

Business Report

General conditions

External influences

The business performance of EnBW is greatly influenced by a wide range of external factors. These include, above all, the development of the wholesale market prices for electricity, the political/regulatory framework conditions and also the weather conditions. The price of electricity is not only dependent on demand but also on the development of the global markets for fuel and CO₂ allowances (Glossary, p. 152). In an environment characterised by a constantly growing share of generation accounted for by renewable energies, earnings are naturally influenced by the weather conditions. Important factors are, for example, the wind strength at sea and on land, the duration and intensity of sunlight and the amount of precipitation that impacts the water levels in rivers. In addition to these factors, the energy sector is still experiencing a period of fundamental change due to the transition to increasingly carbon-neutral methods of energy generation. The sales markets for our products and services are characterised by very intense competition with an increasing number of new players on the market. Furthermore, patterns of demand amongst customers, the market structure and technological requirements are changing.

Macroeconomic trends

Economies

The economies relevant for EnBW developed differently in 2018. Economic growth in Germany slowed compared to the previous year but remained at a high level, whereby private consumption continued to play an important role. The rate of economic growth in the eurozone as a whole also slowed a little. In contrast, the pace of economic growth accelerated in Switzerland. Turkey experienced a severe economic slump – the inflow of foreign investment and the tourism business both declined due to increasing political uncertainty. In general, the political and economic risks grew in Turkey in 2018.

Economic growth in Europe and Germany is set to slow down slightly in 2019. We anticipate that the general conditions for the business activities of EnBW will stabilise in 2019.

Development of gross domestic product (GDP)

in %	2019	2018	2017 ¹
World	3.5	3.7	3.8
Eurozone	1.6	1.8	2.4
Germany	1.3	1.4	2.5
Switzerland	1.8	3.0	1.7
Czech Republic	3.0	3.1	4.3
Turkey	0.4	3.5	7.4

¹ The figures for the previous year have been restated.

Development of interest rates

While the US Federal Reserve raised interest rates multiple times during 2018, the European Central Bank (ECB) continued its expansive monetary policy. In the second half of the year, the rates of return fell significantly due to political events (Italian election), increasing protectionism (trade tariffs) and the global turbulent economic environment.

The discount rates applied to company pension provisions and nuclear provisions remained at a low level in 2018 so that the present value of the pension obligations of EnBW was not subject to any change and the present value of the nuclear obligations was only subject to minor interest rate-driven changes.

The consensus forecasts for the ECB main financing rate remained unchanged at 0.00%.

Development of the sector and competitive situation

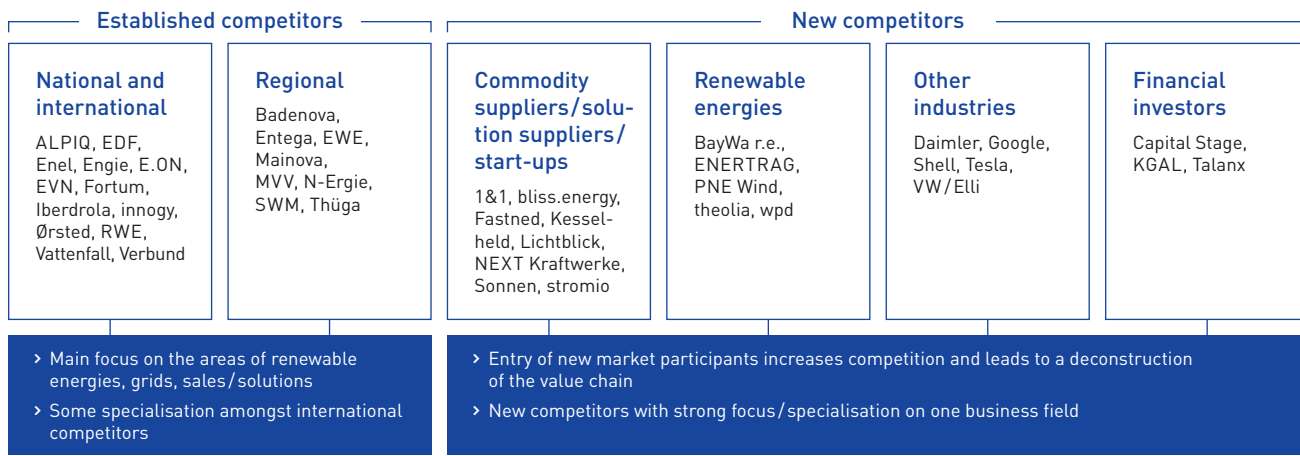
The energy sector is still in the middle of a period of fundamental change. This pertains to the transformation of the generation landscape and also to the transport transition, heating transition and increases in efficiency in energy consumption. In particular, renewable energies will increase their share of the mobility and heating sectors in the long term. In parallel, the business models followed by energy supply companies are changing and new players from outside the sector are also entering the energy market. This is especially true for the commodity and solutions business.

