany on individual days, unusually low temperatures, which led to high demand. The base price was also negative on two occasions, both in spring. The load was low on these days because they were public holidays (a Sunday and Easter Monday) and on both days an unusually large amount of electricity was produced in Germany by wind and solar power. This combination caused hourly prices in Germany to fall below -70 EUR/MWh. These low German prices also affected Swiss prices and pushed the base price below zero (see Figure 5).

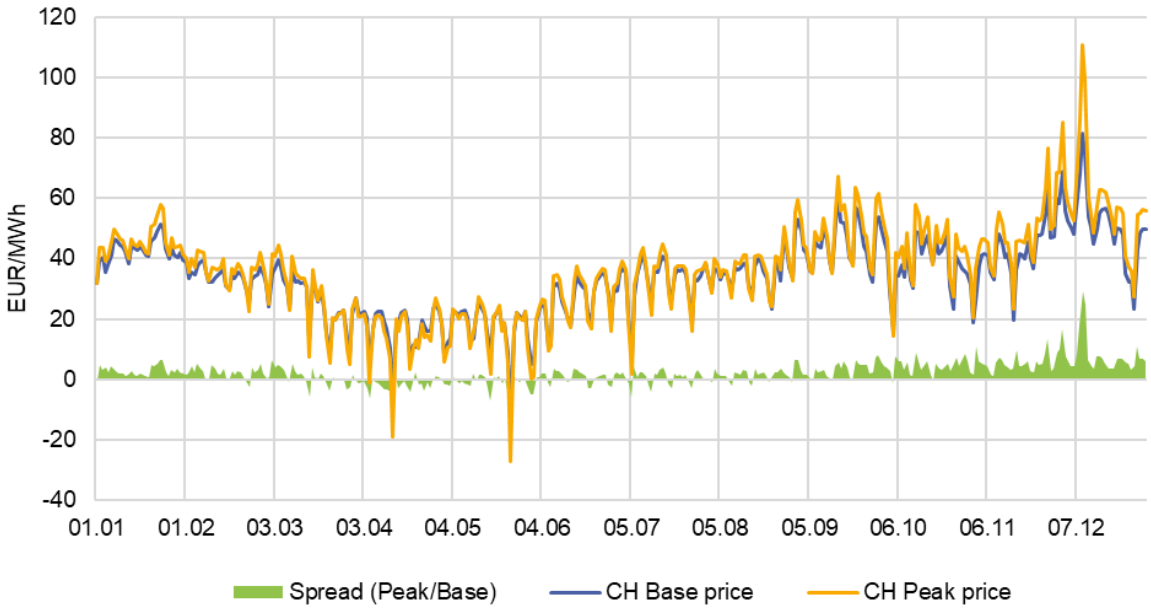

Figure 5: Swiss base and peak day-ahead prices 2020
Data source: EEX

A comparison of day-ahead prices in Switzerland with France and Germany shows higher volatility, especially for German prices. The lowest and highest base prices were in part significantly below or above the Swiss base prices. In Germany, much more electricity was produced from renewable energies such as wind and solar. Since the feed-in from these power plants fundamentally fluctuates, this leads to price spikes (see Figure 6).

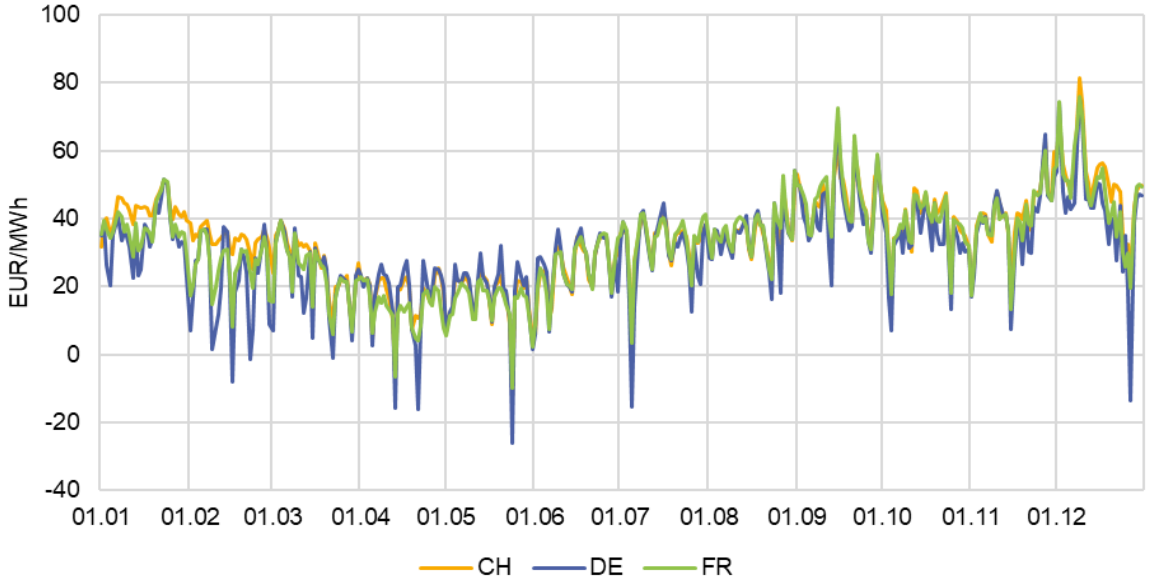

Figure 6: Day-ahead base prices for Switzerland, Germany and France
Data source: EEX

A comparison of Swiss hourly prices with the previous year shows that the price level in 2020 was lower overall and that the highest and lowest prices were more extreme (see Figure 7). Weakness across the energy complex, low coal, gas and CO_2 prices, lower load due to the COVID-19 pandemic, mild temperatures and high generation from wind and solar led to lower prices on the daily day-ahead auction.

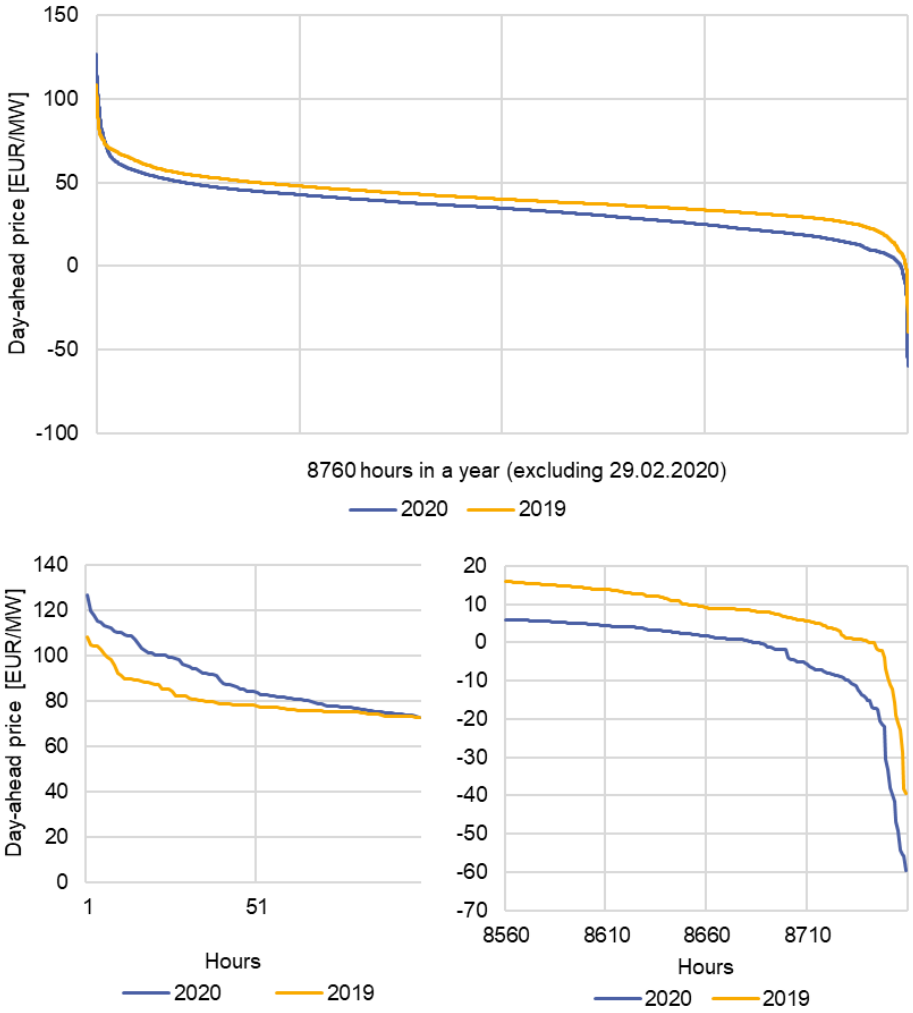

Figure 7: Price-duration curve for day-ahead prices in Switzerland, 2020 and 2019
Top: all hours of the year, sorted by price level; bottom left: the hundred hours with the highest prices; bottom right: the two hundred hours with the lowest prices.
Data source: EEX

The fact that the volatility of hourly prices has increased compared to 2019 is also evident from the difference between daily maximum and minimum prices (see Figure 8). In absolute terms, the difference to 2019 occurred mainly in the last quarter. In relative terms, however, the largest jump can be seen at the beginning of the second quarter, as can be deduced from the bottom left of Figure 8 below. The importance rose of days with extremely low to negative prices (see Figure 5) and days in the fourth quarter with very high prices, which occurred in scarcity situations with little generation from wind or solar energy and high load due to lower temperatures. The first phase of the pandemic-related lockdown in March 2020 had no influence on relative volatility: the two cumulative curves are practically identical until the beginning of April 2020.

