Monitoring report 2022

Key findings and Summary

Bundesnetzagentur Bundeskartellamt

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Key findings

Impact of the Ukraine war on the electricity and gas markets

Russia's invasion of Ukraine and the ongoing war have left a profound mark on Germany's energy markets. The situation in many areas changed dramatically in 2022. The systematic and comprehensive monitoring surveys always relate to the previous calendar year, however, and so the Monitoring Report 2022 relates to the situation in 2021, since definitive figures checked for plausibility and quality are only available for 2021. In cases where sufficiently reliable information for 2022 was already available, the information has been taken into account above all in the key findings in order to present the further course of developments in 2022.

The second half of 2021 already saw considerable price increases in the energy markets as a result of the global economic recovery following the restrictions of the coronavirus pandemic. The situation in the energy markets has intensified since the invasion of Ukraine in February 2022. Prices in the wholesale markets for electricity and gas have once again multiplied; they are very volatile at this high level and particularly dependent on the diverse developments relating to the Ukraine crisis. The higher prices are mainly due to the increase in prices for natural gas, which in turn is due to the reduction in the natural gas supply. Russia first reduced and then completely halted gas supplies to Europe via the Nord Stream 1 pipeline. Use of the Nord Stream 2 pipeline has not been approved, nor is it an alternative for the energy industry in light of the current crisis. As things now stand, use of the Nord Stream 1 pipeline is completely impossible and use of the Nord Stream 2 pipeline partially impossible because of sabotage. Importers have been forced to procure gas at high cost to make up for the lack of gas from Russia. Additional gas supplies through an increase in liquefied natural gas (LNG) imports via the planned floating LNG terminals (floating storage and regasification units – FSRUs) on the North and Baltic Sea coasts are anticipated for the end of 2022/beginning of 2023. The tense supply situation and the sharp rise in prices in the gas sector are also affecting the electricity sector, since in Germany the electricity generated by natural gas power stations determines the wholesale price for electricity in many hours of trading (merit order principle). The price explosion in wholesale electricity and gas trading is also leading to extreme price increases and, in the short term at least, to a considerable dampening of competition among suppliers both for household and for commercial and industrial customers.

Electricity generation

Market concentration in electricity generation and the first-time sale of electricity (not entitled to payment under the Renewable Energy Sources Act – EEG) saw an increase in 2021 as far as the market shares of producers was concerned. The aggregate market share of the five largest undertakings in the market for the first-time sale of electricity based on the German market area, including Luxembourg, was 67% in 2021, compared to 65.3% in 2020. By contrast, the share of the five largest suppliers in Germany's conventional generating capacity at the end of 2021 was 53.0% and thus below the previous year's level of 56.7%. The reason for this is the implementation of the nuclear and coal phase-out, which involves a significant amount of conventional generating capacity, including plants operated by the five largest suppliers, exiting the market. This reduction in capacity in the market has reinforced the importance of the remaining conventional capacity, which is reflected among other things in the increase in the amount of energy generated by the larger providers with an overall smaller conventional power plant fleet.

In the more detailed analyses in the market power report 2021 on the competitive conditions in the electricity generation market, the Bundeskartellamt identified a corresponding intensification in market power for 2021. For the first time in over ten years, the results of the pivotal analysis (residual supply index) indicated a dominant position in the market held by RWE. The number of hours in the year in which the power plants operated by RWE were indispensable to meet the demand for electricity was significantly higher than the 5% statutory threshold for presuming dominance. The analyses also showed an increase in 2021 in the importance of the power plant capacity operated by LEAG and EnBW for meeting Germany's demand for electricity as well as in the importance of electricity imports and thus foreign power plant capacity.

The reduction in the supply of gas due to the Ukraine war in 2022 therefore coincided with an already comparatively lower level of supply in the market for the first-time sale of electricity. This restriction in supply was exacerbated further in the course of the year by other special circumstances such as the relatively low level of production by French atomic energy plants. As a result, it was virtually impossible to use less expensive power plants to substitute electricity generation by gas-fired power plants, which was marked by considerably higher marginal costs, especially at times of peak demand. The legislators' plans, already implemented in some cases, for coal-fired plants to return to the market and to extend the life of nuclear plants should structurally counteract these developments and a deterioration of the situation. However, it is not yet possible to fully assess the actual effects of these measures on market shares and the degree to which individual providers are indispensable in terms of meeting the demand for electricity, and therefore further analyses are being conducted.

At 551.3 terawatt hours (TWh), Germany's net electricity generation in 2021 was 3.3% higher than the 2020 level. Conventional power plants recorded an increase in electricity generation of around 11.6%. There was a steep rise particularly in electricity generation by coal-fired power plants. Generation from renewable energy sources fell by 17 TWh compared with the previous year. This was mainly because there was less wind and sun. The share of renewables in gross electricity consumption was around 40%.

In 2021, net electricity generation not receiving support under the EEG was 35.9 TWh higher than in the previous year and amounted to 347.9 TWh.

The total installed generating capacity stood at 238.4 gigawatts (GW) at the end of 2021 (2020: 236.3 GW).[1] This comprised 99.8 GW of non-renewable and 138.6 GW of renewable capacity. In the renewable energy sector, there was an increase in capacity of 7.5 GW in 2021. A clear increase of withdrawals from the conventional energy market could be observed as a result of the phase-out of nuclear and coal. The return of hard coal and lignite power plants to the market this year under the Maintenance of Substitute Power Stations Act is of course not reflected in the monitoring report's figures for the market conditions in 2021.

[1] The 2020 figure from the 2021 monitoring has been updated.

The growth in renewable energy capacity of 7.5 GW (sum of renewable energy installations with and without payments under the EEG) is due in particular to the larger increase in solar capacity (+5.7 GW). The net growth in onshore wind was 1.6 GW, the same as the previous year.

The development of generation volumes and the energy mix in 2022 are not covered by this report.

Redispatching and feed-in management

Overall, the volume of network congestion management measures was considerably greater in 2021 than in the previous year. The costs for congestion management measures (feed-in management, redispatching including countertrading, and grid reserve provision and use) are provisionally put at around €2.3bn and are thus also considerably higher (2020: €1.4bn).

Electricity network tariffs

Average network tariffs for household customers were considerably higher in 2022 at 8.12 cents per kilowatt hour (ct/kWh). With respect to non-household customers, the arithmetic mean tariffs for commercial customers increased by around 3% to 6.85 ct/kWh and increased considerably for industrial customers by around 11% to 2.96 ct/kWh.

Wholesale electricity markets

The trading volume and liquidity of the wholesale electricity markets remained at a high level in 2021, although the trading volume of the coupled day-ahead 12 o'clock auctions was lower than in the previous year at around 218.7 TWh (2020: 231.2 TWh). Volumes of on-exchange futures trading increased. In 2021, the on-exchange trading volume for Phelix-DE futures stood at 1,450 TWh, an increase of around 2.4% compared to the previous year. Volumes traded off-exchange via broker platforms also recorded growth. The volume of over-the-counter (OTC) clearing of Phelix-DE futures on the European Energy Exchange (EEX) rose by about 4% to 1,750 TWh in 2021, around 20% above the volume traded directly on the exchange.

The second half of 2021 already saw considerable price increases in the energy markets. The spot market Phelix Day Base average for 2021 was about €97.12 per megawatt hour (MWh), compared with an average of €30.46/MWh in the previous year, representing an increase of around 218%. There was also a large increase in the average prices for year-ahead futures. The average for Phelix Base Year Futures in 2021, traded for 2022, was €88.42/MWh, compared with the previous year's average of €40.17/MWh, traded for 2021, which represents an increase of around 120%. The average for Phelix Peak Year Futures in 2021 was €107.23/MWh. This corresponds to an increase of around 119% compared to the previous year's average (€49.04/MWh).

A look at the prices for futures in the course of 2021 shows a continual increase up until the end of the year. While the average price for futures in the previous five years and at the beginning of 2021 was around €50/MWh, on 22 December 2021 prices for Phelix Base Year Futures peaked at €324.50/MWh and for Phelix Peak Year Futures at as much as €410/MWh.

Prices in wholesale electricity trading have once again multiplied since the beginning of the invasion of Ukraine in February 2022. The prices are also extremely volatile at this very high level. By the end of

August, prices for Phelix Base Year Futures had trebled to a peak of around €1,000/MWh, while prices for Phelix Peak Year Futures had quadrupled to around €1,500/MWh. Since then – and in particular since the final halt to direct Russian gas supplies to Germany – prices have halved. At the beginning of October, year-ahead prices stood at around €450/MWh (base) and €600/MWh (peak). The trend in wholesale electricity prices largely mirrors that in gas prices. This is because gas-fired power plants set the price in German wholesale electricity trading during most hours of trading (merit order principle). The situation also deteriorated mid-year because of extremely low water levels on the Rhine and consequent problems in supplying hard coal-fired power plants in the south of Germany.

The trend in prices is now also being exacerbated by numerous nuclear power plant outages in France due to maintenance work and by the need to meet the demand for electricity using generation technologies that have higher marginal costs. The planned extension in the operation of a number of coal and nuclear power plants in Germany should help to bring down prices, although it will still be gas-fired power plants that will frequently set the prices for electricity when demand is high.

Retail electricity markets

As in previous years, the Bundeskartellamt assumes for 2021 that there is currently no single dominant undertaking in the largest electricity retail markets. The combined market share of the four largest undertakings in 2021 was around 25.8% (2020: 28.5%) in the national market for supplying interval-metered customers and 36.1% (2020: 42.8%) in the national market for non-interval-metered customers on non-default contracts. The joint market share of the four biggest providers in 2021 is still well below the threshold for presuming market dominance.

With respect to supplier switching rates, the rate for non-household customers has been fairly constant since 2009. The volume-based switching rate for customers with an annual consumption of more than 10 MWh stood at 10.7% in 2021 (2020: 11.6%). The percentage of household customers' consumption provided by a supplier other than the local default supplier was around 39% (2020: 38%). The number of household customers switching electricity supplier fell to around 4.8mn (2020: 5.4mn). It must be noted, however, that these figures include customers who switched because of their supplier becoming insolvent or stopping their supply to customers, in particular because of the large increase in procurement prices. In 2021 at least, there was another slight increase in the number of undertakings operating in the market for household customers, who had a choice between an average of 147 different suppliers in 2021 (2020: 142).

The major distortions in the market due to, among other things, the war in Ukraine also had a negative impact in the course of 2022 on both the market structure and the ability and willingness of electricity retail customers to switch supplier. As well as suppliers exiting the market, for example because of insolvency, changes in the business models of some suppliers, such as smaller or local electricity suppliers no longer operating nationwide, have reduced supplier diversity and, consequently, customers' switching options. It is not yet possible to put a figure on the effect of these developments over the year. Nor is it yet clear to what extent the current deterioration in the market environment will prove to have a sustainable structural effect or merely be a temporary phenomenon of the extreme price volatility.