At the same time, companies are repositioning themselves along the traditional value added chain in the sector and specialising in certain business fields. A prominent example in the past year was the transaction between RWE and E.ON.

Another aspect is the desire amongst cities and communities to remunicipalise their electricity and gas supplies in the regulated grid sector. Against this background, the traditional energy supply companies need to re-examine their competitiveness in

individual business areas, exploit the potential offered by a changed market environment and align their strategies for the future (p. 38 f. and 48 ff.).

Selection of international, national, regional and new competitors



Cross-segment framework conditions

Climate protection

Climate protection remains a global challenge. The prolonged dry spell and high temperatures in the exceptionally hot summer of 2018 already gave some insight into the possible consequences of climate change for Germany.

The 24th UN Climate Change Conference was held in Katowice in December 2018. The international community agreed to joint measures for limiting global warming to significantly below two degrees Celsius in accordance with the Paris Agreement from 2015. The general rulebook adopted at the conference included, amongst other things, binding minimum standards for reporting on greenhouse gas emissions (Glossary, p. 153) and other climate protection measures. According to an estimate published by the Intergovernmental Panel on Climate Change (IPCC) in October 2018, which was acknowledged by the international community, CO₂ emissions must be reduced by about 45% from the level in 2010 by 2030, and reach zero by 2050 in order to limit global warming to 1.5 degrees Celsius.

The European Council agreed on measures to strengthen climate protection in 2018. These measures included a new Energy Efficiency Directive that defines a minimum energy efficiency target of at least 32.5% for 2030 compared to 2007, and a new version of the Renewable Energy Directive with the target of covering at least 32% of electricity consumption with renewable energies by 2030. In addition, the EU Parliament agreed to reform the European emissions trading system, whereby the annual reduction factor will be raised from 1.7% to 2.2% from 2021. A temporary increase in the prices of up to €25/t CO₂ for emissions trading was the result.

In Germany, the national climate targets for 2020 will not be achieved. In order to minimise the deviation from the targets for 2020 and ensure the targets for 2030 will be achieved, additional measures are required. Amongst other things, the German government has thus announced new legal regulations. The aim is to increase the share of gross energy consumption accounted for by renewable energies to 65% by 2030. The Omnibus Energy Act, which was passed by the Bundestag in November 2018, includes special auctions in the period from 2019 to 2021 with a total capacity of 4 GW each for onshore wind and photovoltaic power plants. Climate protection is also becoming a more significant issue for the business community. For example, Foundation 2° – an initiative started by German businesses – is committed to climate protection and limiting global warming to significantly below two degrees Celsius. EnBW and its CEO, Dr. Frank Mastiaux, have been members since May 2018. The aim of the initiative is to support politicians in the creation of the market economy-based framework conditions for climate protection.

EnBW is also advocating the introduction of a minimum price for CO₂ in order to help steer investment towards climate-friendly technologies. A minimum price could be introduced in Germany but this measure should cover as many European countries as possible, such as France.

The EnBW Chief Financial Officer, Thomas Kusterer, is a member of the Technical Expert Group on Sustainable Finance (TEG) (Glossary, p. 155), which is supporting the European Commission up to the end of 2019 in the development of a legal framework for sustainable financing opportunities. Thomas Kusterer is also a member of the Task Force on Climate-related Financial Disclosures (TCFD) (Glossary, p. 155) for the development of climate-related risk reporting. In October 2018, EnBW published its first Green Financing Framework and issued its first green bond (Glossary, p. 153) with a volume of €500 million (p. 85 f.).

The strategy being followed by EnBW of concentrating investment on renewable energies, expanding the grids and developing new and increasingly digitalised business models works towards the achievement of the targets set at the Climate Change Conference, while the strategy itself is being validated by the international efforts for climate protection.

