Monitoring Report 2016

Monitoring report in accordance with section 63(3) in conjunction with section 35 of the Energy Act (EnWG)
and section 48(3) in conjunction with section 53(3) of the Competition Act (GWB)

Key findings and summary
As of 30 November 2016

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German Energy Act section 63(3)
Reporting

(3) Once a year, the Bundesnetzagentur shall publish a report on its activities and in agreement with the Bundeskartellamt, to the extent that aspects of competition are concerned, on the results of its monitoring activities, and shall submit the report to the European Commission and the Agency for the Cooperation of Energy Regulators (ACER). The report shall include the report by the Bundeskartellamt on the results of its monitoring activities under section 48(3) in conjunction with section 53(3) of the Competition Act as prepared in agreement with the Bundesnetzagentur to the extent that aspects of regulation of the distribution networks are concerned. The report shall include general instructions issued by the Federal Ministry of Economic Affairs and Energy in accordance with section 61.

German Competition Act section 53(3)
Activity report

(3) The Bundeskartellamt shall prepare a report on its monitoring activities under section 48(3) in agreement with the Bundesnetzagentur to the extent that aspects of regulation of the distribution networks are concerned, and shall transmit the report to the Bundesnetzagentur.

Key findings

Electricity generation and security of supply

Total net electricity generation increased by 11.1 TWh from 583.6 TWh in 2014 to 594.7 TWh in 2015. In 2015, electricity generation was characterised by an increase in generation from renewable sources. Generation from conventional sources declined as in the previous years.

The market power of the largest electricity producers has decreased significantly over the last few years. In 2015, the cumulative market share of the four largest electricity producers in the market for the first-time sale of electricity was 69.2%, up 2.2 percentage points on a year earlier but still lower than the share of 72.8% in 2010.

In 2015, the average interruption in supply per connected final consumer was 12.70 minutes and thus below the ten-year average from 2006 to 2015 of 15.87 minutes. The quality of supply thus maintained a consistently high level in 2015.

Development of renewable energy generation

Generation from renewable energy sources accounted for 31.4% of gross electricity consumption in 2015. The net amount of electricity generated from renewable energy sources increased by 26 TWh to 181.1 TWh. The largest growth was in electricity generation from wind, with the amount generated in 2015 totalling 79.1 TWh.

Redispatch and feed-in management

Redispatched energy amounted to around 16,000 GWh in 2015, more than three times as much as in 2014. The transmission system operators (TSOs) put the costs for redispatch actions in 2015 at around €412m.

The curtailment quantity as a result of feed-in management measures almost trebled from 1,581 GWh in 2014 to 4,722 GWh. Compensation payments in 2015 amounted to around €315m. Claims for compensation for 2015 are estimated at €478m.

Electricity network charges

There was a slight increase in the network charges for household customers. The average charge for household customers on default tariffs was 6.71 ct/kWh, up 0.2 ct/kWh on a year earlier. The charges for non-household customers remained broadly unchanged on the previous year's levels. The network charge, including billing, metering and meter operation charges, for "commercial customers" with an annual consumption of 50 MWh rose by around 0.08 ct/kWh while that for "industrial customers" with an annual consumption of 24 GWh fell by 0.06 ct/kWh.

Wholesale electricity markets

In 2015, the wholesale electricity markets were marked once again by high liquidity. While there were further significant increases in the volumes traded in both spot and futures markets, trading via broker platforms did not show such growth.

There was another decrease in the average wholesale prices in 2015. Base prices on the spot markets averaged €31.63/MWh, down 3% on the previous year. The average base year future price was €30.97/MWh and thus 12% lower.

Retail electricity markets

The Bundeskartellamt assumes that there is no longer any single dominant supplier in either of the two largest electricity retail markets. The cumulative market share of the four largest undertakings in the national market for supplying interval metered customers was 31% and in the market for supplying non-interval metered customers (above all household customers) on non-default tariffs was 36%.

The volume-based switching rate for non-household customers in 2015 was 12.6%, up 1.6 percentage points on the previous year. There was a further increase in the switching rate for household customers. Four million household customers switched electricity supplier in 2015, which is around 231,000 more than a year earlier.

Electricity prices for non-household customers as of 1 April 2016 again showed a slight year-on-year decrease. This is primarily due to a reduction in the price component that can be controlled by the supplier, against an increase in surcharges. Electricity prices for household customers as of 1 April 2016 showed a small increase compared to the previous year. As of 1 April 2016, the average price for household customers with an annual consumption of between 2,500 kWh and 5,000 kWh was 2% up on 2015 at 29.80 ct/kWh (including VAT). Taxes, levies, network charges and surcharges account for around 75% of the total price in Germany. According to Eurostat, German household customers continue to pay the second highest electricity prices in Europe. In Germany, taxes, levies and surcharges account for more than 50% of the prices, which is considerably higher than the European average of 33%.