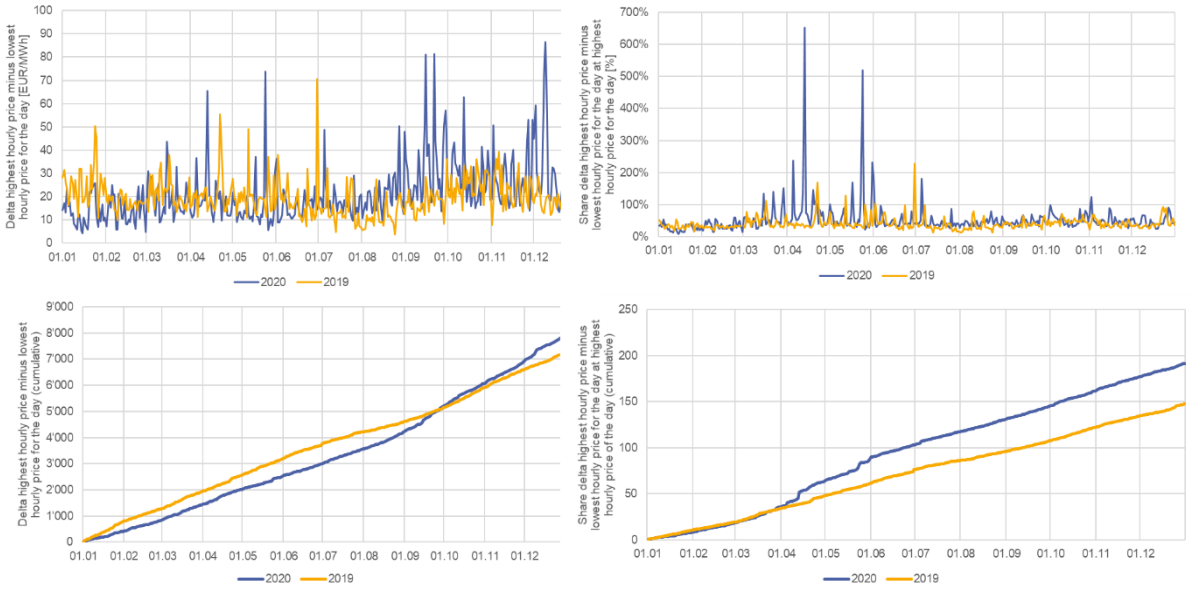

Figure 8: Volatility of hourly prices within a single day
Left: absolute values; right: difference relative to the highest price; above: daily trend; below: cumulative.
Data source: EEX

On the production side, the typical pattern emerged in Switzerland (see Figure 9). Nuclear energy produced the band load, with dips during annual maintenance on the nuclear power plants and reduced feed-in capacities due to unplanned outages. These are usually triggered by technical problems, as was the case in December, when assembly discrepancies on the vibration dampers of two emergency diesel generators at Beznau nuclear power plant had to be repaired. Hydropower (especially storage and pumped storage plants) then covered the peak load.

In general, the outage rate at Swiss nuclear power plants was very low in 2020, with just 17 events (previous year 30, including Mühleberg nuclear power plant) despite the very high level of production (90.9% availability) and following the discontinuation of operation at the Mühleberg nuclear power plant at the end of 2019. The reason for the almost entirely smooth operation of Swiss nuclear power plants was the good condition of the plants and the successful implementation of pioneering pandemic concepts. The de facto additional production of the three nuclear power plants (Beznau 1, Beznau 2 and Gösgen) therefore almost compensated for the loss of generation from the Mühleberg nuclear power plant from the beginning of 2020.[4]

[4] Press release from swissnuclear dated 1 February 2021, Press release - swissnuclear, dated 1 February 2021 (only available in French and German)

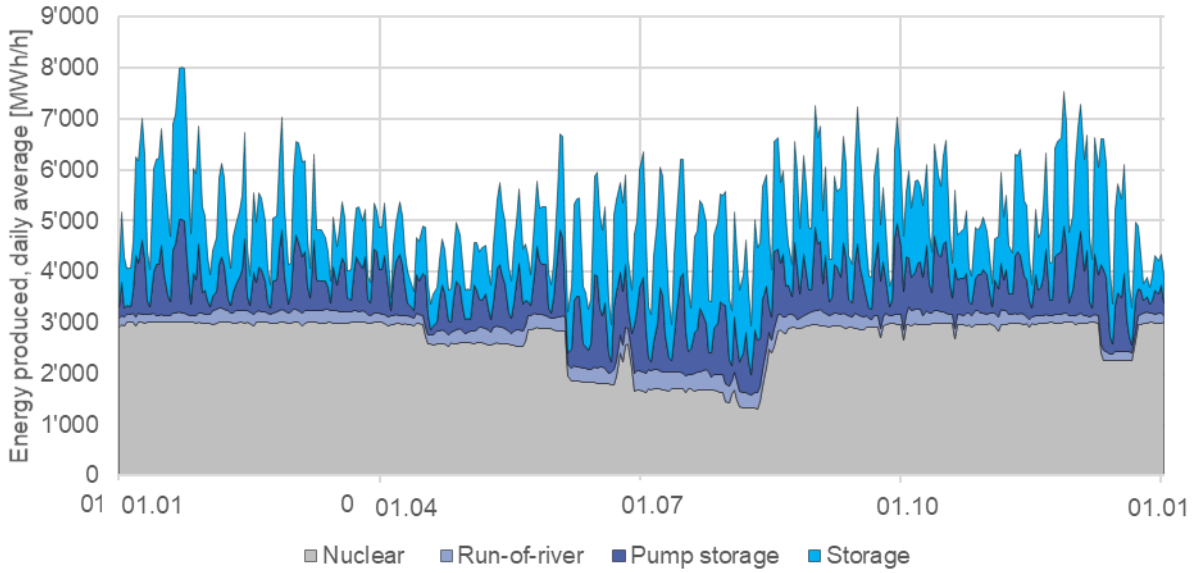

Figure 9: Daily average of current electricity production in Switzerland by type of production
As the share of new renewable energies in the current electricity production in Switzerland is very low, the figure does not show the share of new renewable energies in electricity production in Switzerland.
Data source: ENTSO-E

The levels of Swiss reservoirs followed the typical seasonal pattern of emptying until spring and filling following snow melt, which began earlier in 2020 (see Figure 10). The total level decreased in comparison to 2019. One of the reasons for this was that more water was fed to turbines at the end of 2020 than in the same period in the previous year due to the high spot prices.

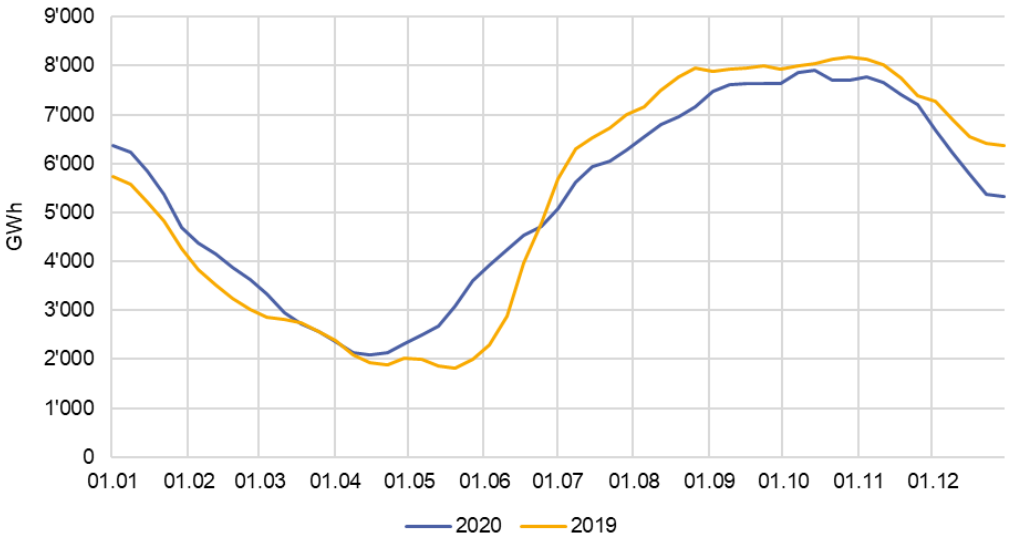

Figure 10: Swiss reservoir levels for 2020 and 2019
Data source: SFOE

Nuclear power plants are responsible for the majority of electricity production in France. A comparison of French nuclear power production between 2020 and 2019 reveals that less nuclear power was produced as early as the beginning of 2020 (see Figure 11). However, while there were year-on-year reductions (averaging just under 5 GW) in January and February, these were significantly larger (averaging 8.5 GW) between March and mid-July. One trigger for this was the COVID-19 pandemic: production was reduced due to limited personnel resources and low electricity prices. From October onwards, however, it returned to the level of the previous year and in some cases was even higher.

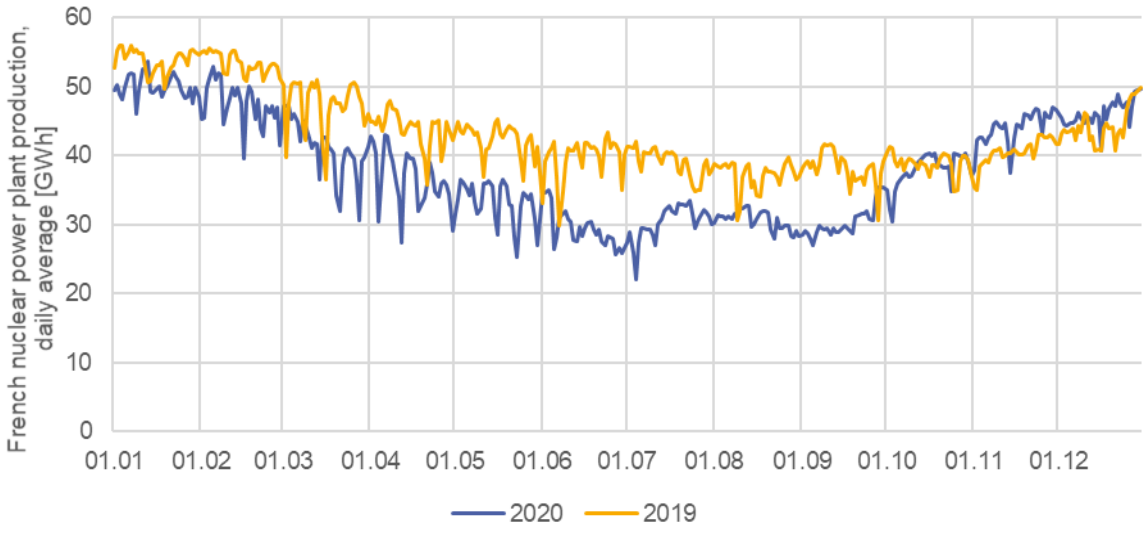

Figure 11: Comparison of French nuclear power plant production in 2019 and 2020

As mentioned above, the combination of load and production from wind and solar plants in Germany has a major influence on spot prices in both Germany and Switzerland. A representation of both the load and feed-in of wind and solar energy in Germany in 2019 and 2020 can be found in Figure 12 below.