The large increase in prices in wholesale electricity trading was already reflected in the trend in retail prices up to 1 April 2022, which is the date for reporting prices in the energy monitoring survey. The average total price (excluding value added tax (VAT) and possible reductions) for industrial customers with an annual consumption of 24 gigawatt hours (GWh) as at 1 April 2022 was about 22.51 ct/kWh, up 5.57 ct/kWh on the average for April 2021. This represents an increase of nearly 33%. The average total price (excluding VAT) for commercial customers with an annual consumption of 50 MWh in April 2022 was 25.65 ct/kWh, up 2.42 ct/kWh on the previous year and corresponding to an increase of about 10.4%. These increases are accounted for by the price components controlled by the supplier, and in particular energy procurement costs, in view of the significant rise in wholesale prices for electricity up to 1 April 2022. More recent developments since 1 April 2022 are not yet included.

The picture is similar with prices for the supply of electricity to household customers as at 1 April in 2021 and 2022. The average price for household customers rose considerably from 32.63 ct/kWh on 1 April 2021 to 36.06 ct/kWh on 1 April 2022, corresponding to an increase of around 10.5%. This average is calculated by weighting the individual prices across all contract models for an annual consumption of 2,500 kWh to 5,000 kWh according to consumption volumes to obtain a reliable average price for household customers.

As with industrial and commercial customers, the rise in retail prices as at 1 April 2022 is due to the increase in the price component controlled by the supplier (energy procurement, supply and margin). While the electricity price component not controlled by the supplier (taxes, levies, network tariffs) was down 1.51 ct/kWh on the previous year overall, the component controlled by the supplier was up 4.65 ct/kWh. This rise is largely due to the trend in wholesale prices for electricity procured at short notice, with prices in April 2022 around 390% up on the previous year. The overall increase in energy procurement costs is comparatively small because only about 10% of electricity is procured at short notice (one quarter, one month and one day in advance).

The price component controlled by the supplier (energy procurement, supply and margin) accounted for about 13.54 ct/kWh (38% of the total electricity price) as at 1 April 2022 and had thus increased considerably, as with industrial and commercial customers. The average network tariff and the meter operation charge added up to 8.12 ct/kWh in 2022, around 23% of the total price. The EEG surcharge (3.72 ct/kWh) accounted for around 10.3% of the total price (2021: 20%).

In addition, for the first time, prices as at 1 April 2022 for household customers with their local default supplier (on a default or non-default contract) were lower than the prices with suppliers that were not the local default supplier. In previous years there had already been a noticeable convergence of the prices of non-default contracts with the default supplier and with suppliers other than the local default supplier. For the first time, prices in 2021 for household customers on a non-default (but not default) contract with their local default supplier were below the average prices of suppliers that were not the local default supplier. This phenomenon is presumably also due to the large increase in wholesale prices and the suppliers' procurement strategies. Suppliers also operating as a local default supplier are mostly able to procure electricity well in advance because they can plan better, which is why the short-term increase in wholesale prices has not had an immediate effect on their retail prices. By contrast, other suppliers not operating as a local default supplier have been procuring their electricity at much shorter notice. This can have a more immediate effect on the level of these suppliers' retail prices than with suppliers procuring electricity further in advance.

The rise in wholesale prices for electricity had a further disruptive effect on the supply of electricity to retail customers in the second half of 2021 and at the beginning of 2022. A number of suppliers stopped supplying customers or became insolvent as a result of the increase in wholesale prices. These included notably one larger electricity supplier as well as several smaller ones. The suppliers' customers were automatically transferred to their default supplier without their energy supply being disrupted. This above-average increase in customer numbers prompted several default suppliers to introduce different general prices for existing and new customers. One particular reason for doing this was that the energy they had to procure at short notice for their new customers was considerably more expensive than the energy procured further in advance for their existing customers.

The legal admissibility of this "price split" was subsequently the subject of court proceedings. The legislators responded with an amendment of the Energy Industry Act (EnWG) in July 2022 to prohibit suppliers from having different general prices for existing and new customers on default contracts. However, the general prices for customers automatically transferred to their local default supplier (fallback supply) are allowed to be higher than those for customers (including household customers) on default contracts and can also be changed on the first and the fifteenth of each month.

It is not yet clear how far the upheavals caused by the current crisis will have a sustainable effect on the market structure or how far the measures already taken or discussed will have an impact.

There was only a slight increase in 2021 in the number of customers whose electricity supply was disconnected. In 2021, a total of 234,926 customers were disconnected, representing a year-on-year increase of around 2% (2020: 230,015). The slight rise in the number of disconnections in 2021 is partly due to disconnections carried over from 2020. There was a clear drop in the number of disconnections in 2020 owing to the right to withhold performance set out in Article 240 section 1 of the Introductory Act to the Civil Code (EGBGB), which applied during part of the coronavirus pandemic. In addition, a large proportion of the suppliers had voluntarily decided not to disconnect their customers.

In 2021, around half of the suppliers surveyed by the Bundesnetzagentur again voluntarily decided not to disconnect customers. Suppliers often accommodated customers by offering them special or individual payment arrangements. The trend in the number of electricity customers disconnected since 2017 shows that the number of disconnections does not necessarily correlate with the increase in prices.

The Bundesnetzagentur collects statistics on the number of customers disconnected for the previous calendar year and therefore no figures for 2022 are yet available.

Heating electricity

Overall, the volume of electricity supplied for heating in 2021 was higher than in the previous year. According to the volumes reported by the suppliers, just under 1.98mn market locations were supplied with about 14.3 TWh of electricity for heating purposes. Around 38.8% of the total volume of electricity for heating in 2021 was supplied by non-default suppliers (2020: 37.3%). However, the large rise in the percentage of heating electricity supplied by non-default suppliers between 2019 and 2020 was due to one unique circumstance (the sale of E.ON's heating electricity business to LichtBlick SE as one of the conditions for clearance of the merger between E.ON and innogy under competition law).

The supplier switching rate in the heating electricity segment based on the number of market locations was lower than in the previous year. The switching rate for 2021 was around 4.6% by volume and around 5.4% by market location. The present extreme increases in electricity prices, partly due to the war in Ukraine, are also having a significant negative impact as described above on supplier diversity and the willingness and ability for customers to switch supplier in this special, but increasingly important retail segment. As with the supply of electricity to household customers, it is not yet clear how the situation will develop or how far the deterioration in the competitive environment will have a sustainable structural effect.

The heating electricity segment is also characterised by considerable price increases. The total gross price for night storage heating was 25.55 ct/kWh as at 1 April 2022 and thus higher than the previous year's level of 23.93 ct/kWh. The average total gross price for heat pump electricity was 25.07 ct/kWh and thus also higher than the previous year's average of 23.80 ct/kWh. The increase is mainly due to the part of the price controlled by the supplier, in particular for energy procurement. Here, too, developments that occurred after the monitoring date are not covered in this report.

Electricity imports and exports

Electricity exports again exceeded imports in 2021. Germany's electricity exports were up in 2021 compared to a year earlier. Cross-border trade volumes for electricity amounted to 93 TWh in 2021 (2020: 83 TWh). The 2021 export balance was 14 TWh, making the export surplus worth €775mn.

As stated in the Bundeskartellamt's 2021 market power report, the German electricity market has been dependent on imports to meet the country's demand via the market – in other words without reserve power plants – in individual instances for a number of years and is now increasingly dependent in certain hours of the year.

The ability of foreign power plants to provide these imports has been limited in particular as a result of the technical outages of numerous French atomic energy plants because of maintenance work. At the same time, power plant closures in Germany have led to a further reduction in supply. This was one of the factors prompting the Federal Ministry for Economic Affairs and Climate Action (BMWK) to initiate the second grid stress test. Overall, there was an increase in electricity exports from Germany in 2022.

Gas imports and exports

The total volume of natural gas imported into Germany in 2021 was 1,458 TWh. Imports to Germany were thus down by 24 TWh or around 2% from the previous year's figure of 1,482 TWh.[2] The main sources of gas imports to Germany in 2021 were Russia and Norway. However, the Netherlands, as an established and liquid European producer, trading hub and point of arrival for LNG shipments with connections to natural gas fields in Norway and the United Kingdom, was also a significant source of imports for Germany.

[2] The figures for 2020 have been adjusted for this report in line with the latest calculation methodology and are therefore not comparable with those in the Monitoring Report 2021. For the first time, the export volumes at the Brandov cross-border interconnection point were deducted to avoid the transit volumes – the volumes imported via the Nord Stream 1 pipeline and the Greifswald cross-border interconnection point – being counted twice at the Waidhaus cross-border interconnection point.

The total volume of gas imported into Germany in the period from January to October 2022 was 1,161.1 TWh. This represents a decrease of 52.1 TWh compared with the previous year's figure (for January to October 2021) of 1,213.2 TWh.

The gas imports situation has intensified as a result of the reduction in supply and the volumes from Russia since the beginning of the war of aggression against Ukraine in February 2022. According to the Bundesnetzagentur's daily status reports on the supply of gas in Germany, gas flows from Russia to Germany were last at the normal level of around 1,800 GWh/day on 10 May 2022. The halting of Russian gas deliveries to Poland and Bulgaria has so far had no impact on the security of supply in Germany. Following Russia's imposition of sanctions on Gazprom Germania and almost all the company's subsidiaries, the volumes of gas flowing through Ukraine to Waidhaus in Germany were more than 25% down on the previous day because of the reduction in transit flows.

On 14 June 2022, gas flows from the Nord Stream 1 pipeline were at about 60% of maximum capacity, but were down to 40% the following day. As from 11 July 2022, gas flows were at zero percent because of planned maintenance work on the Nord Stream 1 pipeline scheduled until 21 July 2022. Gas flows through Nord Stream 1 resumed on 22 July 2022 and were at about 40% of maximum capacity. On 27 July 2022, there was another, announced reduction in gas flows from Nord Stream 1 to around 20% of maximum capacity.

These reduced gas flows through the Nord Stream 1 pipeline were then suspended indefinitely on 2 September 2022, allegedly for technical reasons. On 26 September 2022, a sudden drop in pressure first in Nord Stream 2's pipe A and then in both Nord Stream 1 pipes was identified. The damage to the Nord Stream 1 and 2 pipelines did not have any effect on the gas supply. No gas had been delivered through Nord Stream 1 since the beginning of September anyway, and Nord Stream 2 had never been put into operation. Gas importers were forced and able to find alternative sources of gas to make up for the lack of Russian supplies, but at a high cost. The reductions in supplies from Russia were counteracted by an increase in imports from Norway and via the pipeline networks in the Netherlands, Belgium and, more recently, France. The overall situation with gas imports is not expected to improve in the short term; the operation of the LNG terminals (FSRUs) and a subsequent increase in natural gas imports with LNG promise to ease the situation, but not until 2023.