Since 2014 there has been a significant increase in the number of electric heating customers who have switched supplier, following many years with hardly any customers switching. The percentage of electric heating customers served by a supplier other than the local default supplier increased from 4.3% in 2014 to around 6.6% in 2015. The last few years have seen an increase in transparency for end customers and in the services offered by national electric heating suppliers. The consequent switching activity is helping to stimulate competition in the electric heating sector.

Electricity imports and exports

In 2015, as in the previous years, the volume of Germany's electricity exports was considerably higher than that of its imports. Exports increased again from 59.2 TWh in 2014 to 68.0 TWh. Overall, the German export balance rose from 34.5 TWh in 2014 to 51.0 TWh in 2015. Electricity was principally exported to Austria and the Netherlands. The total balance also reflects a decline in imports from 24.7 TWh to 17.0 TWh.

Gas imports and exports

Gas imports and exports decreased slightly compared to the previous year. The volume of gas imported into Germany decreased by some 8.4 TWh from 1,542 TWh to 1,534 TWh. There was also a decrease in exports. The volume of gas exported decreased from 810.1 TWh in 2014 to 746.3 TWh in 2015.

The main sources of imports to Germany remain Russia, Norway and the Netherlands. The main recipients of Germany's exports were Czechia, Switzerland and the Netherlands.

Gas supply interruptions

In 2015, the average interruption in supply per connected final consumer was 1.7 minutes per year. The level of gas supply reliability remained at 99.999%.

Gas storage facilities

The market for the operation of underground natural gas storage facilities is relatively highly concentrated. The aggregate market share at the end of 2015 of the three largest storage facility operators was down slightly at 73.3%. The current storage level at natural gas storage facilities in Germany is high compared to past years. On 1 October 2016, at the beginning of the 2016/2017 gas year, the total storage level of German storage facilities was around 95%.

Wholesale natural gas markets

Varying developments were recorded in the liquidity of the wholesale markets in 2015. While the bilateral wholesale trading volume was down on the previous year, the on-exchange trading volume increased by 38% after even more than doubling in the previous year.

2015 was again marked by lower wholesale gas prices. The various price indices showed a year-on-year decrease of between 6% and 13%.

Retail gas markets

The levels of concentration in the two largest gas retail markets are well below the statutory thresholds for presuming market dominance. The cumulative market share of the three largest undertakings in the market for supplying interval metered customers was 29%, and 22% in the market for supplying non-interval metered gas customers (in particular household customers) under a contract outside the scope of default supply.

The number of customers switching supplier rose again in 2015. More than 1.1m household customers switched gas supplier in 2015. The volume-based supplier switching rate for non-household customers in 2015 was again around 12%, and around 10% for household customers.

The noticeable downward trend in gas retail prices continued. There was a particularly sharp decrease in the prices paid by industrial customers. The average price (excluding VAT) as of 1 April 2016 for "industrial" customers with an annual consumption of 116 GWh was 2.77 ct/kWh (1 April 2015: 3.5 ct/kWh) and thus by far the lowest ever since data on gas prices was first collected for the monitoring reports. There was a considerable decrease in the prices paid by commercial customers.

The average price for household customers across all contract categories (ie default supply contract, non-default contract with the default supplier, and contract with a supplier other than the local default supplier) decreased by about 2.1% to 6.54 ct/kWh (including VAT) as of 1 April 2016 (1 April 2015: 6.68 ct/kWh). For an average level of consumption, default tariffs are about 0.6 ct/kWh more expensive than non-default contracts with the default supplier and about 0.5 ct/kWh more expensive than contracts with a supplier other than the local default supplier.

A Developments in the electricity markets

1. Summary

1.1 Generation and security of supply

Net electricity generation in Germany in 2015 amounted to 594.7 TWh compared to 583.6 TWh in 2014. Electricity generation from non-renewable energy sources decreased by 15 TWh or 3.5% on the previous year. Nuclear and hard coal power plants recorded the largest decreases in electricity generation. The closure of Grafenrheinfeld nuclear power station led to a reduction in nuclear electricity generation of 6.7 TWh or 7.3%. Generation from hard coal in 2015 was down 5.5 TWh or 4.9% on 2014. Generation from brown coal was 2 TWh or 1.4% lower than a year earlier.

In 2015 generation was characterised by a further increase in capacity from renewables. Altogether, growth in renewables capacity amounted to 7.6 GW, compared to 6.8 GW in 2014. Onshore and offshore wind recorded the highest increases in generation capacity of 3.6 GW and 2.4 GW respectively. Total (net) installed generation capacity thus reached 204.6 GW at the end of December 2015, of which 106.7 GW was non-renewable and 97.9 GW renewable energy capacity.

The market power of the largest electricity producers had decreased significantly in the period after 2010. The market for the first-time sale of electricity (excluding electricity supported under the Renewable Energy Sources Act – EEG) remains highly concentrated, however, with the four largest electricity producers having a cumulative market share of 69.2% relating to the Germany/Austria market area. This represents an increase of 2.2 percentage points on the previous year's share of 67.0%, mainly due to growth recorded by Vattenfall. However, the market share of the four largest producers is still around 3.5 percentage points lower than in 2010. In addition, the closure of the remaining nuclear power plants by 2022 will lead to future changes in the market structure.