Coal Commission

The German government agreed to the creation of a commission on “Growth, Structural Change and Employment” in its coalition agreement. The commission was tasked with defining an end date for coal-fired power generation and also with developing measures to help Germany close the gap on achieving the climate protection target for 2020 and achieve the target for 2030. In addition, it was asked to make recommendations for structural change in regions that will be affected by the end of coal production. The commission started work in June 2018 and presented its final report on 26 January 2019. It recommends the termination of coal-fired power generation in Germany by 2038. However, this deadline could be moved forward to 2035 if a review to be carried out in 2032 indicates that an earlier termination date would be possible. German brown and hard coal capacities in the energy industry should also be reduced to 15 GW each by 2022 (total brown coal and hard coal capacities are currently around 42 GW). A further reduction in the total capacities to 17 GW will then required by 2030. The commission has outlined compensation rules for the period up to 2030 for the operators of the power plants to be decommissioned. These rules recommend that brown coal and hard coal power plants are decommissioned on the basis of voluntary agreements up to 2022. This rule will remain valid for brown coal power plants up to 2030. In the period between 2023 and 2030, a degressive decommissioning premium for the hard coal power stations will be offered for tender. Further details about the design of the compensation rules are not currently known.

Activities in Turkey

EnBW has been actively involved in the expansion of electricity generation in Turkey, above all through investment in wind power plants, as part of its joint venture with its Turkish partner Borusan since 2009. We currently operate the fourth largest wind power portfolio in Turkey with an installed output of 436 MW together with Borusan. Other potential wind power projects with a total output of around 600 MW are currently in development. We still believe that the Turkish market is an attractive proposition for the future, although the current political and economic unrest have unsettled many investors. We are carefully monitoring the developments in Turkey together with our partner.

Sales segment

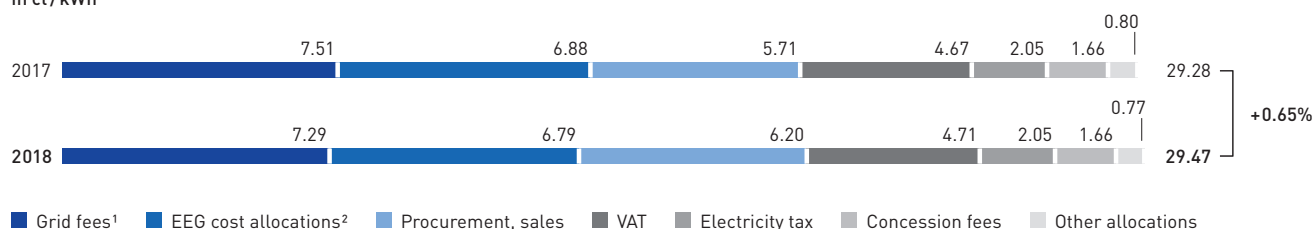
Electricity and gas prices for retail and industrial customers

According to an analysis of electricity prices by the German Association of Energy and Water Industries (BDEW) published in January 2019, the average monthly electricity bill for a household with an annual consumption of 3,500 kWh in 2018 came to €85.94 compared to €85.42 in the previous year. Taxes and levies account for more than half of this amount. EnBW increased the price for the basic supply of electricity by around €32 per year on 1 April 2018. The reason for this development was the higher grid-user charges. In the case of industrial customers receiving a medium-voltage supply, the average electricity price including electricity taxes increased according to calculations made by BDEW by 5.1%, from 17.09 ct/kWh in the previous year to 17.96 ct/kWh in 2018.

According to calculations by the German Federal Statistical Office in 2018, natural gas prices for private households had fallen by 1.4% compared to the previous year; the price of natural gas for industrial customers increased by 14.9%.

Average electricity price for a 3-person household (annual consumption of 3,500 kWh)