Gas supply disruptions

In 2021, the average interruption in supply per connected final customer was 2.18 minutes (2020: 1.09 minutes in the year). This figure of around two minutes is slightly above the long-term average. Despite the increase, this figure shows that the German gas network still has a high quality of supply. The increase in the average interruption duration was mainly due to third-party damage caused to gas pipes during construction work.

Market area conversion

The year 2021 was marked by the disastrous flooding in July that led to the loss of more than one hundred lives and huge damage to property. The flooding also affected areas in which market area conversion work was in progress. The market area conversion was still affected by the coronavirus pandemic in early 2022. As in the previous year, people working from home and travelling less actually facilitated the conversion process. Almost all network operators and companies carrying out adjustments reported that it was easier to make contact with customers for the conversions. The market area conversion was overshadowed by the war in Ukraine, which created uncertainty among many customers regarding the conversion to H-gas. This uncertainty was resolved with the help of transparent information from the network operators and companies carrying out the adjustments. The market area conversion is consequently on schedule and making good progress.

Gas storage facilities

The market for the operation of underground natural gas storage facilities is still highly concentrated. The cumulative market share of the three largest storage facility operators stood at around 66.9% at the end of 2021, representing a slight decrease compared to the previous year (67.2%).

Germany's gas storage facilities are key to the supply of gas in particular in the winter months. The total maximum usable volume of working gas in underground storage facilities as at 31 December 2021 was 278.51 TWh. Of this, 137.02 TWh was accounted for by cavern storage, 119.90 TWh by pore storage and 21.59 TWh by other storage facilities.

The entry into force of the Gas Storage Act on 30 April 2022 and the introduction of statutory requirements for storage levels serve to increase security in the supply of gas in Germany. The target storage level of 85% for 1 October 2022 was already reached in mid-September 2022. Storage levels on 2 November 2022, the editorial deadline for the monitoring report, stood at 99.19%.

Gas network tariffs

The average network tariff for household customers was 1.62 ct/kWh in 2022 and thus around 2% higher than in the previous year. For commercial customers, the average network tariff in 2022 was 1.25 ct/kWh, slightly lower than in the previous year (2021: 1.28 ct/kWh). For industrial customers, there was a significant increase of just over 37% to 0.44 ct/kWh (2021: 0.32 ct/kWh).

Wholesale natural gas markets

Following a large decrease in the demand for natural gas in 2020 during – and presumably due to – the coronavirus pandemic, there was an increase again in 2021 as a result of the global economic recovery. The volumes traded on the exchange increased by around 36% for the spot market and around 41% for the futures market, both well over 2019 levels. There was also another significant rise in the wholesale prices for gas. The non-weighted annual average of the European Gas Index (EGIX), which is taken as the reference price for the medium-term procurement market, increased year-on-year by around 403% and overtook the border price calculated by the Federal Office for Economic Affairs and Export Control (BAFA), which rose year-on-year by around 116%.

It should be noted that this report covers developments in prices and volumes in 2021; the developments in 2022 are not included in the figures. However, the situation in the wholesale gas markets has also intensified further since the invasion of Ukraine in February 2022. Prices have doubled again, in particular since mid-2022, and are very volatile at this high level. This development is due to the fundamental factors described in connection with gas imports.

Retail gas markets

The levels of concentration in 2021 in the two largest gas retail markets for standard load profile (SLP) and interval-metered customers were still well below the statutory thresholds for presuming market dominance. In 2021, the cumulative sales of the four largest companies to SLP customers were about 102.7 TWh, while to interval-metered customers they were around 123.9 TWh. The aggregate market share of the four largest companies (CR4) in 2021 was around 26% for SLP customers (the same as in the previous year) and just 24% for interval-metered customers (2020: 28%).

The total consumption amount of non-household customers affected by supplier switches in 2021 was 107.6 TWh, corresponding to a clear year-on-year increase of 27 TWh from 2020 levels. The switching rate for non-household customers increased to more than 10% again (2020: 7.3%).

The total number of supplier switches by household customers fell in 2021 by just over 0.5% to around 1.64mn. Around 1.3mn of these household customers changed by cancelling their previous supply contract (voluntary switching). It should be noted that the total number of switches for 2021 does not include "involuntary" switching by customers whose contracts were cancelled by their suppliers, including insolvent suppliers, who were no longer able to supply their customers because of the increase in prices. The number of "involuntary" supplier switches amounted to around 345,200. The overall numbers-based supplier switching rate for household customers, based on a total number of household customers of 12.8mn as reported by the gas distribution system operators (DSOs) and excluding insolvency-related "involuntary" switches, was 12.8% (2020: 12.9%). Possible reasons for the decrease in the number of customers switching supplier include the increases in gas prices beginning in the third quarter of 2021. Customers may have been reluctant to switch to a new gas supplier because of the lack of alternatives in terms of price.

There was a significant decrease of around 30% in 2021 in the number and volume of contract switches with the same suppliers. The volume-based contract switching rate was down to 3.1% from 4.8%. As with supplier switching, the underlying reasons include the increases in gas prices beginning in the third quarter of 2021. Household customers kept their existing contracts because of the general developments in prices and because of the lack of alternatives. In 2021, at least, the number of undertakings operating in the market was the same as in 2020. Household customers could choose on average from among 113 different suppliers in 2021.

As in the retail electricity market, there were major distortions in the retail market for gas during 2022 due to, among other things, the war in Ukraine. In addition to suppliers exiting the market because of insolvency, for instance, some suppliers are currently changing their business models, with smaller or local gas suppliers no longer operating nationwide in supplying customers under non-default contracts. This means that customers have had considerably fewer options for new contracts, at least for some of the time. Here, too, it is not yet possible to put an exact figure on the effect of this development over the year. Nor is it yet clear whether the current negative developments in the market structure and the ability and willingness of customers to switch supplier will prove to have a sustainable structural effect.

The volume-weighted gas price for household customers across all contract categories increased to 9.88 ct/kWh as at 1 April 2022. In the price across all contract categories, the largest price component "energy procurement, supply and margin", which makes up around 45%, rose by over 86% from 2.95 ct/kWh to 5.5 ct/kWh.

The volume-weighted gas price for customers on a default contract as at 1 April 2022 was 9.51 ct/kWh (2021: 7.45 ct/kWh), corresponding to an increase of around 28% compared to the previous year. On 1 April 2022, the volume-weighted price for customers under a non-default contract with the default supplier was 9.02 ct/kWh, an increase of about 37% compared to 2021 (6.58 ct/kWh).

On 1 April 2022, the volume-weighted price for a contract with a supplier other than the local default supplier was 10.95 ct/kWh, an increase of just over 71% compared to the previous year (2021: 6.41 ct/kWh). No distinction is made in the price survey between existing and new contracts. The prices are averages that may not reflect the prices applicable to new contracts because of price guarantees attached to existing contracts.

The gas prices for non-household (industrial and commercial) customers as at 1 April 2022 showed substantial year-on-year increases as a result of the effects of the war in Ukraine. The arithmetic mean of the overall price (excluding VAT) for an annual consumption of 116 GWh ("industrial customer") was 6.76 ct/kWh, 3.81 ct/kWh or around 129% higher than the previous year's figure. The arithmetic mean of the overall price (excluding VAT) for an annual consumption of 116 MWh ("commercial customer") was 7.19 ct/kWh on the reporting date, an increase of 2.45 ct/kWh or around 52% year-on-year. Because the monitoring is based on a specific date, 1 April 2022, developments that occurred after this time are not included.

In addition, for the first time, gas prices as at 1 April 2022 for household customers with their local default supplier (on a default or non-default contract) were also lower than the prices of suppliers that were not the local default supplier. This phenomenon is presumably also due to the large increase in wholesale prices and the gas suppliers' procurement strategies. Suppliers also operating as a local default supplier are mostly able to procure gas well in advance because they can plan better, which is why the short-term increase in wholesale prices has not had an immediate effect on their retail prices.

By contrast, other suppliers not operating as a local default supplier more often procure their gas at much shorter notice. This can have a more immediate effect on the level of these suppliers' retail prices than with suppliers procuring gas further in advance.

The rise in wholesale prices for gas had a further disruptive effect on the supply of gas to retail customers in the second half of 2021 and at the beginning of 2022. A number of suppliers stopped supplying customers or became insolvent as a result of the increase in wholesale prices. These suppliers included notably one larger gas supplier as well as several smaller suppliers. The suppliers' customers were automatically transferred to their default supplier without their energy supply being disrupted. This above-average increase in customer numbers prompted several suppliers to introduce different general prices for existing and new customers. One particular reason for doing this was that the energy they had to procure at short notice for their new customers was considerably more expensive than the energy procured further in advance for their existing customers.

The legal admissibility of this "price split" was subsequently the subject of court proceedings. The legislators responded with an amendment of the EnWG in July 2022 to prohibit suppliers from having different general prices for existing and new customers on default contracts. However, the general prices for customers automatically transferred to their local default supplier (fallback supply) are allowed to be higher than those for customers (including household customers) on default contracts and can also be changed on the first and the fifteenth of each month.

It is not yet clear how far the upheavals caused by the current crisis will have a sustainable effect on the structure of the gas market as well or how far the measures already taken or discussed will have an impact.

The number of disconnections carried out by the network operators in 2021 was 26,905, representing an increase of about 12% compared to the previous year (2020: 23,991). The increase in the number of disconnections in 2021, especially among gas customers, is partly due to disconnections carried over from 2020. There was a clear drop in the number of disconnections in 2020 owing to the right to withhold performance set out in Article 240 section 1 EGBGB, which applied during part of the coronavirus pandemic. In addition, a large proportion of the suppliers had voluntarily decided not to disconnect their customers.

In 2021, around half of the suppliers surveyed by the Bundesnetzagentur again voluntarily decided not to disconnect customers. Suppliers often accommodated customers by offering them special or individual payment arrangements.

The Bundesnetzagentur collects statistics on the number of customers disconnected for the previous calendar year and therefore no figures for 2022 are yet available. Based on the figures currently available, the number of gas disconnections correlates even less than electricity disconnections with the increase in prices.