The room for manoeuvre in the market for the first-time sale of electricity is limited amongst other things by the fact that since 2009 more electricity generation capacity has been available in Germany and Europe than is required to meet demand. An increasing proportion of the demand is being covered by electricity generated from renewable sources. Better options for importing electricity as a result of progressive market coupling can also help to limit the room for manoeuvre in the market for the first-time sale of electricity, whereas a reduction in cross-border transmission capacity would have the opposite effect.

Generation from renewable energy sources accounted for 31.4% of gross electricity consumption in 2015. The net amount of electricity generated from renewable energy sources increased by 26.0 TWh from 155.1 TWh in 2014 to 181.1 TWh in 2015. This represents a year-on-year increase of 16.8%. The largest growth in absolute terms was in electricity generation from wind, with the amount generated rising by 21.7 TWh to 79.1 TWh. Onshore and offshore wind generation increased year on year by 15 TWh and 6.7 TWh respectively. The amount of electricity generated by solar power was 35.2 TWh, up 2.2 TWh on the previous year.

The total installed capacity of installations in Germany entitled to financial support under the Renewable Energy Sources Act was 93.0 GW as at 31 December 2015, compared to around 85.4 GW a year earlier. This

represents an increase in 2015 of around 7.6 GW or 8.2%. A total of 161.8 TWh of electricity from renewable energy installations received support under the Renewable Energy Sources Act. This was 25.8 TWh or 19% more than in the previous year. The total sum paid to the renewable energy installation operators by the operators to whose networks the installations are connected was €24.2bn, a year-on-year increase of 13.4%. As in the past few years, about half of the payments in 2015 – around 52% – again went to installations with fixed feed-in tariffs. The share of the payments made for direct selling was up by 8 percentage points on the previous year.

In 2015 the average interruption in supply per connected final consumer was 12.70 minutes and thus below the ten-year average from 2006 to 2015 of 15.87 minutes. The quality of supply thus maintained a consistently high level in 2015.

1.2 Cross-border trading

The year 2015 was characterised by new record high levels of electricity exports. As the hub for electricity exchange in Europe, Germany continues to play a key role within the central interconnected system. There were changes in 2015 in the average available transmission capacity to and from neighbouring countries. Import and export capacity decreased by about 7% on 2014 to around 19.7 GW. The previous year had seen an increase of about 0.3% on 2013.

There was still an increase in the trade balance, however, with a rise in exports compared to imports and higher usage of the reduced transmission capacity. Total cross-border traded volumes rose from 83.9 TWh in 2014 to 85.0 TWh in 2015, an increase of 1.3%. This reflects a massive decline of 31.3% in imports from 24.7 TWh in 2014 to 17.0 TWh against an increase of 14.9% in exports from 59.2 TWh in 2014 to 68.0 TWh. Electricity was principally exported to Austria and the Netherlands, with an export balance of 28.7 TWh and 16.2 TWh respectively. Overall, there was a substantial increase of 47.8% in the German export balance from 34.5 TWh in 2014 to 51.0 TWh in 2015.

1.3 Networks

1.3.1 Grid expansion

Taking into account the second quarterly report for 2016, 650 km – or around 35% – of the total of about 1,800 km of power lines planned under the Power Grid Expansion Act (EnLAG) have been completed and around 900 km approved. The transmission system operators (TSOs) anticipate that some 45% of the planned lines will be completed by 2017. So far, none of the underground cable pilot lines have been put into operation. The TSO Amprion is currently preparing tests under operating conditions for the first 380 kV underground cable pilot project in Raesfeld.

The Bundesnetzagentur approved the scenario framework for 2017 to 2030 on 30 June 2016. The framework provides the basis for the forthcoming network development plan for 2017 to 2030. The TSOs are to publish a draft electricity network development plan for 2017 to 2030 based on the approved scenario framework by 10 December 2016 in accordance with section 12b(3) third sentence of the Energy Act (EnWG).

Alongside monitoring the Power Grid Expansion Act projects, the Bundesnetzagentur publishes quarterly updates on the status of the expansion projects under the Federal Requirements Plan Act (BBPlG). These projects currently comprise lines with a total length of around 6,100 km. At the third quarter of 2016 around

350 km had been approved and about 80 km completed. Eight of the 43 projects have been designated as pilot projects for low-loss transmission over long distances (high-voltage direct current transmission). Five direct current projects have been earmarked for priority underground cabling and five alternating current projects for partial underground cabling. In addition, one project is a pilot project using high-temperature conductors and two are submarine cable projects.

1.3.2 Investments

In 2015 investments in and expenditure on network infrastructure by the four German TSOs amounted to €2,361m compared to €1,796m in 2014. Investments in new builds, upgrades and expansion projects increased from €1,248m in 2014 to €1,673m in 2015. The investments and expenditure incurred by the distribution system operators (DSOs) rose from €6,193m in 2014 to €6,845m in 2015. There was an increase in the number of DSOs carrying out measures to enhance, reinforce or expand their networks as at 1 April 2016.