in ct/kWh



1 Including metering and metering station operation.

2 German Compensation Mechanism Ordinance (AusglMechV) has been applied since 2010.

Source: BDEW | As of January 2019

Structural changes

Greenhouse gas emissions [Glossary, p. 153] in the transport sector need to be reduced by 42% by 2030 compared to the figure in 1990, for climate protection reasons. The gradual **decarbonisation of the transport sector** will be necessary in order to achieve this target. Carbon-neutral fuels such as hydrogen or synthetic fuels (e-fuels) can make a contribution, while above all the transition to battery-powered electric vehicles will make the achievement of this target possible. The number of newly registered electric vehicles increased by 24% in 2018 and accounted for 1.9% of all new registrations. In 2018, the EU agreed to set stricter emission targets for the fleets of passenger cars and light commercial vehicles. The CO₂ emission limit for fleets, which is valid from 1 January 2021, is 95 gCO₂/km, which will decrease by 37.5% in two stages up to 2030 to 59 g CO₂/km (in 2030). In order to comply with these limits, it will be necessary to increase the proportion of electric vehicles significantly in the coming years. Government subsidies, such as the tax exemptions for electric company cars that are valid from January 2019, create an incentive to purchase these vehicles. In parallel, the charging infrastructure [Glossary, p. 153] is being expanded further. Alongside charging at home, the ability to charge at work and in car parks will become increasingly important. Large department stores and hardware stores are equipping their car parks with quick-charging stations. A network of quick-charging stations with ever increasing charging outputs is being installed along the motorways. 150 kW charging stations reached market viability in 2018. In future, they will be supplemented with other 350 kW charging stations. There were 13,500 public and semi-public charging points at 6,700 charging stations across Germany in the middle of 2018, which represented a 25% increase compared to the previous year. EnBW is engaged in the expansion of the charging infrastructure for household customers and also for commercial and local authority partners. As a result of sale campaigns, it was possible to supply over 500 electric cars to employees and customers in 2018.

The German government aims to achieve a climate-neutral building stock by 2050. Achieving high levels of **energy efficiency in buildings** is a key factor in this area. The Building Energy Act (GEG), which is due to be passed in the summer of 2019, will combine the various legal requirements for the energy-related properties of buildings in one law. However, these stricter energy-related requirements have already been anticipated in the construction of new buildings in many cases. Due to the lower heating demands in these buildings, heat pumps can be used as an energy-efficient form of heating. The proportion of new buildings using heat pumps has been increasing for a number of years and stood at 27% in 2017. It is also possible to improve the energy efficiency of existing buildings by replacing the heating system. Around 3% of heating systems are currently replaced per year. Due to the age structure of heating systems, this rate is set to increase in the coming years. On average, 17% of all the heating systems installed in residential buildings are 30 years old or older. Two thirds of the heating systems are considered to be inefficient. The replacement of a heating system is often also accompanied by a switch in energy source to natural gas, district heating or renewable energy sources. EnBW has identified huge oppor-

tunities for growth in the dynamic heating market and offers its customers a broad range of products for energy-efficient and low-carbon heating solutions for new and existing buildings – also in the form of contracting solutions.

The rate of expansion in energy generation from renewable sources needs to increase in the coming years in order to achieve the 65% target for the share of gross energy consumption accounted for by renewable energies by 2030. Alongside the increase in expansion of wind energy, it will also be necessary to double the current EEG target values for the annual **expansion in photovoltaics**. Following a failure to achieve the expansion target in the past few years, the target value of 2.5 GW was achieved again for the first time in 2018. More than two thirds of the expansion in photovoltaics in 2018 came from rooftop systems, with up to 750 kWp in the commercial sector, the housing industry and private buildings. In order to increase the consumption of own electricity in private buildings, 50% of newly installed photovoltaic power plants are equipped with a battery storage system. EnBW is committed to increasing own consumption of solar energy and offers customers innovative photovoltaic storage solutions.

The market for **home storage systems** is growing dynamically – around 100,000 decentralised storage systems were installed in households in 2018. We also expect high growth rates in the future and anticipate that a higher proportion of the photovoltaic power plants installed in the household sector will be combined with a home storage system. EnBW is represented on the market for home storage systems by its subsidiary SENEC.

Decarbonisation, digitalisation and an increase in energy efficiency are all necessary for the success of the Energiewende. The new energy world will crossover and connect more and more sectors in the future. Climate protection will become a key task for cities and communities – including the sustainable planning of urban districts. The electricity, heating, cooling, mobility and communication needs of customers must be considered in a holistic manner and the necessary infrastructures coordinated and harmonised with one another. EnBW supports its customers in these complex tasks through **cross-sector planning services and the implementation of customer-oriented urban district solutions**.

Grids segment

The **regulatory framework conditions that were defined for the electricity and gas grids** in the third regulatory period had a significant influence in 2018. In particular, cost assessments are very relevant for our grid operators because the results have a significant effect on their earnings situation.

The **rates for return on equity for electricity and gas grids** defined by the Federal Network Agency for the third regulatory period were repealed by the Higher Regional Court in Düsseldorf on 22 March 2018, because the interest rates should be increased. The Federal Network Agency filed an appeal against the judgement with the German Federal Court of Justice on 25 April 2018. The court has not yet handed down its judgement.