Developments in the electricity markets

Summary

Russia's invasion of Ukraine has left a profound mark not only on the gas markets but also on the electricity markets. The Bundesnetzagentur and the Bundeskartellamt have made an effort to incorporate any provisional but reliable figures available into the monitoring report. The Monitoring Report 2022 essentially relates to the situation in 2021, however, since definitive figures checked for plausibility and quality are only available for 2021. Any validated figures for 2022 have been explicitly included; otherwise, the figures for 2021 are also valid in the sense that they indicate the longer-term developments as well. The Bundeskartellamt will present the development of market concentration in 2022 in its forthcoming report on the competitive conditions in the field of electricity generation ("market power report").

Generation

At 551.3 TWh, Germany's net electricity generation in 2021 was higher than the 2020 level (533.9 TWh) but still lower than the 2019 level. Generation from non-renewable energy sources increased by 34.4 TWh or 11.6% despite the withdrawal of a number of power plants from the market as a result of the phase-out of coal. One reason for this is that the conventional energy sources were mostly needed to make up for the lack of renewable generation when there was little wind or sun. There was a particularly large increase in net electricity generation from coal-fired power plants: 11.1 TWh more was generated in hard coal-fired power plants (+27.6%) and 19.3 TWh more in lignite-fired power plants (+23.1%). Against the trend of the last few years (with the exception of 2018), natural gas power stations produced less electricity (-4.3 TWh or -5.2%).

There was a 7.2% decrease in generation from renewable energy sources to 219.7 TWh. The share of renewable electricity as a proportion of gross electricity consumption in 2021 was 40%.[3]

Installed generating capacity was characterised by a further increase in renewable capacity in 2021. Overall, renewable capacity growth amounted to 7.5 GW. The year-on-year increase in 2020 was 6.7 GW.[4] The largest increases in 2021 were in solar photovoltaic (+5.7 GW) and onshore wind (+1.6 GW). Non-renewable generating capacity (nuclear, lignite, hard coal, natural gas, mineral oil products, pumped storage and other sources) decreased by 5.4 GW. Total (net) installed generating capacity thus increased to 238.4 GW at the end of 2021, with 99.8 GW of non-renewable and 138.6 GW of renewable capacity. The non-renewable generating capacity includes power stations operational in the market and those outside the market (for example power plants in the grid reserve or that have been shut down temporarily).

The installed capacity of installations eligible for payments under the EEG in Germany stood at 134.2 GW at the end of 2021 (2020: 126.7 GW). This represents an increase of 7.5 GW (+5.9%). A total of 203.4 TWh of electricity from renewable energy installations received payments under the EEG in 2021. Electricity generation from installations eligible for EEG payments thus decreased by 8.4%. EEG payments were down 34% to €19.7bn. In 2021, renewable installation operators thus received an average of 9.7 ct/kWh

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[3] If the share of renewables generation is taken to be about 42.8% or more, it usually relates to the definition of consumption as the "grid load" (for example on the SMARD website).

[4] The 2020 figure from the 2021 monitoring has been updated.

under the EEG.[5] The solar expansion target of 63 GW for 2022 as set out in the EEG 2021 was achieved as early as mid-2022, and the onshore wind expansion target of 57 GW will be met by the end of the year.

Cross-border trading

Electricity exports again exceeded imports in 2021. Germany's electricity exports were up in 2021 compared to a year earlier. Cross-border trade volumes for electricity amounted to 93 TWh in 2021 (2020: 83 TWh). Germany is still one of Europe's biggest electricity exporters. The 2021 export balance was 14 TWh, making the export surplus worth €775mn.

Networks

Network expansion

The projects listed in the Power Grid Expansion Act (EnLAG) (as at the second quarter of 2022) comprise lines with a total length of about 1,821 km. Around 8 km are currently in the spatial planning procedure and around 205 km are in or about to start the planning approval procedure. A total of 360 km have been approved and are under or about to start construction, and 1,248 km have been completed. The projects listed in the Federal Requirements Plan Act (BBPlG) (as at the second quarter of 2022) comprise lines with a total length of about 10,413 km. The projects designated as crossing federal state or national borders, which fall under the responsibility of the Bundesnetzagentur, account for around 6,425 km of this total. The total length of the lines in Germany will largely depend on the route of the north-south corridors and will become apparent in the course of the procedure. In the second quarter of 2022, some 2,662 km of the total were ready to start the planning approval procedure. Around 394 km are in the spatial planning or federal sectoral planning procedure, and 5,815 km are in or about to start the planning approval or notification procedure. A total of 656 km have been approved and are under or about to start construction, and 886 km have been completed. Additionally, 218 km are being carried out in procedures by the Federal Maritime and Hydrographic Agency (BSH).

Investments

In 2021, investments in and expenditure on network infrastructure by the network operators amounted to around €13,556mn (2020: €12,332mn) (both figures under commercial law).[6] This comprised €8,395mn of investments and expenditure by the DSOs and €5,161mn by the four German transmission system operators (TSOs). Investments by the TSOs in 2021 were up by around 21% on the previous year (2020: €3,862mn, 2021: €4,677mn). Investments by the DSOs decreased slightly (2020: €4,838mn, 2021: €4,835mn).

Congestion management

The total volume of network congestion management measures was considerably higher in 2021 than the year before. The costs for congestion management measures (feed-in management, redispatching

[5] The average EEG payment is calculated by dividing the total sum paid under the EEG in a year by the total amount of renewable electricity fed in during that year.

[6] Investments and expenditure are defined in the glossary. The values under commercial law do not correspond to the implicit values included in the system operators' revenue cap in accordance with the provisions of the Incentive Regulation Ordinance (ARegV).

including countertrading, and grid reserve provision and use) are provisionally put at around €2.3bn and are thus also considerably higher (2020: €1.4bn).

Redispatching measures: the reductions and increases in feed-in from conventional operational and grid reserve power plants requested as part of the redispatching process amounted in 2021 to about 21,546 GWh (10,804 GWh of reductions and 10,742 GWh of increases). The total volume of requested reductions and increases in feed-in from power plants in 2021 was therefore higher than in 2020 (16,795 GWh). In particular, the volume of electricity-related measures was higher than in the previous year. There was a further increase in 2021 in the volume of countertrading, data on which is combined with redispatching. The increase is largely due to the bilateral agreement between Germany and Denmark. This agreement provides for minimum trading capacities across the border between western Denmark and Germany as well as for cooperation between the TSOs on countertrading measures. The latter incurred costs of €396.7mn (2020: €134.1mn).

The costs for redispatching measures using operational and grid reserve power plants and for countertrading measures are provisionally put at around €1,236mn in 2021 and are thus about 260% higher than the previous year's level (2020: €474.7mn). The increase in the costs for redispatching measures using operational and grid reserve power plants is largely accounted for by the fourth quarter of 2021. The large increase in the volume of the measures was due firstly to problems with transporting coal because of low river levels and secondly to the big increase in wholesale prices.

Grid reserve power plants: according to the Bundesnetzagentur's current information, the costs of reserving the grid reserve plant capacity plus costs not dependent on the use of the reserve are provisionally put at around €243mn in 2021 and are thus higher than in the previous year (2020: €196mn). The costs of using the grid reserve amounted to around €249mn, considerably more than in the previous year (2020: €100mn).

Feed-in management measures: in absolute terms, the volume of curtailments from electricity from renewable sources as part of feed-in management measures was 5,818 GWh in 2021, around 5% lower than in the same period of the preceding year (2020: 6,146 GWh). The decline was probably due to network expansion projects successively going into operation.

Onshore wind is the most-curtailed energy source, making up around 59% of energy curtailed, followed by offshore wind now with 36%. Installations in Lower Saxony are curtailed the most (45%), followed by those in Schleswig-Holstein (32%). Although around 63% of curtailments were in the distribution system, around 73% of the network congestion that caused them was in the transmission system or in the network level between the transmission and distribution systems.

The estimated compensation claims of installation operators for these curtailments ran to about €807mn in 2021 (2020: €761mn). This rise, which amounts to about 6%, was caused by the greater curtailment of offshore wind turbines. Compensation payments are covered by final customers via the network tariffs although a share of these costs is offset by the reduction in the EEG surcharge, which network users also have to pay, since curtailed installations do not receive any remuneration or market premium under the EEG.

Network tariffs

There was a clear increase in the volume-weighted network tariffs (including meter operation charges) for household customers for 2022 (+0.6 ct/kWh). The weighted average for household customers with an annual consumption of 2,500 to 5,000 kWh was 8.12 ct/kWh. With respect to non-household customers, the arithmetic mean tariffs for commercial and industrial customers are higher than the previous year's levels. The network tariffs (including meter operation charges) for commercial customers increased by around 3% to 6.85 ct/kWh (2021: 6.64 ct/kWh). The network tariffs (including meter operation charges) for industrial customers increased by around 11% to 2.96 ct/kWh (2021: 2.67 ct/kWh). These increases confirm the information provided last year by the DSOs under the Bundesnetzagentur's responsibility about the provisional network tariffs for 2022. According to that information, average network tariffs in Germany were set to increase noticeably in 2022. Reasons include higher upstream network costs in the control areas of Amprion and TransnetBW, investments in the networks, rising non-wage labour costs for many network operators, and increasing costs for the procurement of energy to cover transmission losses due to higher electricity prices on the power exchange.

Costs for system services

The net costs for system services, which are passed on to final customers, were considerably higher in 2021 than in 2020 at around €3,437.3mn (2020: €2,102.7mn). Major costs were the costs for congestion management at around €2,285.4mn (2020: €1,432.2mn), contracting frequency containment reserves (FCR), automatic frequency restoration reserves (aFRR) and manual frequency restoration reserves (mFRR) at a total of €568.6mn (2020: €152.4mn), and loss energy at €458.4mn (2020: 450.5mn).

The increase in the costs for congestion management is due firstly to the large increase in the volume of the measures owing to problems with transporting coal because of low river levels and secondly to the big increase in wholesale prices. The latter also had an impact on the costs for contracting reserves.

Wholesale

The trading volume and liquidity of the wholesale electricity markets remained at a high level in 2021, although there was a year-on-year decrease in the trading volume of the coupled day-ahead 12 o'clock auctions to around 218.7 TWh (2020: 231.2 TWh).

Volumes of on-exchange futures trading increased. In 2021, the on-exchange trading volume for Phelix-DE futures stood at 1,450 TWh, an increase of around 2.4% compared to the previous year. Volumes traded off-exchange via broker platforms also recorded growth. The volume of OTC clearing of Phelix-DE futures on the EEX rose by about 4% to 1,750 TWh in 2021, around 20% above the volume traded directly on the exchange.