1.3.3 Network and system security and system stability

The TSOs' redispatch actions serve to maintain network and system security. In 2015, redispatch actions amounted to 15,811 hours, representing a significant increase from 8,453 hours in 2014. Redispatch actions were taken by the operators on a total of 331 days in 2015 and comprised a total volume of 16,000 GWh compared to 5,197 GWh in 2014. Reductions through redispatch actions corresponded to 1.9% of total generation from non-renewable energy installations, up from 0.6% in the previous year. The TSOs put the costs of system services for redispatch actions in 2015 at around €412m. As in the previous years, the actions primarily concerned the TenneT and 50Hertz control areas, with the line between Remptendorf and Redwitz, the Brunsbüttel area (north of Hamburg) and the line from Vierraden to Krajnik in Poland the most affected.

In 2015 a total of six DSOs and one TSO took adjustment measures for conventional installations without compensation. The measures taken to adjust electricity feed-in and offtake comprised a total of around 26.5 GWh.

The curtailment quantity as a result of feed-in management measures increased substantially from 1,581 GWh in 2014 to 4,722 GWh in 2015, and was thus almost three times higher than in the previous year. This corresponds to 2.6% of the total amount of energy generated by renewable energy installations, compared to 1% in 2014. The sum total of compensation payments also increased significantly from €83m in 2014 to €315m in 2015. In total, claims for compensation from installation operators for 2015 are estimated at €478m.

In 2015, as in the previous years, feed-in management measures primarily involved wind power stations, accounting for 87.3% of the total amount of unused energy, up from 77.3% in 2014. For the first time, offshore wind installations were also affected by feed-in management measures in 2015, accounting for around 16 GWh or 0.3% of the total amount of unused energy. Biomass replaced solar as the second leading energy type affected in 2015 by curtailments, with a share of almost 8%.

In total, the costs for network and system security[1] increased substantially by about €696m from €436m in 2014 to around €1,133m in 2015. This is primarily due to the large increase in the number of network and system security measures taken in 2015.

The TSOs were required to maintain 7,515 MW of reserve capacity to ensure network stability in the winter of 2015/2016. The reserve procured comprised just under 3,000 MW from Germany and around 4,500 MW from foreign power stations.

Compared to the previous years the TSOs used the reserve power plants very frequently during the winter half-year of 2015/2016, with the plants providing power on a total of 93 days. The reason here is that as of November 2015 deployment decisions also take into account which plants are most efficient to alleviate the predicted shortages.

1.3.4 Network charges

The network charges for household customers increased slightly. The charges for non-household customers remained broadly unchanged on the previous year's levels. The charges as of 1 April 2016 for the three consumption groups were as follows:

- household customers (default tariff), annual consumption 2,500-5,000 kWh: 6.71 ct/kWh;
- "commercial customers", annual consumption 50 MWh: 5.85 ct/kWh;
- "industrial customers", annual consumption 24 GWh, without a reduction under section 19(2) of the Electricity Network Charges Ordinance (StromNEV): 2.06 ct/kWh.

1.4 System services

The net costs of system services increased by €284m from €1,029m in 2014 to €1,313m in 2015. A large part of the costs is accounted for by the costs of national and cross-border redispatch – up from €185m in 2014 to almost €412m, procuring primary, secondary and tertiary control reserves – down from €437m in 2014 to just under €316m, and energy to compensate for losses – at around €277m compared to €288m in 2014. The structure of the system service costs changed considerably in 2015 from 2014. There was a further decrease – of €121m – in the total net costs for balancing, as a result in particular of the lower costs for secondary and tertiary reserves, down €73m and €56m respectively. By contrast, there was a small increase of €8m in the costs for primary reserve. The costs for energy to compensate for losses in 2015 were down by around €10m on 2014.

1.5 Wholesale

Well-functioning wholesale markets are fundamental to competition in the electricity sector. Spot and futures markets are crucial for meeting suppliers' short and longer term electricity requirements. Power exchanges play a key role alongside bilateral, over-the-counter (OTC) wholesale trading. They create a reliable trading

[1] The operators use feed-in management, redispatch, reserve power plants and countertrading to maintain network and system security.

forum and at the same time provide important price signals for market participants in other electricity sectors.

Adequate liquidity with sufficient volume on both the supply and the demand side improves opportunities for new suppliers to enter the market. In 2015 the wholesale electricity markets were marked once again by high liquidity, with a further increase in the liquidity of the spot and future markets compared to the previous year. The volume of day-ahead trading on EPEX SPOT and EXAA increased slightly whilst the volume of intraday trading on EPEX SPOT grew by 45%. The volume of electricity futures contracts traded on EEX rose by 15% from 812 TWh to 937 TWh. While futures trading via broker platforms did not show such growth, OTC clearing of futures contracts on EEX increased year on year by more than half from 557 TWh in 2014 to 877 TWh in 2015, a rise of around 57%.