According to the Incentive Regulation Ordinance, the **general sectoral productivity factor** (Xgen) [Glossary, p. 154] has to be recalculated before the start of each regulatory period by the Federal Network Agency from the third regulatory period onwards. For the duration of the third regulatory period for gas (2018 to 2023), the Federal Network Agency has defined an Xgen of 0.49% for the gas grid operators. Hundreds of gas grid operators appealed against this decision to the Higher Regional Court in Düsseldorf. The general productivity factor for operators of electricity grids for the next regulatory period for electricity (2019 to 2024) was set at 0.9% by Ruling Chamber 4 of the Federal Network Agency on 28 November 2018. It is notable that the Xgen for electricity grids will be almost twice as much as that for the gas grids. Grid operators, including Netze BW, will also appeal against this decision.

The Bundesrat agreed an ordinance for the gradual **introduction of uniform transmission grid fees** across Germany on 8 June 2018. The harmonisation of the transmission grid fees for the four German electricity transmission system operators (TSO) began on 1 January 2019. According to the new regulations in the transmission grid fee ordinance, the fees will be harmonised in the period up to 2023 in five stages, each covering 20%. The transmission grid fees for our subsidiary TransnetBW will rise as a result.

On 12 December 2018, the German Federal Cabinet agreed the **draft act to accelerate the power grid expansion** for the electricity transmission grid. The act revises the so-called Grid Expansion Acceleration Act (NABEG). An important objective is to simplify and speed up the approval process for the new construction, improvement and optimisation of high and extra-high-voltage lines. The act is an important component for the quick expansion of the grids that is required for the success of the Energiewende. It is due to come into force in the first half of 2019. EnBW hopes that these measures will create improved framework conditions that will allow the transmission system operators to implement the required grid expansion measures on time.

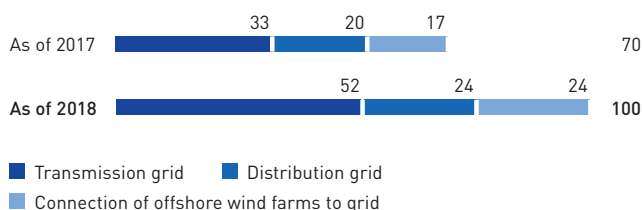
The TSO submitted their first draft of the next national **Network Development Plan Electricity** (NDP Electricity) [Glossary, p. 154] for 2030 for consultation on 4 February 2019. It is based on the framework scenario defined by the Federal Network Agency on 15 June 2018. In particular, it takes into account the German government's aim to increase the proportion of gross electricity consumption covered by renewable energies to 65% by 2030. According to assessments made by the TSO, around 1,600 km of additional newly constructed grids will be required by 2030 due to the raised target. Following the consultation phase, the TSO must submit a revised NDP (second draft) to the Federal Network Agency for approval.

Alongside the integration of renewable energies in the **expansion and restructuring of the power grids**, greater focus is also being placed on sector coupling [Glossary, p. 154]. For example, the electricity grid also needs to be equipped for the expected escalation in the number of electric vehicles. Our subsidiary Netze BW has started the pilot project "E-Mobility Avenue" in Ostfildern to test the charging behaviour of users and the effects on the electricity grid. Netze BW was the first

metering point operator to install a BSI certified smart metering system [Glossary, p. 154] for a private household in December 2018. This marked another important milestone for the Energiewende.

There is also an ongoing need to **expand the electricity grids**, especially the high and extra-high-voltage lines, to ensure that generation and consumption is balanced across regions and nationally. However, there is also a need for significant investment at lower voltage levels in the electricity distribution grid in future, due primarily to advancing sector coupling [Glossary, p. 154] as a result of electromobility and electrical heating applications. In the regulated grid business, an increasing level of tension is expected overall due to, for example, the reduction in the equity yield rate. Investment in the expansion of the grids may reduce the earnings pressure on the grid operators but appropriate returns are necessary in order to continue pushing forward the expansion of the grids and to guarantee the security of supply in Germany. Overall, we anticipate that the grid business of the EnBW grid subsidiaries will be faced with more economically challenging framework conditions in the future.