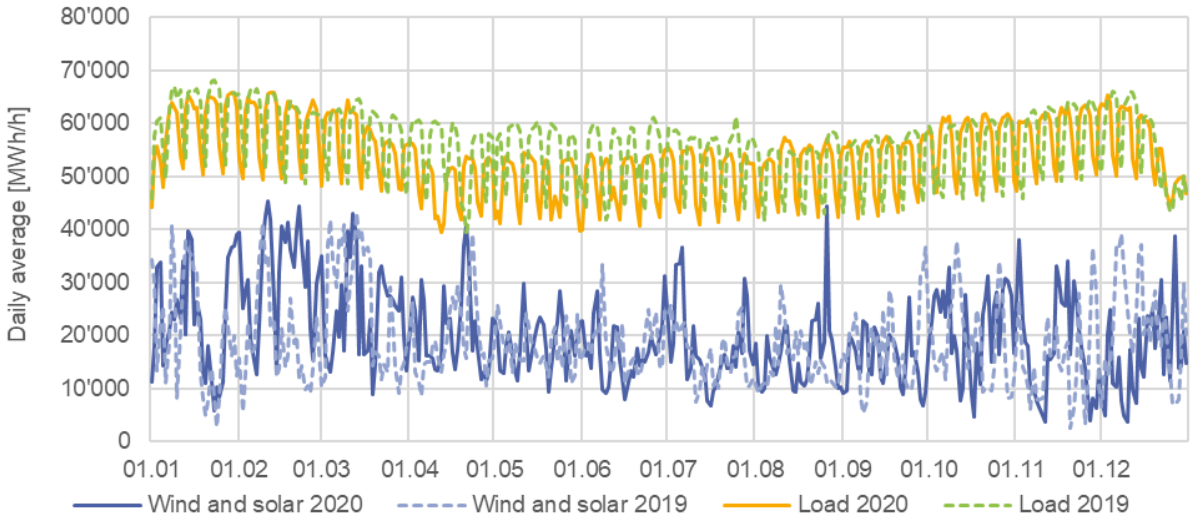

Figure 12 Feed-in of wind, solar and load in Germany in 2019 and 2020
Data source: ENTSO-E

The influence of the pandemic on the load is clearly visible: the load is noticeably below the previous year's value from mid-March to the beginning of August.[5] Production from wind and solar energy fluctuates greatly. Even though it is not clear from the graph that there was an increase in production from these sources, at just under 175 TWh, just over 5.5% more energy was produced from wind and solar in 2020 than in 2019 (165.7 TWh). In the first half of 2020, a windy February even resulted in just over 10% more energy from wind and solar plants than in the same period in 2019.

[5] See the ElCom study entitled 'Auswirkung der Corona-Pandemie auf die europäische Last' (The impact of the COVID-19 pandemic on the European load), May 2020, https://www.elcom.admin.ch/elcom/de/home/dokumentation/berichte-und-studien.html (only available in French and German), dated 1 February 2021.

What is interesting for spot prices is the difference between load and wind/solar production (also known as the 'residual load'). This must be covered by conventional power plants. If the residual load is small, prices can become negative, as it is more worthwhile for certain thermal power plants to pay something for their electricity to be purchased than to shut down the power plant for a short time (which incurs costs and puts a strain on the power plant's technical equipment).[6]

The connection between residual load and spot prices in Germany can be seen in Figure 13. The greater the demand that must be met using conventional power plants, the higher the price, as power plants with much higher production costs go online. At residual loads of less than 10 GW prices are largely negative.

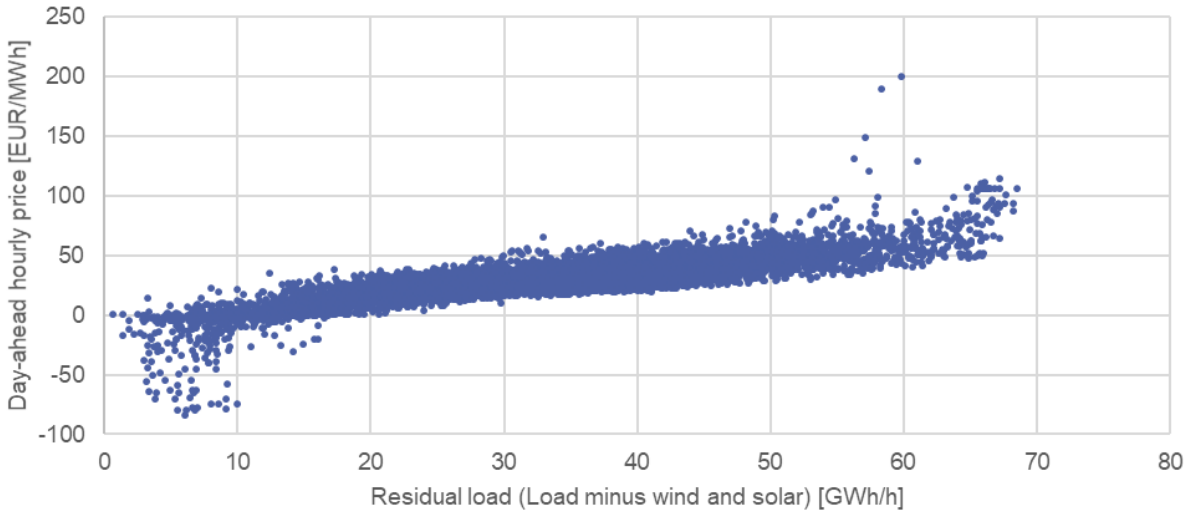

Figure 13: Residual load versus day-ahead hourly price in Germany for 2020
Data source: EEX, ENTSO-E

If the electricity can be produced more cheaply in neighbouring countries than in Switzerland, it is imported within the limits of the available cross-border capacities. If the situation is reversed (lower prices in Switzerland), electricity is exported to neighbouring countries. This is typically the case in times of high load, as prices abroad then exceed the price level in Switzerland. Switzerland regularly exports to Italy. Italian power plants are largely gas-fired and as such generally have high production costs, which is why electricity from Swiss hydropower plants is supplied to Italy.

The overview of the course of the year in Figure 14 shows that Switzerland not only regularly exports to Italy, but also regularly imports from France. One reason for this is the large number of nuclear power plants in France, whose electricity production costs (marginal costs) lead to a lower price level than Switzerland.

As can be seen from Figure 15, the seasonal pattern which emerged as a stronger trend in 2019 was confirmed in the case of Germany in 2020. In Switzerland, electricity is more expensive in winter, so Switzerland imports from Germany. In spring and sometimes in summer, on the other hand, cheap Swiss hydropower often results in electricity being cheaper in Switzerland, and so Switzerland then exports to Germany. Since a large and increasingly greater volume of electricity is produced from German wind and solar power plants, it is generally more common for Switzerland to export to Germany even in winter when less wind energy and/or solar energy is produced there.

[6] See the ElCom study entitled 'Analyse der negativen Preise für die Schweiz, Frankreich und Deutschland' (An analysis of negative prices for Switzerland, France and Germany), https://www.elcom.admin.ch/elcom/de/home/dokumentation/berichte-und-studien.html (only available in French and German), dated 1 February 2021.