There was a further decrease in the average wholesale prices in 2015. Average prices on the spot markets fell year on year, with Phelix Day Base and Phelix Day Peak prices down by 3% and 5% respectively. Despite lower peak prices, the average daily price dispersion was greater than in the previous year. Prices for electricity futures also fell further in 2015. At €30.97/MWh, the average Phelix Base Year Future price in 2015 was €4.12/MWh or around 12% lower than the average for 2014 of €35.09/MWh. The average Phelix Peak Year Future price in 2015 was €39.06/MWh. This was €5.34/MWh and also 12% lower than the average for 2014 of €44.40/MWh. Compared to the all-time peak reached in 2008, the downward trend in base and peak year prices continues. In addition to the changes introduced since the end of 2014 (separate intraday auctions for 15-minute contracts; shorter minimum lead time for intraday trading on EPEX SPOT; trading of electricity contracts for German/Austrian control areas possible up to 30 minutes before delivery since July 2015), trading of Cap Futures (weekly contracts) was introduced in September 2015 as a hedge against price peaks in light of the increasing share of renewables in the market.

The sales volumes of the TSOs using the power exchanges primarily to market electricity from renewables decreased again year on year. The percentage of electricity sold by the TSOs on EPEX SPOT fell from 38% in 2011 to 18% in 2015. This is a result of the increase in the amount of renewable electricity sold directly.

1.6 Retail

There was a further increase in the number of electricity suppliers available to retail customers. In 2015 final consumers could choose between an average of 115 suppliers in each network area (not taking account of corporate groups). The average number of suppliers for household customers was 99.

The number of household customers switching supplier has increased significantly since 2006, with around 4m switching in 2015. In addition, almost 1.7m household customers have switched energy tariff with their supplier. In 2015 a relative majority of household customers – 43.1% compared to 43.2% in 2014 – were on tariffs other than the default tariff with their regional default supplier. The percentage of household customers on default tariffs was 32.1%, representing another year-on-year decrease from 32.8% in 2014. 24.9% of all household customers are now served by a supplier other than their regional default supplier, compared to 24% in 2014. There was a corresponding increase again in the percentage of customers who no longer have a contract with their default supplier. Overall, around 75% of all households are served by their default supplier (on either default or other tariffs). Thus the strong position that default suppliers still have in their respective service areas weakened further in the year under review.

By contrast, default suppliers play a relatively small role in serving non-household customers. Around 68% of the total amount of electricity delivered to interval metered customers in 2015 was supplied by a legal entity other than the regional default supplier, while only about 32% was supplied on special tariffs by the default supplier. Less than 1% of all interval metered customers are on standard tariffs with their default supplier. The supplier switching rate for non-household customers in 2015 was about 13%, the highest since monitoring started in 2006. The switching rates show that since then between around 10.5% and 12.5% – and thus a significant proportion – of non-household customers have switched supplier every year.

The Bundeskartellamt assumes that there is no longer any single dominant supplier in either of the two largest electricity retail markets. The cumulative market share of the four largest undertakings in the national market for supplying interval metered customers was 31%, down two percentage points on 2014. The cumulative share in the national market for supplying non-interval metered customers (above all household customers, excluding electric heating customers) on non-default tariffs remained unchanged from 2014 at 36%. These figures are considerably lower than the statutory thresholds for presuming market dominance.

The number of household customers whose supply was disconnected by the network operator at the regional default supplier's request fell in 2015 by 20,000 to 331,273. For the first time, the suppliers were also asked to provide data on disconnections for household customers on non-default tariffs. In total, about 359,000 customers across all tariffs were disconnected in 2015. In addition, suppliers issued around 6.3m disconnection notices to household customers. Of these, about 1.6m were subsequently passed on to the relevant network operator for disconnection. These figures are based on data provided by 768 DSOs and 998 suppliers. Data was again collected on the use – at the default suppliers' request – of prepay systems such as pay-as-you-go meters using cash or smart cards. In total, around 19,400 prepay systems were installed in 2015.

Electricity prices for non-household customers as of 1 April 2016 showed a slight year-on-year decrease. This is most probably due to the drop in wholesale electricity prices. The individual price for industrial customers depends to a large extent on special statutory regulations enabling certain price components to be reduced. These regulations aim primarily to reduce prices for electricity-intensive undertakings. The average price as of 1 April 2016 for customers with an annual consumption of 24 GWh and not entitled to reductions was around 14.21 ct/kWh (excluding VAT), of which 10.72 ct/kWh was accounted for by surcharges, taxes, network charges and levies. This would be higher than the European average. The state-controlled surcharges, taxes, network charges and levies for industrial customers entitled to reductions could fall from 10.72 ct/kWh to below 1 ct/kWh, depending on the individual circumstances. This would then result in electricity prices for industrial customers that are lower than the European average. The average electricity price as of 1 April 2016 for non-household customers with an annual consumption of 50 MWh was around 21.20 ct/kWh (excluding VAT).