The situation in the energy markets has intensified since the beginning of the war in Ukraine in February 2022. Prices in the wholesale markets for electricity and gas have risen considerably again and are very volatile. The second half of 2021 already saw considerable price increases in the energy markets. The spot market Phelix Day Base average for 2021 was about €97.12/MWh, compared with an average of €30.46/MWh in the previous year, representing an increase of around 218%. There was also a large increase in the average prices for year-ahead futures. The average for Phelix Base Year Futures in 2021, traded for 2022, was €88.42/MWh, compared with the previous year's average of €40.17/MWh, traded for 2021, which represents an increase of around 120%. The average for Phelix Peak Year Futures in 2021 was €107.23/MWh. This corresponds to an increase of around 119% compared to the previous year's average (€49.04/MWh).

A look at the prices for futures in the course of 2021 shows a continual increase up until the end of the year. On 22 December 2021, prices for Phelix Base Year Futures peaked at €324.50/MWh and for Phelix Peak Year Futures at as much as €410/MWh.

Retail

Contract structure and competition

As in previous years, the Bundeskartellamt assumes that there is currently no single dominant undertaking in the largest electricity retail markets and that the four biggest providers are still well below the threshold for presuming market dominance. The combined market share of the current four largest undertakings was around 25.8% (2020: 28.5%) in the national market for supplying interval-metered customers and 36.1% (2020: 42.8%) in the national market for non-interval-metered customers on non-default contracts.

The number of electricity suppliers from which retail customers can choose increased slightly. In 2021, final customers could choose between an average of 167 suppliers in each network area (not taking account of corporate groups), compared to 162 suppliers in 2020. The average number of suppliers for household customers in Germany was 147 (2020: 142).

As in 2020, a relative majority of 37% of household customers' consumption was supplied on non-default contracts with local default suppliers. The volume-weighted percentage of household customers' consumption supplied under default contracts stood at around 24% (2020: 26%) and was thus about the same as in the previous year. The percentage of household customers' consumption provided by a supplier other than the local default supplier is around 39% (2020: 38%). Overall, about 61% of all household customers' consumption is still provided by default suppliers (under either default or other contracts). Thus the strong position that default suppliers have in their respective service areas remains broadly unchanged.

There was a decrease in the number of supplier switches in 2021 to almost 4.8mn. The switching rate based on the total number of household customers was 9.7% and thus just over one percentage point lower than in the previous year (2020: 10.9%). It should be noted that the 2021 figure does not include switches because of insolvencies or (involuntary) switches because of suppliers cancelling contracts (the number including these switches is around 5.7mn). In addition, about 1.5mn household customers changed energy supply contract with the same supplier. The supplier switching rate for non-household customers – with an annual consumption of more than 10 MWh – based on consumption volumes was 10.7% (2020: 11.6%).

Disconnections

The number of disconnections actually carried out by the network operators was 234,926, representing an increase of 2% compared to the previous year (2020: 230,015). The number of disconnection notices issued by suppliers to household customers was very much higher, although it was lower than the year before. The number of notices issued was approximately 4mn, of which about 740,000 were passed on to the relevant network operator with a request for disconnection (2020: 4.2m notices and 696,000 requests). The amendment of the Electricity Default Supply Ordinance in December 2021 introduced stricter conditions for disconnecting customers on default contracts.

Price level

The average total price (excluding VAT and possible reductions) for industrial customers with an annual consumption of 24 GWh as at 1 April 2022 was about 22.51 ct/kWh, up 5.57 ct/kWh on the average for April 2021. The average total price (excluding VAT) for commercial customers with an annual consumption of 50 MWh in April 2022 was 25.65 ct/kWh, up 2.42 ct/kWh on the previous year. The increase in these prices is mainly due to the price components controlled by the suppliers, which include the rising energy procurement costs. Because the monitoring is based on a specific date, 1 April 2022, developments that occurred after this time are not included.

Data was collected from the suppliers operating in Germany on the prices for household customers as at 1 April 2022. The average price (including VAT) increased significantly to 36.06 ct/kWh (2021: 32.63 ct/kWh). This average is calculated by weighting the individual prices across all contract models for an annual consumption of 2,500 kWh to 5,000 kWh according to consumption volumes to obtain a reliable average for the electricity price for household customers.

The electricity price is made up of a component controlled by the supplier (energy procurement, supply and margin) and a component not controlled by the supplier (levies, taxes, etc). While the component not controlled by the supplier accounted for 62% in 2022 and was thus smaller than in the previous year (2021: 74%), the component controlled by the supplier accounted for about 38% and was therefore considerably larger (2021: 26%). This contributed significantly to the rise in the retail price. The underlying cause is the large increase in wholesale prices, which has an effect in particular on the energy volumes procured by suppliers at short notice. The network tariff in 2022 was also higher than in the previous year and thus still at a high level. The EEG surcharge (3.72 ct/kWh) accounted for only around 10% of the total price. It should be noted that the prices relate to a specific reporting date and do not take account of the early discontinuation of the EEG surcharge on 1 July 2022. If the EEG surcharge had been discontinued before the reporting date, 1 April 2022, and assuming that prices include the full EEG surcharge, the average price (including VAT) would be 31.64 ct/kWh.

Compared to 2021, the average price for household customers on default contracts with an annual consumption of 2,500 kWh to 5,000 kWh increased to 35.70 ct/kWh (2021: 33.80 ct/kWh). The average price for customers on a non-default contract with their default supplier was 34.86 ct/kWh (2021: 31.89 ct/kWh). In 2022, as in the previous year, prices with the default supplier were lower than prices with suppliers that were not the local default supplier. For the first time, prices for both types of contract with the local default supplier (default and non-default contracts) were lower than those for non-default contracts with suppliers that were not the local default supplier. The price for customers on a contract with a supplier other than their local default supplier increased by around 14% to 37.22 ct/kWh (2021: 32.70 ct/kWh). This is presumably due to the suppliers' different procurement strategies. While default suppliers tend to have longer-term procurement strategies, suppliers not operating as a default supplier presumably usually procure their energy at shorter notice. This is also reflected in the number of insolvencies and supply contract cancellations among suppliers not operating as a local default supplier.

Surcharges

The network operators estimated that they would pass on around €17.2bn in surcharges to network users in 2022. This total comprises the EEG surcharge (€12.96bn), the offshore network surcharge (€1.48bn), the section 19 Electricity Network Charges Ordinance (StromNEV) surcharge (€1.22bn), the Combined Heat and Power Act (KWKG) surcharge (€1.49bn) and the interruptible loads surcharge (€0.014bn). The sum to be refinanced through the EEG surcharge therefore still makes up the largest share (about 75%) out of all the surcharges, although it is already considerably lower than in the previous year (2021: €22.28bn). The federal government assistance of €3.25bn that was planned for 2022 as a means of capping the EEG surcharge (assistance in 2021: €10.8bn) is not required because of the high exchange prices for electricity.

In its Climate Action Programme 2030, the German government decided to introduce a national fuel emissions trading scheme and to use the proceeds from the pricing of carbon emissions from fossil fuels for the benefit of the public and the economy by reducing the burden of the EEG surcharge from 1 January 2021. The government decided to reduce the surcharge to 0 ct/kWh as from 1 July 2022 in order to quickly reduce the burden on electricity customers from the significant rise in energy prices. The coalition agreement had originally set the date of 1 January 2023 for the EEG surcharge to be discontinued.

Heating electricity

Overall, the volume of electricity supplied for heating was higher than in the previous year. According to the volumes reported by the suppliers, just under 1.98mn market locations were supplied with about 14.3 TWh of electricity for heating purposes. The supplier switching rate in the heating electricity segment based on the number of market locations was lower than in the previous year. The switching rate for 2021 was around 4.6% by volume and around 5.4% by market location.

The total gross price for night storage heating was 25.55 ct/kWh as at 1 April 2022 and thus higher than the previous year's level of 23.93 ct/kWh. The average total gross price for heat pump electricity was 25.07 ct/kWh and thus also higher than the previous year's average of 23.80 ct/kWh. The increase is mainly due to the part of the price controlled by the supplier, in particular for energy procurement. Here, too, developments that occurred after the monitoring date are not covered in this report.

Digitisation of metering

The Energy Transition Digitisation Act and the Metering Act (MsbG) contained therein made the rollout of modern metering equipment and smart metering systems legally mandatory in Germany. Whereas in the past household customers were mainly equipped with analogue Ferraris meters, modern metering systems consist of digital meters with an interface capable of connecting to a communication unit (smart meter gateway). Modern metering systems do not transmit any data. They are referred to as smart metering systems when they are connected to a smart meter gateway, enabling them to transmit the data recorded by the meter.

Default meter operators had until 30 June 2017 to notify the Bundesnetzagentur of their metering operations. These notifications also served to trigger a deadline set by the MsbG: three years after the notification of responsibility for default metering operations, that is by 30 June 2020, the default meter operators had to have installed modern metering equipment in at least 10% of the meter locations that have to be fitted with them by law. If this requirement is not met, the meter operators are required to initiate a process to transfer their default metering responsibility.

The installation of smart metering systems was able to start when the first smart meter gateway was certified by the Federal Office for Information Security (BSI) on 12 December 2018. Following the certification of a third gateway in December 2019 and the announcement of technical feasibility for certain applications, the BSI gave the go-ahead for the rollout of smart metering systems with effect from 24 February 2020. By February 2020, several default meter operators and another company had started legal action against the BSI's general administrative order determining the technical feasibility of the installation of smart metering systems. In an application for an interim injunction, the Higher Administrative Court (OVG) in Münster initially ruled in favour of the complainant. Adjustments have been made to the MsbG to remove the resulting legal uncertainties. The law introducing these amendments entered into force on 27 July 2021. A central amendment to the MsbG was carried out in section 19(6) MsbG, creating a provision protecting vested rights for smart metering systems that have already been installed and those still to be installed. In addition, the Gateway Standardisation committee was set up within the Federal Ministry for Economic Affairs and Energy (BMWi) and was consulted regarding the expanded Technical Directive BSI-TR-03109-1 v1.1 of 23 September 2021. The Technical Directive was subsequently approved by the BMWi and published by the BSI. The Technical Directive focuses on the interoperability certification of smart meter gateways. On 20 May 2022, the BSI revoked its market statement of 7 February 2020, which had been viewed as likely unlawful in the proceedings for interim measures, with retrospective effect. In its administrative order under section 19(6) MsbG, the BSI stated that smart meter gateways already certified could still be used safely and BSI-compliant systems could still be installed voluntarily. An objection was filed against the BSI's revocation of its market statement.