Predicted investment in the expansion of the German electricity grid up to 2030 in € billion



Source: Draft NDP Electricity 2030, version 2019, NDP Electricity 2030, version 2017, BMWi 2014 Distribution Grids Study, own estimates

Aside from the impending expansion of the grids, other measures were also taken by the transmission system operators in 2018 to **guarantee the stability of the grid** in the long term. Alongside maintaining 6,600 MW of decommissioned capacity at power plants still classified as system-relevant, the German transmission system operators, including TransnetBW, issued an invitation to tender for the construction of 1,200 MW of new power plant capacity. EnBW participated in the tender process with a new facility at the site in Marbach.

On 29 March 2018, the gas transmission system operators submitted a revised draft of the **Network Development Plan Gas** (NDP Gas) [Glossary, p. 154] for the period from 2018 to 2028. For the proposed measures, investment of around €7 billion will be required by 2028 in order to safeguard the transmission requirements for Germany and Central Europe. The Federal Network Agency approved the NDP Gas on 20 December 2018 with requests for changes and ancillary provisions. Due to damage to one of the two TENP (Trans Europa Naturgas Pipeline) natural gas lines, the transmission system operators also proposed three additional grid expansion measures (54 km of new gas lines, €171 million investment volume) in the middle of 2018 to supplement the NDP. In particular, these measures are required to safeguard the supply to Baden-Württemberg

because the transport capacity of the TENP line up to 2020 is only expected to be available to a limited extent. In order to satisfy the increasing demand for capacity in Baden-Württemberg, our transmission system operator terranets bw is expanding its own infrastructure accordingly. This will include the construction of the so-called “Neckar-Enz Valley line” and the expansion of the Scharenstetten compressor station as envisaged in the NDP.

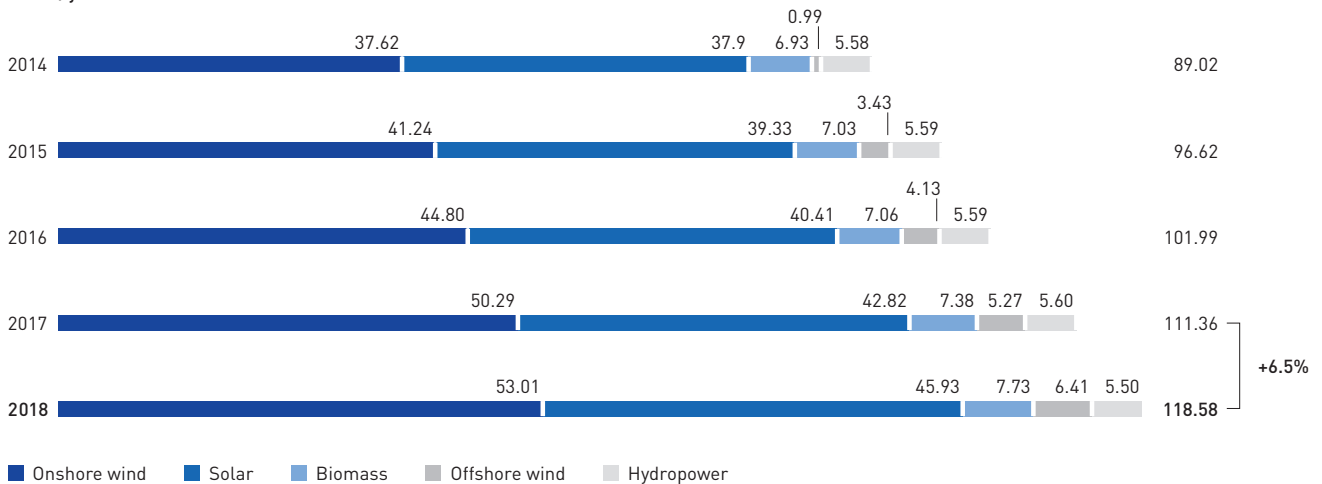
The **reform of the Gas Grid Access Directive** (GasNZV) from 7 July 2017 stipulates that the two German market areas NetConnect Germany (NCG) [Glossary, p. 154] and GASPOOL [Glossary, p. 153] must be merged by 1 April 2022 at the latest. The transmission system operators and the Federal Network Agency have already agreed on the date of 1 October 2021 for the launch of the joint German gas market area. This date is also the start of the gas business year and was considered the most suitable choice for all market participants. EnBW believes that the merging of the two German market areas is a necessary step in the further development of the German gas market.