For the first time data was collected in 2016 on the prices for household customers in four different consumption bands. Following a slight fall in the previous year, the prices again showed a small increase in the year under review. As of 1 April 2016, the average price for household customers on default tariffs with an annual consumption of between 2,500 kWh and 5,000 kWh (comparable to the previous year's 3,500 kWh consumption band) had risen year on year by 1.8% to 30.63 ct/kWh (including VAT). Prices for the two other customer groups – those on other tariffs with their default supplier and those with another supplier – also increased slightly. Electricity prices for customers on other tariffs with their default supplier and with an

annual consumption of between 2,500 kWh and 5,000 kWh averaged 29.01 ct/kWh and for customers with another supplier were an average 28.17 ct/kWh. The volume-weighted average across all three groups for an annual consumption of between 2,500 kWh and 5,000 kWh was 29.80 ct/kWh (including VAT). In a European comparison only Denmark has higher electricity prices than Germany. Germany's high prices are due to a heavy burden of surcharges, taxes and levies. There was a further increase in the state-determined price components of the offshore liability surcharge and the surcharges payable under the Renewable Energy Sources Act, the Combined Heat and Power Act (KWKG) and section 19 of the Electricity Network Charges Ordinance. The renewable energy surcharge is used to balance out the renewable energy costs incurred by the TSOs and the income generated from selling renewable energy on the spot market, and alone accounts for more than 21% of the prices. Network charges also rose. The price components not controlled by the supplier (taxes, levies, surcharges and network charges) amount in total to about 75%. The competitive component of the electricity price found in "energy procurement, supply, other costs and the margin" accounts for around 25% of average total prices.

As of 1 April 2016, there was another decrease – of around 3% – in the "energy procurement, supply, other costs and the margin" component of the price, leading to a dampening effect on overall prices. This component has again fallen in all household customer tariff categories. The decrease could be related in particular to the drop in wholesale prices.

As a rule, customers on default tariffs can make savings by switching tariff and even more by switching supplier. Special bonuses offered by suppliers are an added incentive for customers to switch supplier.

Since 2014 there has been a significant increase in the number of electric heating customers who have switched supplier, following many years with hardly any customers switching. The last two years have seen an increase in transparency for end customers and in the services offered by national electric heating suppliers. The percentage of electric heating customers (meter points) served in 2015 by a supplier other than the regional default supplier was more than 6%, up two percentage points on a year earlier. Electric heating prices were broadly unchanged compared to the previous year. The average price as of 1 April 2016 for electric storage heating customers with an annual consumption of 7,500 kWh was around 20.59 ct/kWh, and 21.33 ct/kWh for heat pump customers.

A Developments in the gas markets

1. Summary

1.1 Production, imports and exports, and storage

In 2015, natural gas production in Germany fell by 0.6bn m³ to 8.5bn m³ of gas (with calorific adjustment).[2] This corresponds to a decline of 6.9% compared to the previous year. The decline in natural gas production is chiefly due to the increasing exhaustion of the large deposits and the resulting natural decline in output. The reserves-to-production ratio of proven and probable natural gas reserves was 8 years as of 1 January 2016 (2015: 8.8 years).

In 2015, the total volume of natural gas imported into Germany was 1,534 TWh. Based on the previous year's figure of 1,542 TWh, imports to Germany decreased slightly by 8.4 TWh, a drop of 0.5%. Imports from the Netherlands decreased significantly (-10.6%) while imports from Russia through the Nord Stream pipeline rose by 11%.

In 2015, the total volume of natural gas exported by Germany was 746.3 TWh. Based on the previous year's figure of 810.1 TWh, exports from Germany decreased significantly by 63.8 TWh or just under 8%. Exports to the Netherlands rose sharply (+27.5%), while there was a large decrease in exports to Austria (-36.7%) and Switzerland (-19.4%).

The total maximum usable volume of working gas in underground storage facilities as of 31 December 2015 was 27.6bn Nm³.[3] About half of this was accounted for by cavern storage facilities and the other half by pore storage facilities. There was another slight decrease in the volume of short-term (up to 1 October 2017) freely bookable working gas; the capacity bookable from 2016/2017 also decreased slightly. The volume of working gas available for longer-term booking increased again compared to previous years.

The current storage level at natural gas storage facilities in Germany is high compared to past years. On 1 October 2016, at the beginning of the 2016/2017 gas year, the total storage level of German storage facilities was around 95%.

The market for the operation of underground natural gas storage facilities is still highly concentrated but less concentrated than in the previous year. The aggregate market share of the three largest storage facility operators on 31 December 2015 was some 73%, representing a year-on-year decrease of nearly two percentage points.

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[2] Gas volumes with calorific adjustment are amounts measured in a manner that is commercially relevant. 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).

[3] The 7Fields and Haidach storage facilities in Austria are fully accounted for in this figure.

1.2 Networks

The gas network development plan (NDP) 2015 was presented to the Bundesnetzagentur by the TSOs on time on 1 April 2015. The Bundesnetzagentur then published the document for full consultation. Taking the results of the consultation into account, the Bundesnetzagentur issued a request for modification to the TSOs on 1 September 2015.