Developments in the gas markets

The monitoring reports published by the Bundesnetzagentur and the Bundeskartellamt always relate to the previous calendar year because reliable and firm figures are available for that year. With regard to the situation in the gas markets, the year presented in this report – 2021 – is the last year before the turning point in 2022. The situation changed dramatically in 2022 in the wake of Russia's invasion of Ukraine. The Bundesnetzagentur and the Bundeskartellamt have made an effort to incorporate any relatively reliable figures available into the monitoring report. The editorial deadline was 2 November 2022. The Bundesnetzagentur and the Bundeskartellamt have refrained from explicitly pointing out in each individual case that the situation has since changed and is now radically different to that in 2021. In this respect, we assume that readers will naturally keep this fact in mind.

Gas supply situation

Imports

The total volume of natural gas imported into Germany in 2021 was 1,458 TWh. Imports to Germany were thus down by 216 TWh from the previous year's figure of 1,674 TWh. The main sources of gas imports to Germany in 2021 were Russia and Norway. However, the Netherlands, as an established and liquid European producer, trading hub and point of arrival for LNG shipments with connections to natural gas fields in Norway and the United Kingdom, was also a significant source of imports for Germany.

According to the Bundesnetzagentur's daily status reports on the supply of gas in Germany, gas flows from Russia to Germany were last at the normal level of around 1,800 GWh/day on 10 May 2022. The halting of Russian gas deliveries to Poland and Bulgaria has so far had no impact on the security of supply in Germany. Following Russia's imposition of sanctions on Gazprom Germania and almost all the company's subsidiaries, the volumes of gas flowing through Ukraine to Waidhaus in Germany were more than 25% down on the previous day as a result of the reduction in transit flows. On 14 June 2022, gas flows from the Nord Stream 1 pipeline were at about 60% of maximum capacity, but were reduced to 40% the following day. As from 11 July 2022, gas flows were at zero percent because of planned maintenance work on the Nord Stream 1 pipeline scheduled until 21 July 2022. Gas flows through Nord Stream 1 resumed on 22 July 2022 and were at about 40% of maximum capacity. On 27 July 2022, there was another, announced reduction in gas flows from Nord Stream 1 to around 20% of maximum capacity. These reduced gas flows through the Nord Stream 1 pipeline were then suspended indefinitely on 2 September 2022, reportedly for technical reasons. On 26 September 2022, a sudden drop in pressure first in Nord Stream 2's pipe A and then in both Nord Stream 1 pipes was identified. The damage to the Nord Stream 1 and 2 pipelines has not had any effect on the gas supply. No gas had been delivered through Nord Stream 1 since the beginning of September anyway, and Nord Stream 2 had never been put into operation.

The total volume of gas imported into Germany in the period from January to October 2022 was 1,161.1 TWh. This represents a decrease of 52.1 TWh compared with the previous year's figure (for January to October 2021) of 1,213.2 TWh.

Production

In 2021, natural gas production in Germany amounted to 5.1bn m³ of gas (with calorific adjustment).[7] This is about the same as in the previous year.[8] The reserves-to-production ratio of proven and probable natural gas reserves of 42bn m was 7.4 years as at 1 January 2022. In 2021, natural gas production in Germany covered about 5% of the country's demand; 95% of the annual demand therefore had to be met with imports from countries including Russia, Norway and the Netherlands.[9]

Gas storage facilities

Germany's gas storage facilities are key to the supply of gas in particular in the winter months. The total maximum usable volume of working gas in underground storage facilities as at 31 December 2021 was 278.51 TWh. Of this, 137.02 TWh was accounted for by cavern storage, 119.90 TWh by pore storage and 21.59 TWh by other storage facilities.

The entry into force of the Gas Storage Act on 30 April 2022 and the introduction of statutory requirements for storage levels serve to further increase security in the supply of gas in Germany. The original storage level targets were 80% on 1 October, 90% on 1 November and 40% on 1 February of each year. These levels were raised again by a ministerial ordinance on 29 July 2022. The targets for 1 October and 1 November were increased to 85% and 95% respectively, while the target for 1 February was left at 40%.

The target storage level of 85% for 1 October 2022 was already reached in mid-September 2022. Storage levels on 2 November 2022, the editorial deadline for the monitoring report, stood at 99.19%.

The market for the operation of underground natural gas storage facilities was still highly concentrated in the year under review. The cumulative market share of the three largest storage facility operators stood at around 66.9% at the end of 2021, representing a slight decrease compared to the previous year (67.2%).

Consumption

In 2021, approximately 188.7 TWh of gas was delivered to final customers from the TSO network (2020: 199.5 TWh). The volume of gas delivered from the TSO network was thus about 5.5% less than the level of the previous year. Total gas supplies from the network of the DSOs amounted to 810.2 TWh in 2021, up by around 70 TWh or just over 9% compared to the previous year (2020: 741.6 TWh). The quantity of gas supplied in 2021 to household customers as defined in section 3 para 22 EnWG was up by more than 11% at about 300.8 TWh (2020: 270.3 TWh). A simplified comparison between the supply and use of natural gas in 2021 in Germany is shown below.

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[7] Calorific adjustment is used because natural gas is not sold according to its volume but according to its energy content (9.7692 kWh/m³). In contrast, gas without calorific adjustment has a natural calorific value that may vary depending on the location of the deposit (in Germany this figure varies between 2 and 12 kWh/m³).

[8] Source: Annual report "Erdöl- und Erdgasreserven in der Bundesrepublik Deutschland am 1. Januar 2022" [Crude Oil and Natural Gas Reserves in the Federal Republic of Germany as at 1 January 2022]; State Authority for Mining, Energy and Geology (LBEG), Lower Saxony.

[9] See previous footnote.

Gas available and gas use in the supply network in 2021
(TWh)

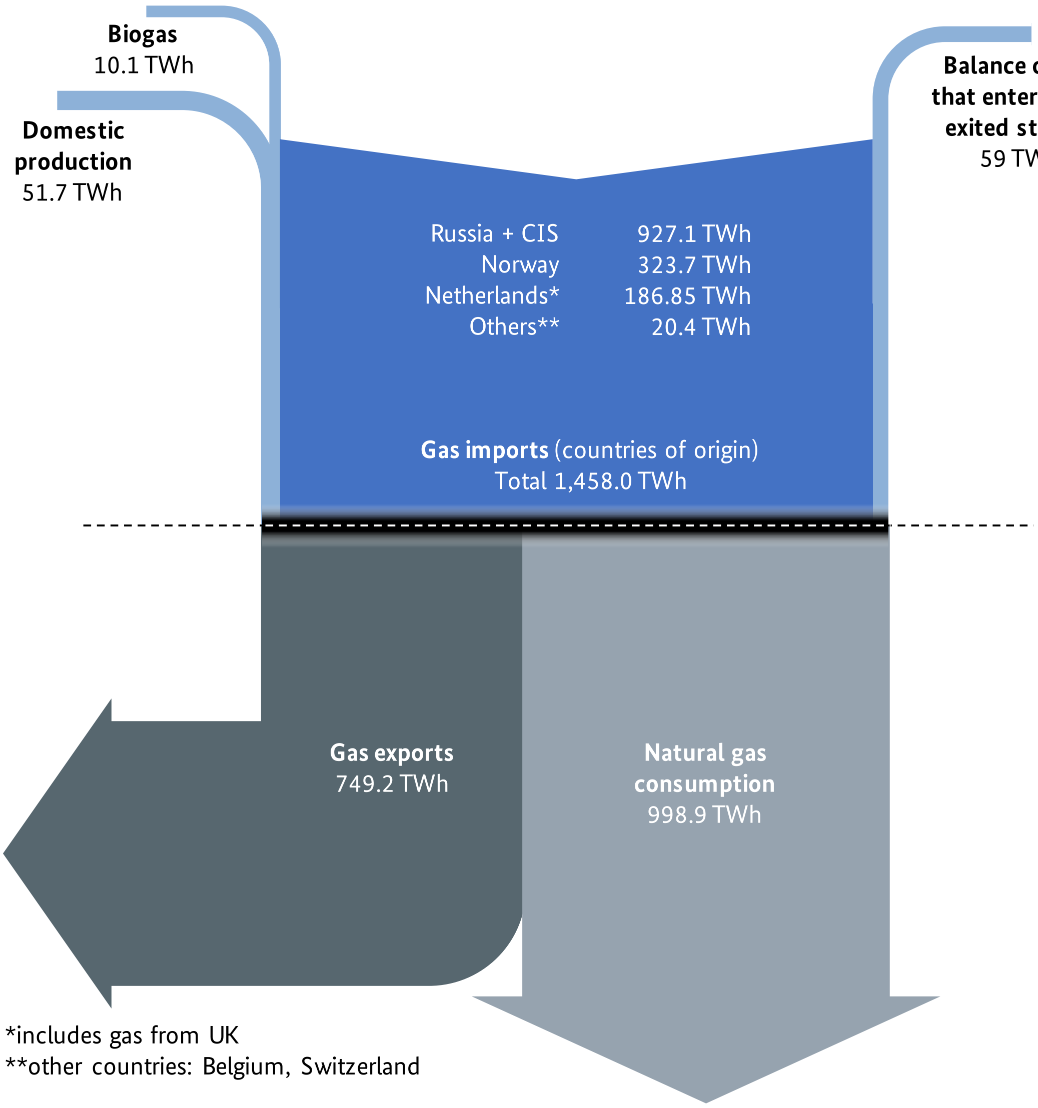

Figure 1: Gas available and gas use in Germany in 2021

It must be pointed out, however, that this is based on gas flows, meaning that self-supply and statistical differences have not been accounted for. The total amount of gas entering the German network was about 1,578 TWh in 2021. Of this, 51.7 TWh came from domestic sources, while 1,458 TWh was imported.[10] In 2021, the annual storage balance – the difference between the gas that entered and exited storage in a year – was +59 TWh. The storage balance was positive, which means that overall more gas was withdrawn

[10] The import figure for 2020 has been adjusted for this report in line with the latest calculation methodology and is therefore not comparable with the figure in the Monitoring Report 2021. For the first time, the export volumes at the Brandov cross-border interconnection point were deducted to avoid the transit volumes – the volumes imported via the Nord Stream 1 pipeline and the Greifswald cross-border interconnection point – being counted twice at the Waidhaus cross-border interconnection point.

from storage than was injected into it. Moreover, 9.7 TWh of biogas upgraded to natural gas quality was fed into the German natural gas system in 2021.

In 2021, just over 51% (749.2 TWh) of the gas was exported and transported to neighbouring countries in Europe. Final customers used 998.9 TWh of gas in Germany (2020: 941.1 TWh).

The table below shows a breakdown of the quantity of gas provided to final customers in the network areas of the TSOs and DSOs surveyed in 2021.