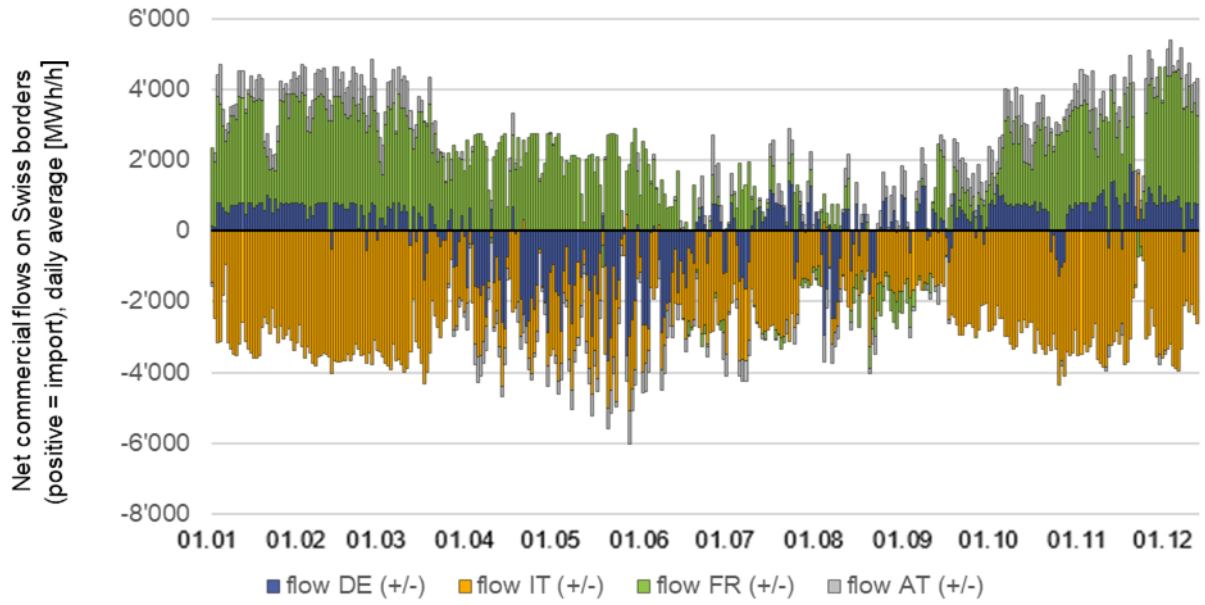

Figure 14: Net commercial flows on Swiss borders
Data source: EEX

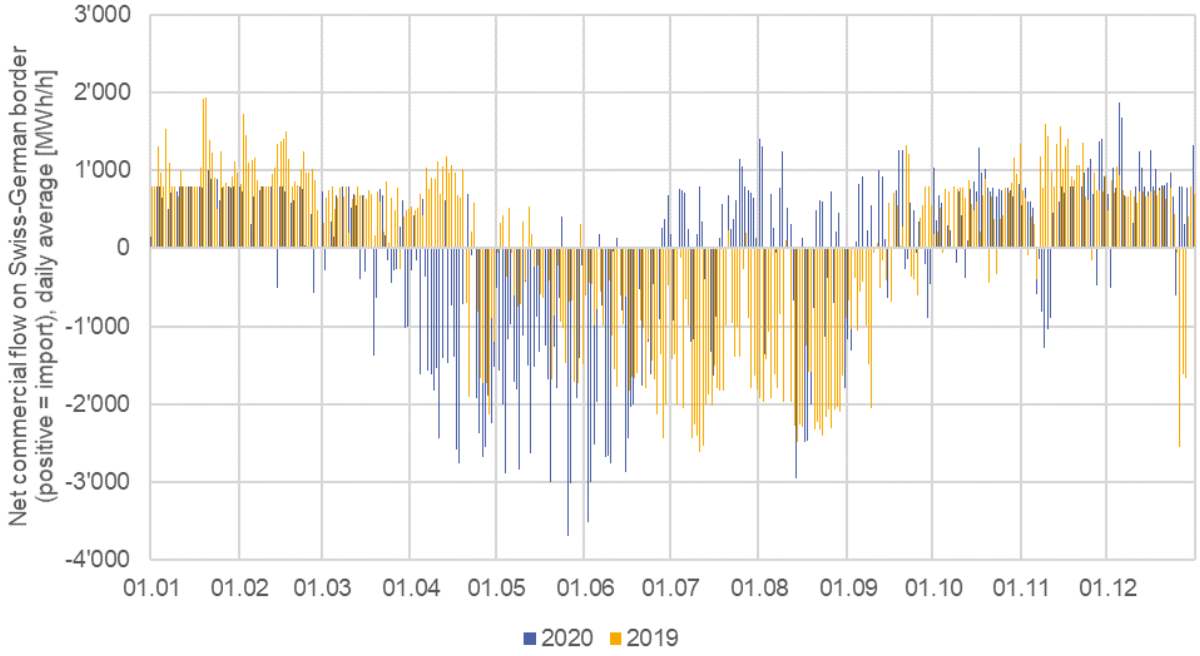

Figure 15 Net commercial flow on the Swiss-German border
Data source: ENTSO-E

An annual net total of 0.56 TWh was exported to Germany, which represents a slight increase on the previous year. In 2020, however, new daily average export peaks of over 3,500 MWh/h were achieved.

The net cross-border flow across all Swiss borders reveals the same seasonal pattern as the Swiss-German border (see Figure 16). This is not surprising, as regular exports to Italy are roughly balanced by regular imports from France. Here, too, it can be seen that the net flows in winter and summer can behave atypically on individual days with net exports in winter and net imports in summer. Switzerland was a net exporter with just under 4 TWh of net exports over the entire year.

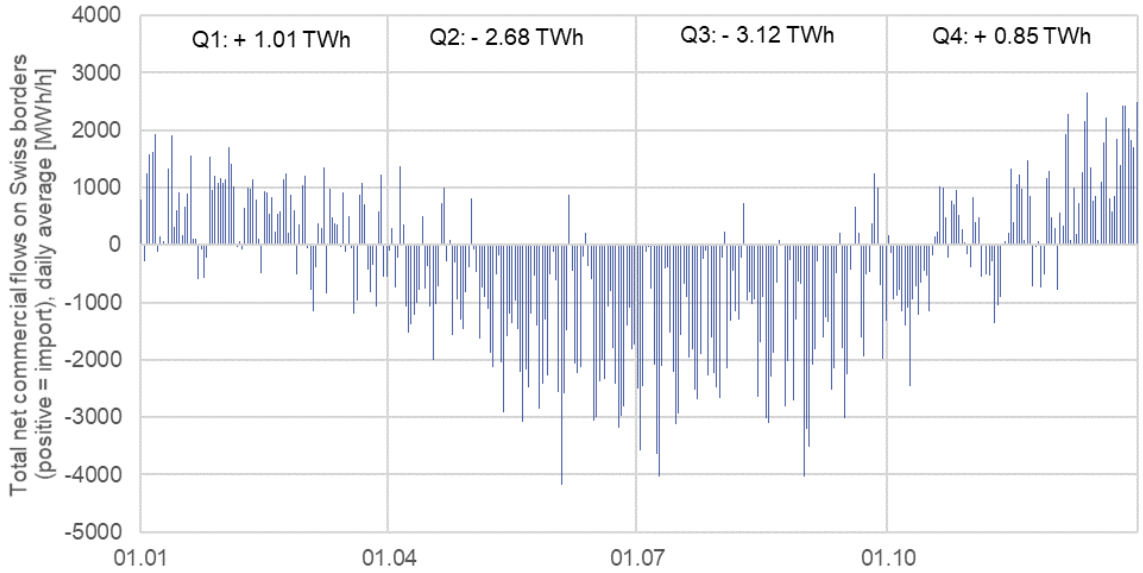

Figure 16: Total net commercial flows in 2020 on Swiss borders
Data source: ENTSO-E

2.2 Futures market reports: Annual review 2020

In 2020, Swiss electricity prices for the calendar year 2021 continued to move in parallel with prices in the neighbouring countries of Germany, France and Italy, with the spread to Germany widening and the spread to France and Italy narrowing from mid-March. While at the beginning of the year, the base for the Swiss calendar year 2021 was still around 3 EUR/MWh above the French year ahead, the base for the French calendar year 2021 traded at around 2 EUR/MWh above the Swiss trading product in the second quarter of 2020 due to the pandemic-related postponement of the maintenance plan for French nuclear power plants. Improved availability of the French nuclear power plants led to another convergence of the spread in the third quarter of 2020. The difference in the French and Swiss base prices for the calendar year 2021 virtually disappeared in the fourth quarter. The Swiss-German spread for the year ahead 2021 was still trading at around 4 EUR/MWh at the beginning of 2020. It then increased to around 7 EUR/MWh in the second quarter, recovered to around 5 EUR/MWh in the summer months and finally closed the year back at around 4 EUR/MWh.

The development of electricity prices in 2020 for the year-ahead base with Switzerland, Germany, France and Italy (as the place to which the electricity is supplied) is shown graphically in Figure 17.

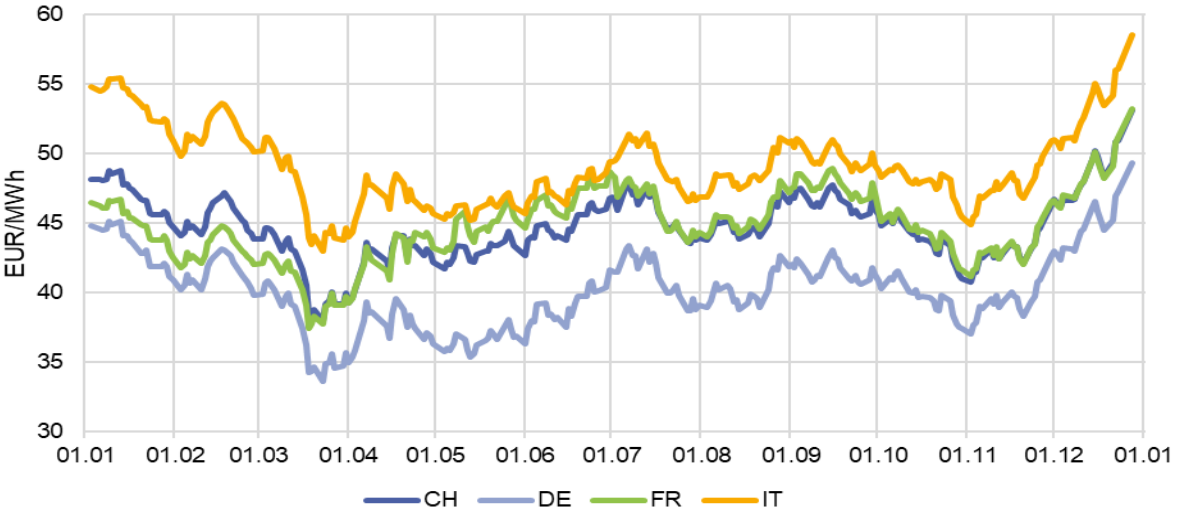

Figure 17: 2020 price trend for year-ahead base electricity contracts 2021
Data source: EEX

In terms of figures, the Swiss year ahead 2021 began at around 48 EUR/MWh in January 2020 and fluctuated between 43 and 49 EUR/MWh until the outbreak of the COVID-19 pandemic in mid-March. The various measures triggered by the pandemic led to large sections of industry being shut down in certain European countries. Electricity consumption fell sharply, which had a bearish effect on the futures markets. The Swiss year ahead reached its low point on 23 March 2020 with daily closing prices at 37.95 EUR/MWh on the EEX. During the second quarter of 2020, the combination of a strong increase in CO_2 prices and a sideways movement in gas and coal prices led to electricity prices recovering. The year ahead traded at around 47 EUR/MWh at the end of June, almost reaching the level of the start of the year.

Both coal and gas prices fell significantly during the first quarter. The reference price for coal in Europe, the Rotterdam Coal Futures Index API2 2021, fell from the 58.0 EUR/t at the beginning of the year to 51.4 EUR/t by the end of June, representing a decline of almost 11%. The reference price for gas in Germany for 2021 went from 16.9 EUR/MWh to 12.9 EUR/MWh in the first six months. The main cause of the price collapse in both markets was the global uncertainty surrounding the pandemic and the subsequent slowdown in global economic and industrial activity. The combination of this and the mild weather and strong wind feed-in (especially in the first quarter of 2020) led to a fall in demand for coal and gas and a rise in inventories and storage levels, which put downward pressure on prices. In the case of gas, oversupply of LNG, which was due to LNG cargo being diverted from China to Europe, provided additional bearish impulses in the first quarter of 2020.

The CO_2 price also crashed in the first quarter and reached its low for the year (EUR 16.8/t) on 27 March 2020 due to the outbreak of the COVID-19 pandemic. In the second quarter of 2020, news of extensive government aid in the wake of the crisis and the announcement of an easing of measures led to a recovery in the CO_2 price. The December 2021 contract consequently closed at 27.3 EUR/t at the end of June.

The electricity price increased overall in the second half of 2020. The Swiss year ahead 2021 contract then went from 46.8 EUR/MWh at the end of June to 53.15 EUR/MWh at the end of December, with prices initially moving sideways in the third quarter, before the rising price trend established itself from mid-November. The increase in the electricity price was again driven by coal, gas and CO_2. The coal API2 2021 contract rose from 51.4 EUR/t to 56.4 EUR/t, with closing prices in the range of 45.3 EUR/t to 58.2 EUR/t during this period. The reference price for the gas market in Germany (NCG) for the year ahead 2021 rose from 12.9 EUR/MWh at the end of June to 17.4 EUR/MWh at the end of December, with the contract trading in the range between 12.2 EUR/MWh and 17.4 EUR/MWh.