The need for the total of 37 new measures included in the gas NDP 2015 is in particular due to the market area conversion from L-gas to H-gas and the ensuing increased demand for H-gas. From a security of supply perspective, market area conversion plays a significant role in the draft gas NDP 2015. The result is a specific proposal for the gradual transformation of these areas that goes beyond 2025 to cover the period until 2030.

On 1 April 2016, the TSOs submitted their draft gas NDP 2016-2026 to the Bundesnetzagentur. Essentially, the measures in the gas NDP 2015 are confirmed by the results of the gas NDP 2016-2026. Moreover, the gas TSOs are proposing a further 39 expansion measures up to 2026, largely on the basis of the need for market area conversion as a result of the decline in L-gas imports from the Netherlands over the next few years, the need to take account of increased H-gas demand, and the increase in demand for capacity with regard to planned reserve gas fired power plants. Furthermore, individual measures can be attributed to the increased capacity required in the distribution network, particularly in southern Germany.

In 2015, investments in and expenditure on network infrastructure by the 16 German TSOs amounted to €495.9m (2014: €527.4m). Of this, €340.7m (2014: €383.6m) was accounted for by investments in new builds, upgrades and expansion projects and €155.2m (2014: €143.8m) by investments in network infrastructure maintenance and renewal. Expenditure on network infrastructure maintenance amounted to €365.5m in 2015 for all TSOs (2014: €266.6m).

The investment volume for new builds, upgrades and expansion projects (€681.5m) as well as network infrastructure maintenance and renewal (€430.5m) amounted to €1,112m according to the data provided by the gas DSOs. This was a decrease of 3.7% compared to the prior year's investment volume (€1,155m). The €1,079m in investments for distribution networks originally planned by gas DSOs for 2015 was therefore exceeded by €33m.

According to the data provided by the gas DSOs, maintenance expenses amounted to €1,203m in 2015. This was an increase of almost 12% compared to the previous year (€1,075m). The €1,158m in expenses for the distribution network originally planned by the gas DSOs for 2015 was therefore exceeded by €45m.

The Bundesnetzagentur again conducted a comprehensive survey of all gas supply interruptions throughout the Federal Republic of Germany. The average value for all final consumers determined from the results of this survey – the System Average Interruption Duration Index or SAIDI – reflects the average duration of supply disruptions experienced by a customer over a period of one year and was 1.699 minutes in 2015 (2014: 1.257 minutes).

The average volume-weighted network charge, including billing, metering and meter operation charges, for household customers on default tariffs in consumption band II was 1.50 ct/kWh on 1 April 2016, representing a year-on-year increase of 0.1 ct/kWh or 7.1%.

Compared to the previous year, the total quantity of gas supplied by general supply networks in Germany increased in 2015 by 64.3 TWh or 8% to 865.7 TWh. The quantity of gas supplied to household customers (as defined in section 3 para 22 EnWG) rose by just over 13.5% to 254.5 TWh. There was a further decrease in the gas supplied to gas fired power stations with a nominal capacity of at least 10 MW. 38.8 TWh of gas was supplied to such gas fired power stations in 2015, a drop of over 10% compared to the previous year.

With regard to gas transmission networks, the quantity of gas procured directly on the market by large final consumers (industrial customers and gas fired power stations) amounted to 57.2 TWh, equivalent to just under 36% of the total quantity of gas supplied by the TSOs. With regard to gas distribution networks, the amount of gas procured without a conventional supplier contract amounted to 31.4 TWh, corresponding to a share of approximately 4.5% of the total supplied by the DSO.

The conversion of German L-gas networks to H-gas began in 2015. Overall the conversion, which is expected to be completed by 2030, will affect more than four million gas customers with around 4.9m gas appliances.

1.3 Wholesale

Liquid wholesale markets are vital to ensure well-functioning markets along the entire value-added chain in the natural gas sector, from the procurement of natural gas all the way to supplying final customers. Liquid wholesale markets facilitate market entry and foster competition for final consumers.

Varying developments were recorded in the liquidity of the wholesale natural gas markets in Germany in 2015. In 2015, natural gas transactions brokered by broker platforms with Germany as the place of delivery amounted to some 2,652 TWh, representing a decrease of around 11% compared to the previous year. A further increase of 38% in on-exchange gas trading volumes was, however, recorded, having already more than doubled in the previous year. The Bundeskartellamt now defines the wholesale market for natural gas as a national market and no longer defines markets based on their respective network area.

2015, much like the previous year, was marked by falling wholesale gas prices.[4] The annual average daily reference prices calculated by EEX fell by around 6% (2014: 22%), while the cross-border price, as calculated by the Federal Office for Economic Affairs and Export Control (BAFA), decreased on average by 13% (2014: 15%). The changes in the BAFA cross-border price over the course of 2015 clearly show a correlation with exchange prices for natural gas.