Renewable Energies segment

The costs for using renewable energies reduced significantly around the world in 2018 and the very dynamic growth of this market continued. Numerous countries are currently developing funding mechanisms and targets, which should help to sustain this expansion. In Europe, the first major projects for the generation of electricity from renewable energies without the need for state funding were realised in 2018.

Electricity generation from renewable energies rose again significantly in Germany in 2018. According to the Fraunhofer ISE (www.energy-charts.de), the proportion of total German electricity generation accounted for by sustainable energy generation increased to just over 40% (2017: around 38%). The installed capacity of renewable energies increased by around 7.3 GW in Germany in 2018 (of which photovoltaics around +3.6 GW, onshore wind +2.7 GW and offshore wind around +1 GW). The special auctions for renewable energies (4 GW each for photovoltaics and onshore wind energy) announced in the coalition agreement of the German government – which are welcomed by EnBW – are expected to be held between 2019 and 2021. However, the adjustment to the expansion target for offshore wind energy for 2030 that was also announced in the coalition agreement has not yet been implemented.

Installed net output for electricity generation from renewable energies in Germany
in GW/year



Source: AGEE, BMWi, Federal Network Agency | As of 31/01/2019

There was a clear drop in the number of projects eligible to participate in the German auctions for **onshore wind energy** in 2018. The reason for this is that the privileges enjoyed by community energy cooperatives [Glossary, p. 152] and the increasing number of obstacles that need to be overcome to secure regional approval have led to significant delays in many projects. The resulting shortage of bids was also reflected in the average prices for those bids accepted in the auctions, which rose significantly compared to the previous year (from around 4.6 ct/kWh in 2017 to more than 5.7 ct/kWh in 2018). Plans to enshrine regional control over the expansion of onshore wind energy in law have not yet been realised. EnBW was also impacted in 2018 by the uncertainty in the investment

environment for onshore wind energy in Germany. Therefore, we advocate regional control over the expansion of onshore wind energy to exploit opportunities for the expansion of renewable energies close to where the energy is consumed, especially in the south of Germany.

In the cross-technology auctions held in 2018, only bids from **photovoltaic projects** were accepted. This outcome reflects the global trend, whereby photovoltaics have become the cheapest technology in the area of renewable energies. This trend can also be seen in the regular auctions for open-field solar projects in Germany. The average price of the bids accepted for large solar projects thus fell from around 5.7 ct/kWh in 2017 to

around 4.5 ct/kWh in 2018. EnBW is aiming to become the pioneer in Germany for open-field photovoltaic power plants without state funding (p. 50).

Generation and Trading segment

Electricity wholesale market

Prices on the wholesale market for electricity rose significantly during the course of 2018. The average spot market price (Glossary, p. 154) of €44.47/MWh was around €10/MWh above the level in the previous year. This development was due, on the one hand, to rising prices for coal, gas and CO₂ allowances (Glossary, p. 152), while on the other hand, low water levels, especially in the Rhine river in the second half of the year, caused transport restrictions and a sharp increase in logistics costs and the lower availability of power plants. At the same time, feed-ins from wind power plants were significantly below the level in a normal year.

The front year base load price (Glossary, p. 152) on the forward market (Glossary, p. 153) of around €44/MWh was also considerably higher than the level in the previous year. There was a continuous increase in the price between March and the middle of September 2018, which was followed by lateral movement with a high level of volatility. In the future, the forward market prices in Germany up to 2022 show a downward trend. This development reflects – alongside falling prices for imported coal – the expectation of market participants that the further expansion of renewable energies will result in structural changes to conventional generation in the future. Overall, prices for electricity will remain highly dependent on the development of prices for fuel and CO₂ allowances. In the medium term, the price level will be increasingly influenced by changes in energy and environmental policies at home and abroad.

Development of prices for electricity (EPEX), base load product

in €/MWh	Average 2018	Average 2017
Spot	44.47	34.19
Rolling front year price	43.84	32.38