Bullish factors during this period included reduced coal production capacity due to lockdowns, reduced availability of French nuclear power plants (which increased demand for coal and gas), the various maintenance operations on gas fields in Norway and several strikes which occurred there: the Norwegian oil workers' strike led to the shutdown of Norwegian gas production in October and security personnel at the gas processing plant went on strike in November. In the case of gas prices, rising prices in the Asian and American regions also resulted in an increase in European prices.

In the case of coal, the EU's announcement at the end of November of the approval for the German coal exit payment mechanism (which paved the way for the shutdown of 4 GW of coal capacity in 2021) and a recovery in coal import demand in key import markets (India and China, which was prompted by an easing of Chinese coal import restrictions) pushed coal prices higher. As the year drew to a close, bullish signals on the markets were triggered by hopes that the coronavirus vaccine would soon allow economies the world over to return to normality and the results of the US presidential elections. This was countered primarily by bearish factors including the increase in COVID-19 cases throughout Europe, the associated fear of renewed restrictions and consequently slower economic recovery.

CO_2 prices fluctuated in the third quarter of 2020. Although the 30 euro mark was breached at the beginning of July, the price quickly returned in the direction of 25 EUR/t. In mid-September, the approval by the EU Committee on the Environment, Public Health and Food Safety (ENVI) of the EU's CO_2 reduction target of 60% by 2030 boosted prices. However, the European Commission proposed a target of a 55% reduction in emission levels by 2030 compared to the base year 1990, which again put a damper on prices. Weak auction results, lack of progress in the Brexit trade deal negotiations and an increase in COVID-19 cases were responsible for lower prices in October. CO_2 prices followed a rising trend from November until the end of the year. Positive news about the coronavirus vaccine and its approval in the EU, bullish stock and energy markets, cold weather, low wind power production, the announcement by the European Commission that the start of the 2021 auctions would be postponed, the agreement by EU leaders to increase the savings target to 55% less CO_2 by 2030 and climate neutrality by 2050, and last but not least the conclusion of the Brexit agreement between the EU and the UK, had a bullish effect on the CO_2 market. The December 2021 contract closed the year at 33.44 EUR/t.

Figure 18 shows the price trend in 2020 for the 2021 product for CO_2 (EUA[7]), gas (NCG[8]) and coal (for the ARA[9] region).

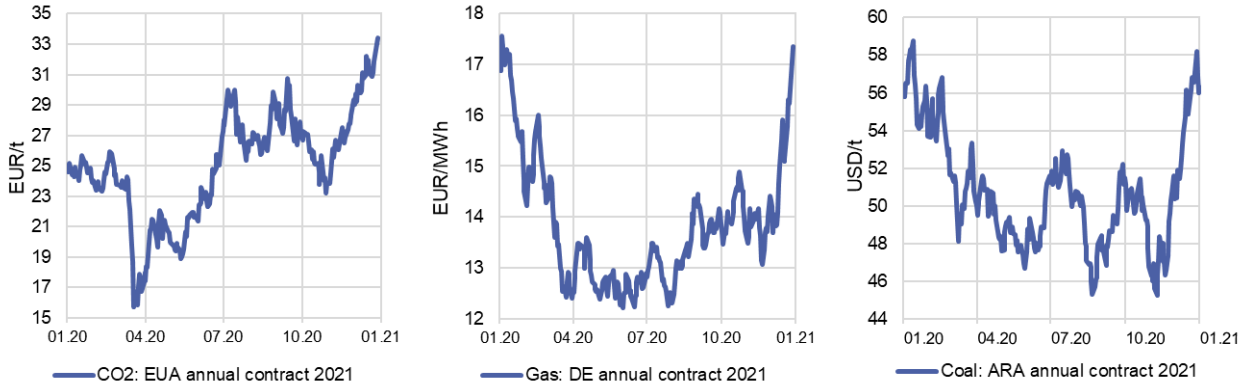

Figure 18: Price trend in 2020 for the 2021 annual contracts for CO_2 (EUA 2020), gas (NCG 2020) and coal (ARA region)
Data source: EEX and Refinitiv Power Research

3 ElCom's key market monitoring activities

3.1 Analysis

3.1.1 Overview and analysis statistics

Article 26a of the Electricity Supply Ordinance establishes an obligation to provide information for market participants (legal entities and individuals) which have their registered office or who are domiciled in Switzerland, participate in a wholesale electricity market in the EU and are obliged to provide information to the authorities of the EU or its member states on the basis of REMIT. Accordingly, they report to ElCom data relating to wholesale products, fundamental data and (insofar as it is published) inside information. The processing and analysis of the data collected makes it possible to evaluate what is effectively happening on the (European) wholesale markets. Since market prices in Switzerland are strongly influenced by developments and events in neighbouring countries, this information is important for market surveillance and is consequently also important for assessing security of supply in Switzerland.

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

With the aid of the Market Monitoring System (MMS), where data is processed and made available for analysis activities by the Market Surveillance section using alerts according to certain predefined criteria, ElCom monitors the activities of Swiss market participants on the European wholesale electricity markets with particular regard to suspicious phenomena which could indicate market manipulation or insider trading. ElCom also receives notifications of suspicious transactions and order reports (STORs) involving Swiss market participants from the trading monitoring bodies of the organised marketplaces. ElCom was notified of three such incidents in 2020 (see Figure 19). 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.

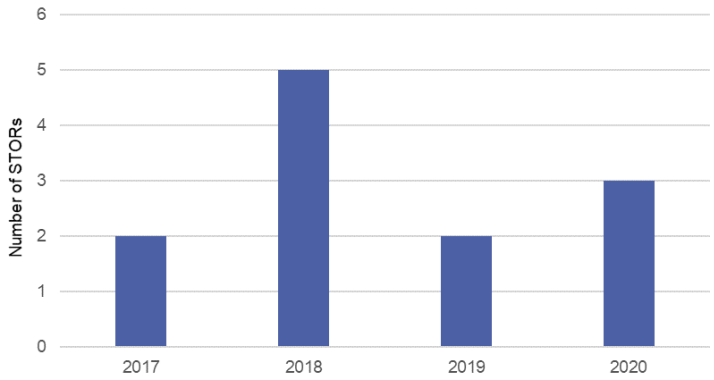

Figure 19: Overview of the STORs received by ElCom

In addition to the investigations triggered by the MMS alerts or initiated on the basis of STORs, ElCom also conducted a number of ad-hoc analyses regarding various topics in 2020. This market transparency report presents a compact version of the study on negative prices for Switzerland, Germany and France between 2015 and 2020, the implementation of the reporting of inside information, as well as an investigation and ElCom's statement regarding continuous cross-border intraday trading. The ElCom Activity Report 2020 also discusses two other analyses: a study on the impact of the COVID-19 pandemic on the European load and an investigation into the background to the MEAS (Mutual Emergency Assistance Service) auction conducted by Swissgrid.

The study on negative prices for Switzerland, Germany and France between 2015 and 2020, and the study on the impact of the COVID-19 pandemic on the European load are published on ElCom's website.

3.1.2 Increased transparency and data quality in the publication of solar data

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 2020.

The most significant aspect regarding data quality from last year was that there was a significant improvement in the quality of the published solar data. While at the beginning of 2020 a lack of a transparent and complete data meant it remained unclear how much electricity was actually generated from solar energy in Switzerland, the initiative and efforts of ElCom and other committed stakeholders led to more complete and better-quality data on solar production in Switzerland being presented as early as August 2020. This data is now also included in the weekly spot market reports and is also used in some of ElCom's analyses.

The initial situation was as follows: Swissgrid reported to ENTSO-E production data from the Swiss solar plants registered in the Balance Group for Renewable Energies (RE-BG). For several reasons, however, this included by no means all the production capacity actually installed in Switzerland. The publicly available, officially published data on solar production in Switzerland was therefore significantly lower than the actual amount produced.

The cooperation between ElCom, Swissgrid and the Swiss certification body for the recording of guarantees of origin and the processing of support programmes for renewable energies (Pronovo) led to the development of a new solution. A total, aggregated production volume for Switzerland is now published in hourly resolution on the ENTSO-E TP. The processed data is also presented at energy-charts.ch in graphic form and in a clear, transparent and user-friendly manner. Both publications should bring more transparency with regard to electricity production and electricity prices in Switzerland, provide the public with better, more comprehensive information and as such contribute to a more fact-based discussion of the relevant topics. ElCom therefore regards it as important to publish the actual volume of electricity generated from renewable energies in the form of aggregated production in Switzerland on a daily basis, with hourly resolution, on a platform provided for this purpose, and to create the legal basis for this.

Data on the real-time feed-in of solar energy in Switzerland will increase in importance as the installed capacity of solar plants increases, both for network operators (stable operation) and for electricity market participants (management of portfolios, avoidance of balancing energy). This has long been standard in countries such as Austria and Germany. With the recent adjustment in the publication of solar data, Switzerland is now also getting closer to the level of transparency in neighbouring countries.

3.2 Reporting inside information

3.2.1 European standards for the reporting of inside information

According to Article 2 para. 1 of REMIT, inside information means “information of a precise nature which has not been made public, which relates, directly or indirectly, to one or more wholesale energy products and which, if it were made public, would be likely to significantly affect the prices of those wholesale energy products”.

According to Article 4 of REMIT, market participants are obliged to publish inside information effectively and in a timely manner. “Market participants shall publicly disclose in an effectively and timely manner inside information which they possess in respect of business or facilities which the market participant concerned, or its parent or related undertaking owns, controls or for whose operational matters that market participant or undertaking is responsible, either in whole or in part. Such disclosure shall include information relevant to the capacity and use of facilities for production, storage, consumption or transmission of electricity or natural gas or related to the capacity and use of LNG facilities, including planned or unplanned unavailability of these facilities.” Article 4 para. 2 of REMIT provides for a deferral of the publication obligation under certain conditions.

The transparency of wholesale energy markets requires the disclosure of inside information in a manner which allows the dissemination of information to the widest possible public and facilitates access to information for all market participants. For the purpose of effective disclosure in accordance with Article 4 of REMIT, the publication of inside information must in future be carried out exclusively via a dedicated platform for the publication of inside information which meets certain minimum requirements defined by ACER (see Section 1).