1.4 Retail

The majority of household customers (54%) were supplied by the local default supplier under a non-default contract (2014: 57%) and were delivered 122.4 TWh of gas (2014: 116 TWh). Just under one quarter of household customers (23.5%, compared to 24% in 2014) with a default supply contract were supplied with 53.3 TWh of gas (2014: 49.8 TWh). The percentage of household customers who have a contract with a supplier other than the local default supplier once again increased and now stands at 22.4% (2014: 19%) for 50.8 TWh of gas (2014: 38.3 TWh). Default supply is of only minor significance for non-household customers. Around 71%

[4] Influencing factors include the world market prices for oil and LNG, weather and temperatures, the renegotiation of long-term supply contracts on the European gas market, increasing trade at European gas trading points and gas storage capacities.

of the total volume of gas delivered to interval metered customers in 2015 was supplied on the basis of a contract with a legal entity other than the local default supplier.

The volume-based supplier switching rate for non-household customers was still around 12% in 2015. There was a strong rise in the switching rates among non-household customers between 2006 and 2010. Since then the switching rate has remained more or less constant. The number of household customers who switched supplier rose by around 15% (+120,171 supplier switches) to 925,195. By contrast, the number of household customers who immediately chose an alternative supplier rather than the default supplier when moving home decreased by 13.5% (-33,011 household customers). In addition, almost half a million household customers have changed their gas tariff with their supplier.

The total volume of gas supplied to household customers who switched supplier (including those switching when moving home) increased in 2015 by 3 TWh or 13.3% to 25.6 TWh. Considering the significant increase in gas supplied to household customers by network operators, the volume-based switching rate remained stable at 10.1%.

The Bundeskartellamt assumes that there is no longer any single dominant supplier in either of the two largest gas retail markets. The cumulative market share of the three largest undertakings in the national market for supplying interval metered customers was 29%, and 22% in the national market for supplying non-interval metered gas customers (in particular household customers) under a contract outside the scope of default supply. These figures are considerably lower than the statutory thresholds for presuming market dominance.

Since market liberalisation and the creation of a legal basis for a well-functioning supplier switch, there has been a steady positive development in the number of active gas suppliers for all final consumers in the different network areas. In 2015, there was a choice of more than 50 gas suppliers in nearly 83% of the network areas. Final consumers in almost 31% of the network areas had a choice of more than 100 suppliers. On average, final consumers in Germany can choose between 90 suppliers in their network area; household customers can, on average, choose between 75 suppliers (these figures do not take account of company affiliations).

As of 1 April 2016 retail prices for gas fell again compared to a year earlier (1 April 2015).

Gas prices for non-household (industrial/commercial) customers fell considerably. The levies/taxes and network charges have remained unchanged, meaning that the falling prices are solely due to a further reduction in the price component that can be controlled by the supplier (energy procurement, supply, other costs and margin). The average price (excluding VAT) as of 1 April 2016 for "industrial" customers with an annual consumption of 116 GWh was 2.77 ct/kWh (1 April 2015: 3.5 ct/kWh) and thus by far the lowest ever since data on gas prices was first collected for the monitoring reports.

Gas prices for household customers also fell, although to a considerably lesser extent. This decrease was also due to a further reduction in the price component that can be controlled by the supplier (energy procurement, supply, other costs and margin). The average price for household customers across all contract categories (ie default supply contract, non-default contract with the default supplier, and contract with a supplier other than the local default supplier) decreased by about 2.1% to 6.54 ct/kWh (including VAT) as of 1 April 2016 (1 April 2015: 6.68 ct/kWh). On 1 April 2016, the volume-weighted price for default supply in consumption

band II was 6.99 ct/kWh, a slight decrease of 1.7% compared to the previous year. The price for customers in consumption band II supplied under a non-default contract by their default supplier was 6.37 ct/kWh, a considerable drop of 4.6% compared to the previous year. The price for customers in consumption band II with a supplier other than the local default supplier was 6.49 ct/kWh, a clear increase of 6% compared to the previous year.

A look at the household customer prices over the past ten years (2006-2016) shows that default supply constitutes the most expensive tariff for gas customers. Overall, the price paid by default supply customers has increased by just under 14% over the past ten years. Customers with a non-default contract with their default supplier and customers with a supplier other than the local default supplier have been able to rely on very stable gas prices. The price increase for these customers over the last eight years remained below 2%.

The number of household customers whose supply was disconnected by the network operator at the local default supplier's request fell in 2015 by just under 3,000 to 43,626. For the first time, the suppliers were also asked to provide data on disconnections for household customers on non-default tariffs. In total, about 43,126 customers across all tariffs were disconnected in 2015.

Compared to the previous year, the number of disconnection notices issued (1,284,670) remained more or less steady (-0.3%). Compared to 2014, the number of requests for disconnection fell by 4.1% to 261,260. A comparison of the number of disconnection notices issued with the number of disconnections actually carried out shows that about 3.4% of the notices issued actually led to gas supply disconnection.

Data was again collected on the use – at the default suppliers' request – of prepay systems such as pay-as-you-go meters using cash or smart cards. In total, 1,178 prepay systems were installed in 2015.

A comparison with the gas prices across Europe shows that household customers in Germany pay slightly below average prices and non-household customers in Germany pay slightly above average prices.

Imprint

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