Gas: offtake volumes in 2021 broken down by final customer category, according to the survey of gas TSOs and DSOs

	TSO offtake volume (TWh)	Share of total	DSO offtake volume (TWh)	Share of total
≤ 300 MWh/year	<0.1	<0.1%	365.0	45.1%
> 300 MWh/year ≤ 10,000 MWh/year	0.5	0.3%	136.4	16.8%
> 10,000 MWh/year ≤ 100,000 MWh/year	5.7	3.0%	108.1	13.3%
> 100,000 MWh/year	138.6	73.4%	141.9	17.5%
Gas power plants ≥ 10 MW net nominal capacity	43.9	23.3%	58.8	7.3%
Total	188.7	100%	810.2	100%

Table 1: Gas offtake volumes in 2021 broken down by final customer category, according to the survey of gas TSOs and DSOs

The following consolidated overview includes the total gas offtake volumes of TSOs and DSOs and the quantity of gas provided to final customers by suppliers for 2021. Once again, gas TSOs and DSOs were asked in the 2022 monitoring survey to provide figures on the volumes that mostly large final customers (industrial customers and gas-fired power plants) procure directly on the market themselves, that is not using the traditional route via a supplier, and instead approaching the network operator as a shipper (paying the transport charges themselves). The quantity of gas procured directly on the market amounted here to 79.3 TWh (2020: 73.7 TWh), equivalent to about 42% of the total quantity of gas delivered by TSOs to final customers. As regards gas distribution systems, the amount of gas procured without a conventional supplier contract amounted to 45.9 TWh (2020: 41.4 TWh), corresponding to a share of just over 6% of the DSOs' total gas supplies.

The difference between the 2021 offtake volumes of the system operators, 998.9 TWh (2020: 941.1 TWh), and the gas delivered by gas suppliers, 908.9 TWh (2020: 853 TWh), includes the amount of gas procured directly on the market without using a supplier as well as survey-related variations.[11]

Gas: total offtake volumes in 2021 according to survey of gas TSOs and DSOs and volume delivered according to supplier survey, broken down by final customer category

	TSO and DSO offtake volumes (TWh)	Share of total	Total volume delivered by suppliers (TWh)	Share of total
≤ 300 MWh/year	365.0	36.5%	349.2	38.4%
> 300 MWh/year ≤ 10,000 MWh/year	136.9	13.7%	122.8	13.5%
> 10,000 MWh/year ≤ 100,000 MWh/year	113.8	11.4%	100.6	11.1%
> 100,000 MWh/year	280.5	28.1%	268.7	29.6%
Gas power plants ≥ 10 MW net nominal capacity	102.7	10.3%	67.7	7.4%
Total	998.9	100.0%	909.0	100.0%

Table 2: Total gas offtake volumes in 2021, according to the survey of gas TSOs and DSOs and total volumes of gas delivered according to the gas supplier survey

The total quantity of gas supplied by general supply networks in Germany rose in 2021 by about 57.8 TWh or just over 6% year-on-year to 998.9 TWh. The quantity of gas supplied to household customers as defined in section 3 para 22 EnWG rose by just over 11% to 300.8 TWh (2020: 270.3 TWh). Gas supplies to gas-fired power stations with a nominal capacity of at least 10 MW decreased by about 4.9% to 102.7 TWh (2020: 108 TWh). The quantity of gas supplied to SLP and interval-metered customers in 2021 as reported by the system operators was 992.4 TWh. Based on the reported volumes of gas sold to SLP and interval-metered customers, about 572.7 TWh went to interval-metered customers and about 419.7 TWh to SLP customers. The majority of SLP customers are household customers. In 2021, household customers within the meaning of section 3 para 22 EnWG were supplied with around 300.8 TWh, according to the DSOs' figures.[12]

The following chart shows the use of gas by economic sector in 2021. The data from the monitoring survey are set against the consumption data of final customers with a technical connection capacity of 10 MWh/h

[11] Variations in data quality and response frequency mean that the difference between the figures from the system operators and the gas suppliers (90 TWh) is lower than the figure calculated for gas procured directly on the market (125.2 TWh).

[12] Variations in the system operators' data quality and response frequency mean that there is a difference of about 6.5 TWh between the gas offtake volume based on Eurostat categories and that based on the distinction between SLP and interval-metered customers.

or more in the Trading Hub Europe (THE) market area. These customers were divided into three categories: goods production, energy supply, and other sectors.

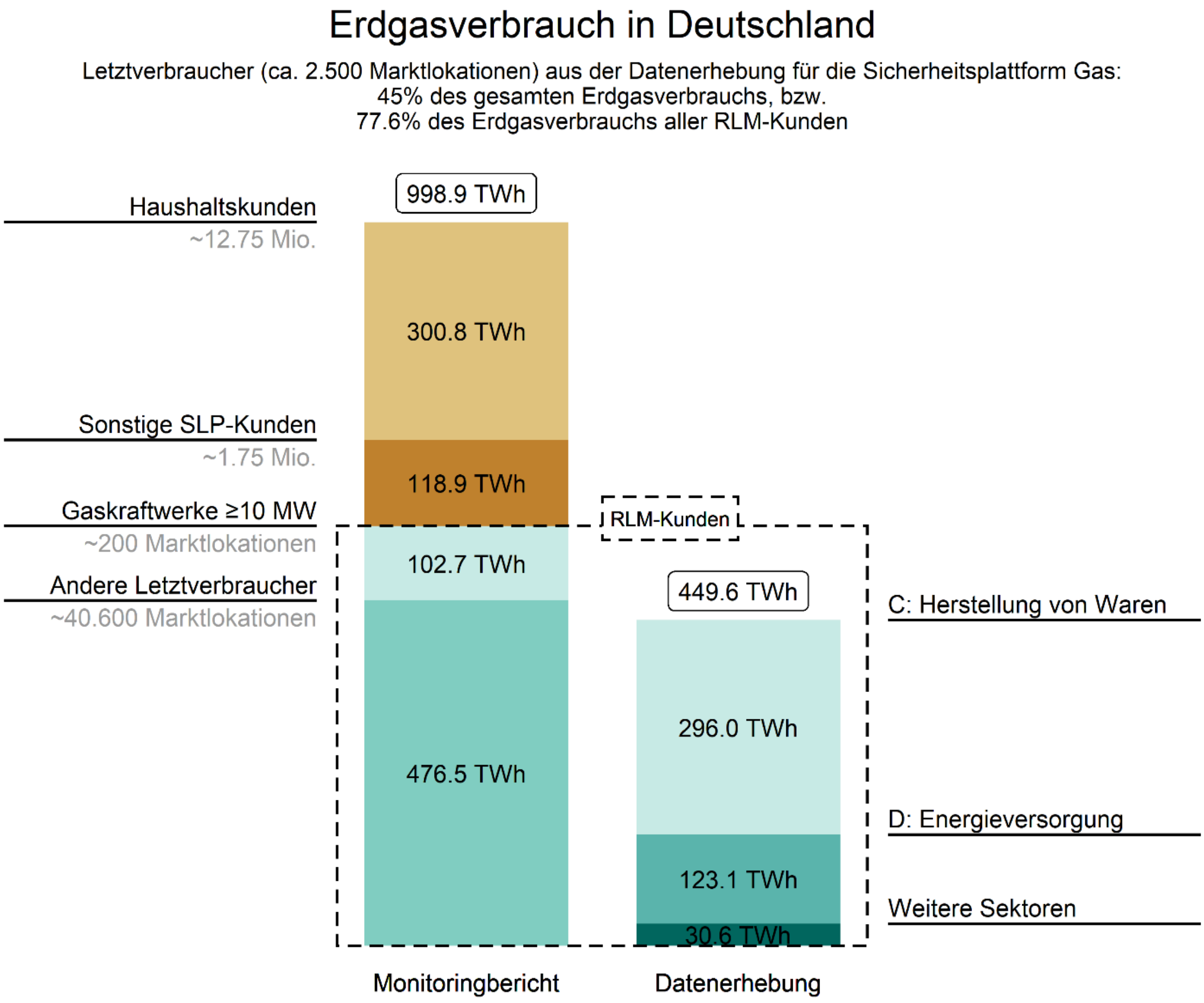

Figure 2: Natural gas consumption in Germany in 2021 by sector

Summary

Networks

Network expansion

For the first time, hydrogen projects were considered and determined as part of the Gas Network Development Plan (NDP) 2020-2030. The confirmed measures therefore also include projects that involve removing pipelines and/or gas pressure regulating and metering stations from the natural gas network for conversion to hydrogen. This will enable a hydrogen network to be established swiftly where and if pipelines are no longer needed for the transport of natural gas. This approach also conforms to the provisions on the regulation of hydrogen networks that entered into force on 26 July 2021.

The Bundesnetzagentur confirmed the scenario framework for the Gas NDP 2022-2032 with changes on 20 January 2022. The draft NDP was originally due to be submitted to the Bundesnetzagentur on 1 July 2022. The original timetable changed because of the geopolitical situation and the political objectives for the construction of LNG facilities in Germany. The Bundesnetzagentur and the TSOs agreed to deviate from the normal NDP process and to publish the NDP in two parts because the substitution of Russian gas imports has necessitated further network calculations in the TSOs' network planning process and the results are not yet available.

Investments

In 2021, the 16 German gas TSOs invested a total of €679mn (2020: €995mn) in network infrastructure. Of this, €420mn (2020: €638mn) was accounted for by investments in new builds, upgrades and expansion projects and €259mn (2020: €357mn) by investments in network infrastructure maintenance and renewal.

Across all TSOs, expenditure on maintenance and repair of network infrastructure amounted to €358mn in 2021 (2020: €402mn), with expenditure lower than that in the previous year but within the usual range of fluctuation. The TSOs' planned expenditure for 2022 is €385mn.

The 600 gas DSOs reported total network infrastructure investments in 2021 of €1,736mn (2020: €1,674mn) in new builds, upgrades and expansion (€1,101mn (2020: €1,044mn)) and in maintenance and renewal (€635mn (2020: €631mn)). For 2022, the projected total investment is €1,732mn.

Service and maintenance expenses, based on the data provided by the DSOs, totalled €1,204mn in 2021 (2020: €1,365mn). The projected expenditure on maintenance and repair for 2022 is €1,189mn.

Supply interruptions

In 2021, the average interruption in supply per connected final customer was 2.18 minutes, twice that in the previous year (2020: 1.09 minutes in the year). The figure is also higher than the long-term average of 1.54 minutes in the year. The increase in the average interruption duration was mainly due to third-party damage caused to gas pipes during construction work. The figure nevertheless shows that the German gas network has a high quality of supply.

Network tariffs

As of 1 April 2022, the average volume-weighted network tariff including the charges for metering and meter operation for household customers (volume-weighted across all contract categories) was 1.62 ct/kWh (2021: 1.59 ct/kWh), a slight increase of around 2% compared to the previous year.