With regard to the notion of timely disclosure of inside information, such information must normally be disclosed as soon as possible, but within one hour of the occurrence of the event giving rise to the information at the latest, unless otherwise specified in the applicable rules and regulations. The inside information must be published in any case before:

- the market participant receiving the inside information trades in wholesale energy market products to which the inside information relates, or
- before the market participant recommends another person to trade in a wholesale energy market product related to the inside information, or
- before it is disclosed to third parties, unless this is achieved in the normal course of the work of the person providing the communication, the normal remit of their profession or in the normal performance of his or her duties.

The publication of inside information should be as concise and specific as possible, as well as precise and complete enough to allow a proper understanding of the underlying events which may affect the prices of wholesale energy products.

If the publication requires a forecast, e.g. on the duration of an outage, such a forecast contains an element of uncertainty according to ACER. ACER therefore believes that market participants fulfil their disclosure obligations if the forecast is based on all available data and has been prepared with reasonable effort. If a forecast changes over time, the publication should be updated accordingly as soon as the new information is available.

The ACER Q&As were updated in June 2020. There it was stated under Question III.7.14 that ramping situations qualify as inside information and must be published accordingly. Ramping situations which qualify as inside information under Article 2 para. 1 of REMIT, i.e. situations which have not been made public and relate directly or indirectly to one or more wholesale energy products and which, if made public, would be likely to have a significant effect on the prices of those wholesale energy products, should be disclosed in accordance with Article 4 of REMIT. Virtual power plants (VPPs) may also fall under the obligations defined by Article 4 of REMIT under certain circumstances, particularly if the VPP has control over or is responsible for the operation of the facilities.

The publication of question III.7.18 in December 2020 is interesting. If a power plant has to be available to the network operator for congestion management and is therefore no longer available for the wholesale energy market, this information can be regarded as inside information. The transmission network operator and/or power plant operator must indicate the respective duration of unavailability for the wholesale energy market accordingly. It is considered misleading if this information is published with reasoning such as ‘maintenance’ or ‘outage’.

3.2.2 ElCom recommendations regarding the reporting of inside information

Within the scope of ElCom’s monitoring activities, the reports of power plant maintenance on the EEX TP were compared with the schedules actually reported on ENTSO-E’s transparency platform. It was found that Swiss market participants report the time of maintenance on EEX TP differently in the case of planned maintenance. In the case of shutting down a power plant, publications on EEX TP sometimes refer to the start time of the ramp down and sometimes to the end of the ramp down. ElCom’s review has revealed that Swiss market participants do not generally report ramp events.

In principle, non-availability should refer to the beginning of the event. In the case of nuclear power plant maintenance, where in some cases the power plant has already begun the shutdown process the day before, details of the ramp down should definitely be published, as in this case it may have price effects on the Swiss day-ahead or intraday markets. In order to ensure uniform reporting practice, ElCom would welcome the publication of inside information by Swiss market participants in accordance with the ACER recommendations.

3.3 Continuous cross-border intraday trading

3.3.1 ElCom communication - Recommendation regarding capacity reservation and trading behaviour

In January 2021, ElCom published a communication concerning continuous cross-border intraday trading. The basis for this was the launch of SIDC in Central-Western Europe in June 2018. The system of implicit cross-border capacity allocation to market participants which had existed for the Swiss-German and Swiss-French borders to date was discontinued. Since then, market participants have to reserve, in addition to the actual energy trading, the required cross-border capacity for these two borders on the intraday-capacity.com platform. Reservations are made on a first-come first-served basis and the capacities are allocated free of charge.[10] In explicit allocation, electricity trading and capacity reservation

[10] The same procedure has also been applied to the Swiss–Austrian border since 24 September 2020.

are decoupled in terms of time and organisation. This means additional work for transmission network operators and market participants, as sufficient capacity must be booked for each electricity trade.

Since then, Swissgrid has repeatedly drawn market participants' attention to conspicuous behaviour in the reservation of cross-border capacity. Some of them then contacted ElCom, requesting clarification if their behaviour was legally compliant. ElCom's assessment revealed it is currently not possible to implement an alternative form of allocation. ElCom therefore recommends that market participants adhere to the ACER guidance notes on transmission capacity hoarding in cross-border intraday trading.[11] The rules for managing the Swiss-Austrian border already refer to these guidance notes. The plan is to add this reference and a reference to Article 5 of REMIT into the relevant auction rules for other borders, too.

3.3.2 Investigation into conspicuous behaviour in the reservation of cross-border capacity in continuous intraday trading

During an analysis of the reservation behaviour of market participants on Swiss borders, market participants were noticed who repeatedly reserved large quantities of cross-border capacity in one direction (e.g. Germany to Switzerland) and later reserved similarly large quantities in the opposite direction (Switzerland to Germany). The time span between the two reservations extended up to more than 15 hours. The first reservation also often used up all the remaining cross-border capacity available for a supply period, i.e. after this reservation there was no more capacity available for other market participants. An increasing number of cases were also observed in which the first reservation took place exactly at the time of the opening of the reservation platform on the previous evening. There were no transactions on the intraday market which would have justified an effective use of capacity. It must therefore be assumed that the first reservation in these cases represented an unused option for energy transmission.

When market participants were questioned, it was revealed that this was indeed so in some cases. One reason given was the volatile intraday markets, on which price spreads between the markets developed differently than market participants anticipated at the time of the first reservation. Another reason given was intent to transport energy from Germany to France (or vice versa) via Switzerland. These market participants stated that because the reservation platforms for these two borders open at different times (18:00 for Germany to Switzerland and 21:05 for France to Switzerland), they did not know at 18:00 whether and how much capacity would be made available at 21:05 for the France to Switzerland border. They then reserved the Germany to Switzerland capacity at 18:00 as an option and, if necessary, returned by reservation in the opposite direction at 21:05.

Even if these behaviours of market participants are understandable, they nevertheless lead to various problems. On the one hand there is an increased risk that cross-border capacity in intraday trading is not used efficiently, as unused but reserved capacities may no longer be used by other market participants once they are returned to the market. On the other hand, the information that no more cross-border capacity is available can send a misleading signal to the market. At best, other market participants assume that energy transmission between two countries is no longer possible and may behave differently. A price spread may also develop between the two countries which would not have occurred or would have occurred to a lesser extent had cross-border capacity been available and used.

More information on this topic can be found in the ACER guidance notes on transmission capacity hoarding cited above.

3.4 An analysis of negative prices for Switzerland, France and Germany in 2020

The low spot prices in the first half of 2020 and the accumulation of negative prices (especially in Germany) have prompted this study, which will be updated with the latest figures at regular intervals in the future.

[11] ACER Guidance Note 1/2018 on the application of Article 5 of REMIT on the prohibition of market manipulation - Transmission capacity hoarding, 1st ed.,18 March 2018, Guidance Note Transmission Capacity Hoarding (acer-remit.eu).

The occurrence of negative prices on the electricity market could be explained by the following circumstances:

- ***Technical restrictions and opportunity costs***. Conventional power plants have limited flexibility due to technical restrictions. There are technical limitations on the load following rate, so they cannot quickly adjust output from one hour to the next. Such power plants must also have a certain minimum output (must-run) to ensure stable operation. Furthermore, start-up costs for thermal power plants are not insignificant. These include one-off costs which are incurred every time the power plant is started up and are largely independent of the operating time following the start up. It may therefore be cheaper for the power plant operator to pay a price for the surplus electricity it produces for certain hours than to shut down the entire power plant.
- ***Other contractual obligations***. Power plant suppliers can offer the energy they produce on both the day-ahead market and the reserve energy markets. Cogeneration plants also have additional obligations regarding marketing scheduled energy. They must serve a demand for heat from their plants, generating electricity as a by-product. In this case too, negative profit margins on the electricity market may be accepted once costs and opportunities are taken into account.
- ***Regulatory framework.*** Wind and solar are sometimes offered at unlimited prices on the day-ahead auction in order to reflect the feed-in priority of renewable energies on the market. Certain plant operators also have an incentive to feed in even if the day-ahead prices are negative. This applies in particular to operators which market these renewable-energy plants directly and receive a market premium for each kWh generated in addition to the revenue from direct marketing. As long as the negative market revenues (via sales on the EPEX SPOT exchange) do not exceed the income from the market premium, such plants are operated even at negative prices.

It is striking that for all countries in 2020 the number of hours with negative prices and the number of days with negative hourly prices increased on the EPEX SPOT day-ahead auction (see Figure 20). In 2020, there were almost 300 hours with negative prices on the day-ahead auction in Germany, while there were 75 in Switzerland and 102 in France.

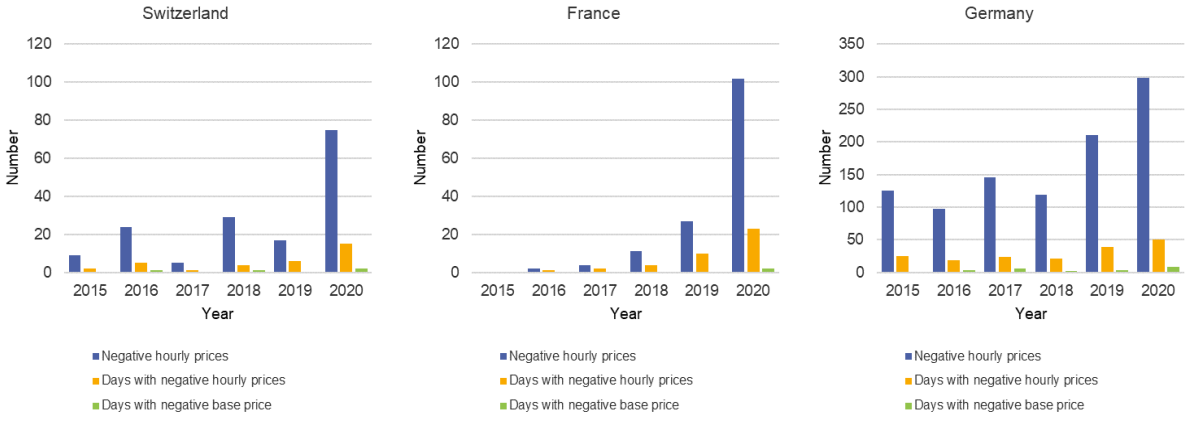

Figure 20: Number of hours with negative prices, number of days with negative hourly prices and number of days with negative base price by year for Switzerland, France, Germany as the country of electricity delivery

In Switzerland and France, negative hourly prices occur mainly in March, April and May (see Figure 21). In these months, melting snow leads to above-average availability of run-of-river water for power production. The combination of increased run-of-river water, low load and cheap electricity from Germany (due to higher generation from wind and solar) leads to negative prices. In 2020 in particular, lower load (due to the COVID-19 pandemic), which led to a load reduction of almost 17% in France during the lockdown,[12] also affected the number of hours with negative prices in France.

[12] ElCom reported on this in the study entitled 'Auswirkung der Corona-Pandemie auf die europäische Last' (The impact of the COVID-19 pandemic on the European load).

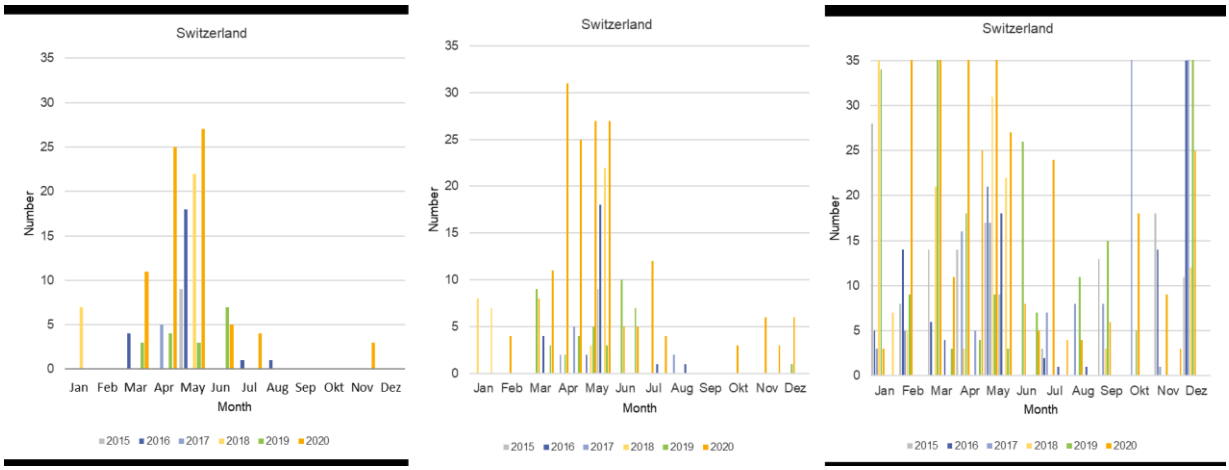

Figure 21 Number of hours with negative prices on the EPEX SPOT day-ahead auction by month and year for Switzerland, France and Germany as the country to which the electricity is delivered

In Germany, negative prices occur more often in winter than in summer. There has also been a marked increase in negative hourly prices during the first quarter and for the months of April and May in recent years. Although electricity demand is higher in winter than in summer, high feed-in from wind energy tends to occur in the winter months, spring and autumn. Power plant maintenance tends to be carried out in the summer months, which leads to a reduction in supply from conventional power plants, which are less flexible. The demand for heat is of course lower during the summer months. Electricity generation from cogeneration plants is therefore also lower than in winter.

Although the number of hours with negative prices has increased in recent years, it is not possible to observe any major shift in the hours of the day when negative prices occur for Switzerland (see Figure 22). Only in 2018 did negative hours during the first eight hours of the day occur with significantly greater frequency (just under 40%) than in the other years. If negative prices do occur in Switzerland, they occur every year, particularly between Hour 14 and Hour 17.

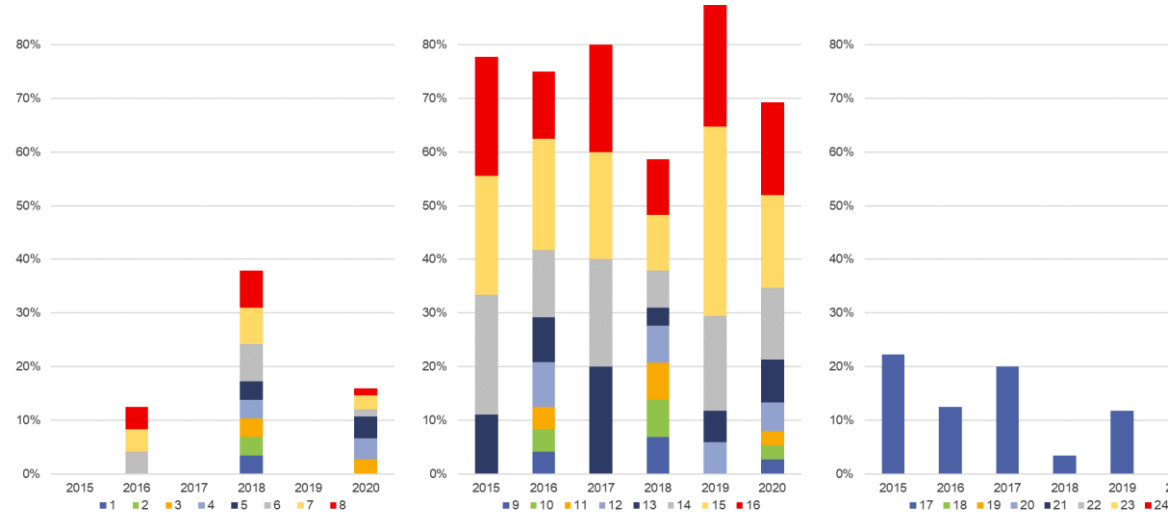

Figure 22: Share of hours with negative prices by hour of the day and year in Switzerland
Left: Share from Hour 1 to Hour 8 (00:00–08:00); centre: Hour 9 to Hour 16 (08:00–16:00); right: Hour 17 to Hour 24 (16:00–24:00) [13]

[13] There was a data error in this figure for 2019 in the June 2020 publication. This has been corrected in the present version.

In France, negative prices have increasingly been observed in the first eight hours of the day since 2018. This is attributable to the expansion of wind energy in France. Hours 10, 11 and 12 appear to be increasingly affected by negative prices. Solar production in France (both domestic production and via imports from Germany) has of course also had an impact on prices.

In Germany, 75% of negative hours continued to occur between 00:00 and 08:00 in 2015. In 2020, this figure was just under 35%. While the share of hours with negative prices between 08:00 and 16:00 was still just under 20% in 2015, it was around 50% in 2020. The share of hours with negative prices in the last eight hours of the day, excluding Hour 17 (16:00 to 17:00), has remained relatively stable at below 10% since 2015. The shift in the share of hours with negative prices between 2015 and 2020 from the first eight hours of the day to the period between Hour 9 and Hour 17 highlights the impact of solar generation. The residual load becomes smaller and smaller, especially during the period between Hour 11 and Hour 17, which has led to more frequent occurrence of negative prices during these hours than in 2015 (see Figure 23).

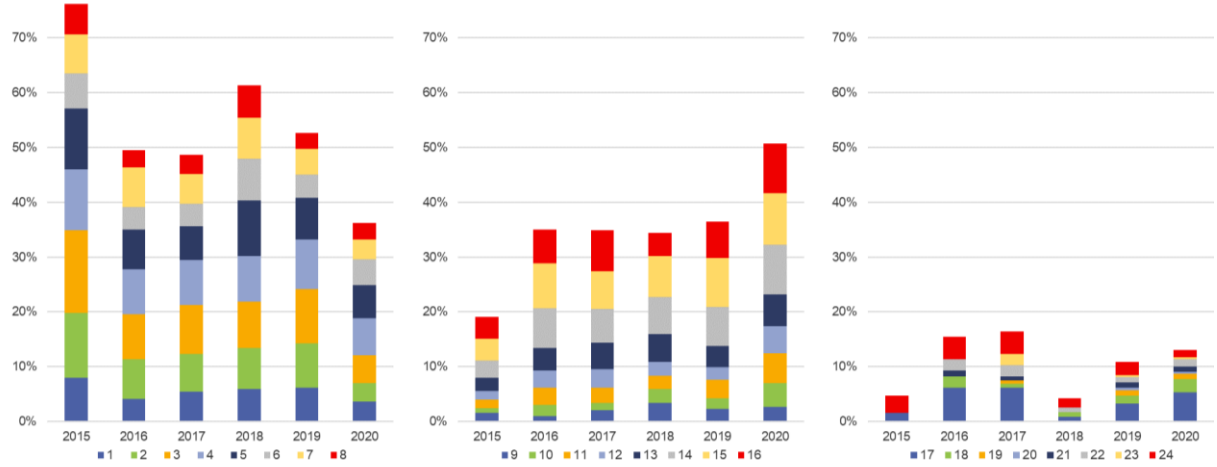

Figure 23: Share of hours with negative prices by hour of the day and year in Germany
Left: Share from Hour 1 to Hour 8 (00:00–08:00); centre: from Hour 9 to Hour 16 (08:00–16:00); right: from Hour 17 to Hour 24 (16:00–24:00)

As long as the expansion of renewable energies continues to increase, if there is no great progress made in electricity storage options, if there is insufficient flexibility in load and generation, and if cross-border transmission capacity to neighbouring countries is not expanded, negative prices are likely to continue to increase in Germany (as in France and Switzerland).

However, negative hourly prices on the short-term electricity market are no cause for concern. It is a necessary market mechanism to ensure that electricity demand matches supply at all times. These prices provide an incentive for conventional power plants to adjust their electricity production to fluctuating demand and weather-dependent generation from renewable energies. On the demand side, negative prices also provide an incentive to increase demand for electricity precisely when large volumes of electricity are being fed into the network.

Negative prices therefore make perfect economic sense: they create the right incentives to increase flexibility in the course of the switch to renewable energies and to use every option to be flexible.

4 Other activities on market transparency and market surveillance

4.1 Cooperation in Switzerland and abroad

With the merging of markets as a result of current developments, exchange between energy regulators regarding market surveillance and market integrity is also becoming more important. The unique situation triggered by the COVID-19 pandemic meant that it was only possible to conduct coordination meetings with market surveillance bodies from neighbouring countries virtually. It was not possible to realise job rotations which had been planned with two foreign regulators in the form of a one-week job exchange. The usual exchange of methodological experience with FINMA also did not take place in the reporting year.