For commercial customers, the average network tariff in 2022 was 1.25 ct/kWh, slightly lower than in the previous year (2021: 1.28 ct/kWh). For industrial customers, there was a significant increase of just over 37% to 0.44 ct/kWh (2021: 0.32 ct/kWh).

Transport

The total quantity of gas supplied by general supply networks in Germany rose in 2021 by about 57.8 TWh or just over 6% year-on-year to 998.9 TWh. The quantity of gas supplied to household customers as defined in section 3 para 22 EnWG rose by just over 11% to 300.8 TWh (2020: 270.3 TWh). Gas supplies to gas-fired power stations with a nominal capacity of at least 10 MW decreased by about 4.9% to 102.7 TWh (2020: 108 TWh).

With regard to gas transmission networks, the quantity of gas procured directly on the market by large final customers (industrial customers and gas-fired power stations) – in other words not using the classic route via a supplier, and instead approaching the network operator as a shipper (paying the transport charges themselves) – amounted to 79.3 TWh (2020: 73.7 TWh), equivalent to about 42% of the total quantity of gas supplied by the TSOs to final consumers. As regards gas distribution systems, the amount of gas procured without a conventional supplier contract amounted to 45.91 TWh (2020: 41.1 TWh), corresponding to a share of just over 6% of the DSOs' total gas supplies.

Market area conversion

The year 2021 was marked by the disastrous flooding in July that led to the loss of more than one hundred lives and huge damage to property. The flooding also affected areas in which market area conversion work was in progress. The market area conversion was still affected by the coronavirus pandemic in early 2022. As in the previous year, people working from home and travelling less actually facilitated the conversion process. Almost all network operators and companies carrying out adjustments reported that it was easier to make contact with customers for the conversions. The market area conversion was overshadowed by the war in Ukraine, which created uncertainty among many customers regarding the conversion to H-gas. This uncertainty was resolved with the help of transparent information from the network operators and companies carrying out the adjustments. The market area conversion is consequently on schedule and making good progress.

Wholesale

Following a decrease in the demand for energy in 2020 because of the coronavirus pandemic, there was an increase in demand again in 2021 due to the global economic recovery. The total volume traded on the EEX Group energy exchange, which is the exchange relevant for natural gas trading in Germany, increased by around 37% or 178 TWh compared with 2020.

The volume traded on the spot market was about 582 TWh in 2021 (2020: about 429 TWh), which corresponds to an increase of around 36%. The focus of spot trading in 2021 for the NCG and GASPOOL market areas and for the THE market area, which was formed by merging these two market areas in October 2021, was on day-ahead contracts, with a total volume of 373.2 TWh (NCG: 149.2 TWh; GASPOOL: 110.2 TWh, THE: 113.8 TWh). The futures trading volume rose from around 58 TWh in 2020 to about 82 TWh in 2021, corresponding to an increase of some 41%.

The nine broker platforms surveyed reported a total volume of off-exchange wholesale gas transactions for delivery to Germany of 2,392 TWh in 2021 (2020: 2,898 TWh). This represents a decrease of around 17% compared to the previous year. Of this, 862 TWh was for contracts with delivery in 2021 and a delivery time of at least one week, 793 TWh was for transactions with delivery in 2022, and 616 TWh was for delivery in 2023 or later.

Wholesale gas prices in 2021 were also considerably higher than in previous years. The respective price indices (EGIX and the BAFA border price) show an increase of around 403% (EGIX) and around 116% (BAFA border price) from the arithmetic mean of the year before. The European Gas Spot Index (EGSI) also increased significantly year-on-year. The average EGSI for the new THE market area was €90.94/MWh in October 2021 and had risen to €115.05/MWh by December 2021. This represents an increase from December 2020 of around 624% for the former NCG market area and 611% for the former GASPOOL market area.

Retail

Contract structure and competition

An overall analysis of how household customers were supplied in 2021 in terms of volume shows that nearly half of them (48%) were supplied by the local default supplier under a non-default contract, receiving 131.7 TWh of gas.

Only 16% of household customers still had a default supply contract in 2021 and these were supplied with 44.6 TWh of gas. The percentage of household customers who had a contract with a supplier other than the local default supplier increased again to 36% for a total of 98.2 TWh of gas. Thus supply by the default supplier at a default tariff is the least popular form of supply.

The gas sold to non-household customers is mainly to interval-metered customers. About 22.8% of the total volume delivered to these customers was supplied under a contract with the default supplier on non-default terms (as in the previous year) and about 77.1% was supplied under a contract with a legal entity other than the default supplier (2020: 77.2%). These figures show that default supply is still of minor significance in the acquisition of interval-metered customers in the gas sector.

The total number of customers changing contract in 2021 was 0.54mn. The volume of gas these customers were delivered was approximately 8.5 TWh. The volume-based switching rate was therefore 3.1%.

The total number of supplier switches by household customers fell in 2021 by just over 0.5% to around 1.64mn. Around 1.3mn of these household customers changed by cancelling their previous supply contract (voluntary switching). It should be noted that the total number of switches for 2021 does not include "involuntary" switching by customers whose contracts were cancelled by their suppliers, including insolvent suppliers, who were no longer able to supply their customers because of the increase in prices. The number of "involuntary" supplier switches amounted to around 345,200. Possible reasons for the decrease in the number of customers switching supplier include the increases in gas prices beginning in the third quarter of 2021. Customers may have been reluctant to switch to a new gas supplier because of the lack of alternatives in terms of price.

The total consumption amount of non-household customers affected by supplier switches in 2021 was 107.6 TWh, corresponding to a year-on-year increase of 27 TWh. The switching rate for non-household customers rose to 10.2% (2020: 7.3%).

The level of concentration in the two largest gas retail markets for SLP and interval-metered customers is still well below the statutory thresholds for presuming market dominance. In 2021, the cumulative sales of the four largest companies to SLP customers were about 102.7 TWh, while to interval-metered customers they were around 123.9 TWh. The aggregate market share of the four largest companies (CR4) in 2021 was again 26% for SLP customers (the same as in the previous year) and 24% for interval-metered customers (2020: 28%).

Since market liberalisation and the creation of a legal basis for an efficient supplier switch, there has been a steady rise in the number of active gas suppliers for all final customers in the different network areas. This positive trend was maintained in 2021 as well.

On average, final consumers in Germany can choose between 135 suppliers in their network area; household customers can, on average, choose between 113 suppliers (these figures do not take account of corporate groups).

Gas disconnections

The number of disconnections actually carried out by the network operators in 2021 was 26,905, representing an increase of about 12% compared to the previous year (2020: 23,991). The increase in the number of disconnections in 2021, especially among gas customers, is partly due to disconnections carried over from 2020. There was a clear drop in the number of disconnections in 2020 owing to the right to withhold performance set out in Article 240 section 1 EGBGB, which applied during part of the coronavirus pandemic. In addition, a large proportion of the suppliers had voluntarily decided not to disconnect their customers. In 2021, around half of the suppliers surveyed by the Bundesnetzagentur again voluntarily decided not to disconnect customers. Suppliers often accommodated customers by offering them special or individual payment arrangements.

According to the gas suppliers' data, a disconnection notice is issued when a customer is on average around €120 in arrears. Just over a million disconnection notices were issued to household customers in total, of which around 174,000, or 17%, were passed on to the relevant network operator with a request for disconnection. The suppliers' data show that a total of around 3% of the connections issued with a disconnection notice were actually disconnected. Around 53% of the customers disconnected in 2021 were on default contracts and 47% were outside of default supply. The gas suppliers stated that around 10% of disconnections were the same customers being disconnected more than once.

Price level

The volume-weighted gas price for household customers across all contract categories rose about 48% year-on-year from 6.68 ct/kWh to 9.88 ct/kWh. The current survey method does not make a distinction between prices for existing and new customers. There was a considerable increase in the gas prices for new customers, especially from the third quarter of 2021 onwards, while existing customers were still able to benefit from their cheaper prices. The survey method and widening gap between prices for existing and new customers mean that the average calculated is lower than would be expected based on current trends.

In the price across all contract categories, the largest price component "energy procurement, supply and margin", which makes up around 45%, rose by over 86% from 2.95 ct/kWh to 5.5 ct/kWh. This figure is also lower than would be expected based on current trends because of the survey method described above.

The volume-weighted gas price for customers on a default contract as at 1 April 2022 was 9.51 ct/kWh (2021: 7.45 ct/kWh), corresponding to an increase of around 28% compared to the previous year.[13]

On 1 April 2022, the volume-weighted price for customers under a non-default contract with the default supplier was 9.02 ct/kWh, an increase of about 37% compared to 2021 (6.58 ct/kWh).

[13] Customer category according to Eurostat: band II (D2): annual consumption from 20 gigajoules (GJ) (5,556 kWh) to 200 GJ (55,556 kWh).

On 1 April 2022, the volume-weighted price for a contract with a supplier other than the local default supplier was 10.95 ct/kWh, an increase of just over 71% compared to the previous year (2021: 6.41 ct/kWh).

The gas prices for non-household (industrial and commercial) customers as at 1 April 2022 showed substantial year-on-year increases as a result of the effects of the war in Ukraine. The arithmetic mean of the overall price (excluding VAT) for an annual consumption of 116 GWh ("industrial customer") was 6.76 ct/kWh, 3.81 ct/kWh or around 129% higher than the previous year's figure. The proportion of the total price (about 77.1%) controlled by the supplier was 5.21 ct/kWh, up by 3.67 ct/kWh. The arithmetic mean of the overall price (excluding VAT) for an annual consumption of 116 MWh ("commercial customer") was 7.19 ct/kWh on the reporting date, an increase of 2.45 ct/kWh or around 52% year-on-year. The proportion of the total price (about 65.1%) controlled by the supplier was 4.69 ct/kWh, up by 2.28 ct/kWh. The prices paid by non-household customers in Germany in the annual consumption range of 27.8 GWh to 278 GWh was 3.85 ct/kWh in the second half of 2021, about 0.32 cents below the EU average of 4.17 ct/kWh. On an EU average, the net price is subject to about 7% (0.36 ct/kWh) of non-refundable taxes and levies. In this regard, Germany's figure of about 17% (0.65 ct/kWh) is again higher than average. Compared with the gas prices for industrial customers, there are relatively large differences between the gas prices for household customers across the EU. The gas price for household customers in Germany was 6.92 ct/kWh and thus around 11.5% below the EU average (7.82 ct/kWh). Taxes and levies amounted to an average of 2.18 ct/kWh in Germany, which is relatively close to the EU average of 2.36 ct/kWh.

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