Thematic exchanges with Swissgrid took place throughout the year. A STOR submitted by the EPEX SPOT Exchange Surveillance Office gave rise to a discussion regarding the MEAS auction. This is being carried out by Swissgrid on behalf of Terna, the Italian network operator. ElCom's Technical Secretariat made Swissgrid aware that the results of the MEAS auction could exert a strong influence on prices on both the Swiss intraday market and the Swiss intraday auction if the prices at which Terna is prepared to sell significantly deviate from the current day-ahead or intraday prices. The surcharge prices and surcharge quantities with the respective partner could possibly also constitute inside information. Swissgrid was asked to publish the results from the MEAS auction on its website in good time, i.e. before the Swiss intraday auction, in order to increase market transparency. ElCom's proposal was implemented accordingly. The results of the MEAS auction will be published on Swissgrid's website from 12 November 2020. This is an efficient solution which has been developed together with Swissgrid for a more transparent Swiss market.

Work within Europe also continued without restrictions. ElCom continued to participate in the meetings of the CEER Market Integrity and Transparency Working Group (CMIT). ElCom's communication on algorithmic trading was presented at one of the meetings at the request of CMIT members. ElCom once again participated in the comprehensive survey on the implementation of market integrity and transparency at national level. This survey allows comparison among the regulatory authorities and this year again provided ElCom with valuable insights into various areas of implementation of REMIT in the European regulatory processes.

ElCom's Technical Secretariat also took part in the REMIT forum, which this year took place online and was organised by ACER. The focus of the fourth edition of the forum was on how to protect markets in changing times and beyond. The topics and future developments discussed included digitalisation, B2B trading platforms on Network Level 7 and the emergence of new flexibility markets and their impact on REMIT reporting.

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 and will continue to be cultivated by ElCom.

4.2 Other activities related to market transparency and market surveillance

This year, the activities of the Market Surveillance Section at ElCom's Technical Secretariat were dominated by the COVID-19 pandemic. Despite the lockdown, operations and surveillance of the Swiss wholesale electricity market and the activities of Swiss market participants in the European Union were maintained in the secure room. The publication of the spot and futures market reports continued uninterrupted. The 2019 ElCom Market Transparency Report was also published as scheduled on ElCom's website in May 2020.

However, it was not possible to present the report at the Market Surveillance Workshop scheduled for 15 May 2020. Entitled 'Algorithmischer Handel – Auswirkungen im Energiehandel' (Algorithmic Trading - Implications for Energy Trading), this event was initially postponed to 2 November 2020 due to the lockdown and then cancelled.

In addition to the spot and futures market reports and the Market Transparency Report 2019, the Technical Secretariat also published other studies and communications prepared by the Market Surveillance section which contribute to improving transparency for production- and consumption-side market participants. These are published on the ElCom website under the heading 'Reports and studies'.

5 Digitalisation in the energy industry

ElCom examined the current developments in digitalisation in the Swiss energy industry on the basis of the official consultation on the revision of the Federal Electricity Supply Act carried out by the Swiss Federal Office of Energy (SFOE) in January 2020. The amendment to the law adapts the regulatory framework to the Energy Strategy 2050 and developments on the European electricity market.
The EU Clean Energy Package stipulates that end customers have the right to act as active customers (consumption of electricity generated off-site or sale of self-generated electricity) without being subject to disproportionate or discriminatory requirements, surcharges, levies or non-cost-based network use remuneration.

In future, the potential for flexibility will increase with the smart meter rollout and the increasing decentralisation of production and storage envisaged by the legislator. Marketing will be further promoted with the revision of the Federal Electricity Supply Act by requiring network operators to exploit flexibility potential before expanding the network.

The Federal Council believes that controllable flexibility is an important building block for the future energy system. Producers, end consumers and storage operators will become the owners of their flexibility and will be able to offer it where the highest profits can be made (e.g. on the network or electricity market). There is currently no marketplace for trading flexibility at regional and local levels. This trading opportunity creates the need to establish multi-level trading for flexibility products at local, regional and national levels.

It will not be possible to implement future neighbourhood models such as Network Level 7 platforms or virtual *Zusammenschluss zum Eigenverbrauch* (mergers for own consumption) without fully opening up the market. Based on this, digital service markets for 'energy management' will emerge, especially at lower network levels. Combination with increased use of virtual or swarm storage allows existing markets to be used in new ways and allows the creation of new services and markets. It is important to note that the 'new' participants in the respective markets must also comply with the same terms and conditions as the market participants which are already established. This concerns in particular the expansion, improved integration and the use of decentralised renewable energy sources, as well as the flexibility thereof. Digitalisation, data-centric business models and innovation also support energy efficiency, decarbonisation and the decentralisation which comes with renewable energy sources.

The costs in the distribution network are distributed to fewer and fewer cost bearers (end customers without self-consumption). It is becoming apparent that the self-consumption regulation will lead to a distribution problem in the case of network use remuneration. End consumers without self-consumption always bear higher network costs. If the financing of the network is not designed in a sustainable way due to an unresolved distribution problem with network use remuneration, it is possible that more demand tariffs will be introduced in future.

The legislator is also planning a central data register (also known as a data hub) in the electricity sector. A data hub is a central data point through which essential data can be exchanged with the individual stakeholders. The point of this is to accelerate the digitalisation and transformation of the electricity industry. It is striking that energy supply companies regard e-mobility as the fastest-growing field. It has

become apparent that intelligent charging management in particular has great potential with regard to possibilities for intervention by the network operator: electronically allocating charging times would make it possible to avoid bottlenecks without participants experiencing a negative effect. This shows that energy management to control load (and consumption) is becoming more important as the number of possible charging processes increases. Various types of battery storage proved to be another sensible option which relieved the load on the network.

Digitalisation can be an essential lever for achieving climate targets. In this context, digitalisation in the areas of industry, mobility and buildings could help to realise the targeted CO_2 reduction by 2030. It is important to assess the direction in which the market and the needs of market participants are developing, as well as to derive from this what ElCom will have to deal with in this area and what is expected of ElCom.

6 Outlook

In the EU, the number of market manipulations which pose a risk to security of supply is increasing. In the UK, for example, false information was provided regarding the availability of essential power plants. In Germany, traders sold short, bringing Germany to the brink of a blackout and it was only with help from abroad that sufficient reserve energy was provided for the German grid. Thanks to the legal basis created in the EU six years ago to extend market transparency (REMIT), EU national authorities are now in a position to detect such cases, thereby identifying market mechanisms which pose a potential threat to supply security and reducing the risk of future misconduct. As part of this process, sanctions for violations of REMIT are increasingly being imposed throughout the EU, in some cases with heavy fines.

In comparison, existing laws in Switzerland allow only limited insight into market activity. Accordingly, the electricity market lacks transparency and options for detecting and preventing system failures caused by market manipulation are limited. There is still no ban on market manipulation and insider trading in wholesale electricity trading in Switzerland. As a result, the deterrent effect of appropriate sanctions and penalties is lacking, as is cooperation with neighbouring regulators in this regard. The upcoming revision of the Federal Electricity Supply Act in 2021 presents an opportunity to change this.

The number of reported data sets will continue to increase steadily in coming years. The main reasons for this are the increasing use of SIDC and the increased use of automated trading systems on the intraday market. Changes in market design and technological developments such as artificial intelligence (AI), machine learning (ML), FinTech prosumers, etc. will lead to further changes.

In contrast, the UK's withdrawal from the EU means that ElCom will no longer receive data on the trading activities of Swiss market participants on the UK wholesale electricity market from 1 January 2021. Since this data is no longer reported to ACER as a result of Brexit, reporting to ElCom has also been discontinued. This has led to certain adjustments within ElCom's monitoring systems. These were implemented quickly.

Through the consultation procedure carried out in 2019/2020, the implementation of the Gas Supply Act in Switzerland is continuing to take a definite shape. As in the case of the Federal Electricity Supply Act, Swiss market participants trading gas in the EU will be obliged to report their transactions. The current plan is for ElCom to assume this task in the gas sector. In this context, it will also be important to follow the developments of new markets (e.g. hydrogen, flexibility and electric mobility markets) to improve assessment of cross-market trading.

Hydrogen is increasingly becoming a focal point as part of the current sustainability debate and the publication of various hydrogen strategies. Innovations in the field of (green) hydrogen will lead to particularly interesting and strategically important developments. It was in this context that the 'Green Hydrogen @ Blue Danube' project was launched to build a European value chain for green hydrogen as part of the EU IPCEI (Important Projects of Common European Interest) initiative. This is designed to

strengthen and promote hydrogen in Europe. The first phase of the project aims to promote the production and use of green hydrogen in Europe, while the second phase focuses on the production of green hydrogen in Southeast Europe. Electricity from wind, sun and hydropower is to be converted into hydrogen directly on site in order to use renewable European resources which otherwise could not be used due to a lack of electricity transmission capacity.

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)
API2	Rotterdam Coal Futures Index
SFOE	Swiss Federal Office of Energy
BNetzA	Bundesnetzagentur (German regulator)
CEER	Council of the European Energy Regulators
CEREMP	Centralised European Register of Energy Market Participants
CMIT	CEER Market Integrity and Transparency Working Group
CNE	Comisión Nacional de Energía (Spanish regulator)
CRE	Commission de régulation de l'énergie (French regulator)
E-Control	Energie-Control GmbH (Austrian regulator)
EEX	European Energy Exchange (European electricity exchange for futures contracts)
EEX TP	European Energy Exchange Transparency Platform
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
ENVI	EU Committee on the Environment, Public Health and Food Safety
EPEX SPOT	European Power Exchange (European electricity exchange for spot and intraday trading)
ESO	Swiss Electricity Supply Ordinance
EU	European Union
EUA	European emission allowances
FINMA	Swiss Financial Market Supervisory Authority
GW	Gigawatt
GWh	Gigawatt hour
IIP	Inside Information Platform
IPCEI	Important Projects of Common European Interest
AI	Artificial intelligence
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
MIT	Market integrity and transparency
ML	Machine learning
MW	Megawatt
MWh	Megawatt hour
NCG	Reference price for the German gas price from the market area operator NetConnect
Ofgem	Office of Gas and Electricity Markets (British regulator)
OMP	Organised market places
OTF	Organised trading facility
REMIT	Regulation on Wholesale Energy Market Integrity and Transparency
RRM	Registered reporting mechanism
SIDC	Single intraday coupling
STOR	Suspicious transaction and order report
Terna	Gestore della rete di trasmissione italiana (Italian network operator)
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)
VPP	Virtual power plant
XBID	Cross-border intraday