Gas market

Long-term gas import contracts form a primary basis of Germany's gas supply. The wholesale markets, such as the Dutch TTF and the trading point of the NetConnect Germany (NCG) (Glossary, p. 154) market area, are other important sources of natural gas. Prices track the oil price trends with a time lag. As a result of the increased supply of Liquefied Natural Gas (LNG) from the USA and Australia, the dependency of the gas price on the price of oil has, however, fallen in Europe. In addition, the

price of gas was influenced above all by the temperatures during the winter half-year. Although the average temperatures in winter 2017/2018 were close to the long-term average, the cold spell in north-west Europe and Germany from the end of February to the beginning of March led to a short-term increase in prices. Due to the cold spell, gas storage levels were very low in the summer months which led to increased demand. In addition, deliveries of LNG to north-west Europe remained below market expectations due to strong demand from the Asian region. In combination with high oil prices in comparison to the previous year, these factors have resulted in increased prices on the spot and forward markets. The border price index for natural gas published monthly by the German Federal Office of Economics and Export Control (BAFA) stood at €20.80/MWh in November 2018, which was 14.7% above the December 2017 figure (€18.13/MWh) and 18.2% above the figure for the same month in the previous year (€17.60/MWh). Due to the good supply situation on the gas markets and the fact that the gas storage facilities in Germany are relatively well stocked, we do not anticipate that prices will rise further in the short term.

Development of prices for natural gas on the TTF (Dutch wholesale market)

in €/MWh	Average 2018	Average 2017 ¹
Spot	22.98	17.33
Rolling front year price	20.70	17.00

¹ The figures for the previous year have been restated.

Oil market

The caps in production introduced by OPEC and some non-OPEC countries including Russia, the continued fall in oil production in Venezuela and the dynamic increase in demand for oil and oil products worldwide initially resulted in a decrease in global stock levels in 2018. The stock levels held by the OECD countries fell below the five-year average again from March for the first time. Another shortage in supply was caused by the reintroduction of US sanctions against Iran and its oil sector as part of the USA's withdrawal from the international nuclear deal with this country. These factors led to a sharp increase in crude oil prices (Brent) to more than US\$85/bbl at the beginning of October. A huge turnaround in this trend from October resulted in oil prices falling since then to below US\$60/bbl. The main causes for this fall in prices were the renewed increase in OECD stock levels due to unexpectedly high global oil production and concerns about the development of the world economy against the background of the trade dispute between the USA and China and the associated growth in demand for oil. Further price developments will be mainly influenced by the extent to which the agreed production cuts are actually implemented by OPEC, the supply situation outside of OPEC and the continuation of the trade dispute between the USA and China.

Development of prices on the oil markets

in US\$/bbl	Average 2018	Average 2017
Crude oil (Brent) front month (daily quotes)	71.69	54.75
Crude oil (Brent), rolling front year price (daily quotes)	68.94	54.87

Coal market

Following a drop in coal prices in the first quarter of 2018 due to a sharp fall in prices on the Chinese coal market, prices recovered by the end of the second quarter and exceeded the level at the beginning of the year. This was primarily due to a very strong increase in demand from China and the simultaneous rise in oil prices. Following a brief period of consolidation in the summer, the same factors led to a further increase in coal prices and caused the API 2 front year price to rise to over US\$100/t for the first time since 2012. Coal prices fell significantly again from the middle of October due to falling oil prices, weaker demand in China and the restrictions announced on coal imports into China. Overflowing coal stocks in the Amsterdam–Rotterdam–Antwerp coal trading hub due to low water levels in the Rhine river also resulted in additional pressure to sell.

The future development of prices for coal will be largely determined by China which is by far the largest consumer. The unpredictable nature and timing of the sometimes major interventions by the Chinese authorities to regulate the domestic coal market have increased the volatility of coal prices. A slowdown in the global economy due to the intensification of international trade disputes and the continued strength of the US dollar could result in a fall in coal prices. In addition, freight prices and the price of oil will also have a significant effect on future prices on the coal market.

Development of prices on the coal markets

in US\$/t	Average 2018	Average 2017
Coal – API #2 rolling front year price	87.03	73.70
Coal – API #2 spot market price	91.91	84.52

CO₂ allowances

Under the European emissions trading system, proof must be provided of the correct number of CO₂ allowances (Glossary, p. 152) for the corresponding CO₂ emissions from power plants. In 2018, supply and demand stood at around the same level. Nevertheless, the price of EUA certificates (Glossary, p. 153) increased sharply in 2018 from around €8/t CO₂ to around €25/t CO₂. This was primarily attributable to speculative demand due to the expectation of further price increases because the reform of the market stability reserve (MSR) – a measure drawn up by the EU Commission to reform the European Union emissions trading system over the long term – will result in a significant reduction in supply over the next four years. Therefore, further price increases are expected in 2019 and in subsequent years.

Development of prices for emission allowances/daily quotes

in €/t CO ₂	Average 2018	Average 2017
EUA – rolling front year price	15.62	5.77
CER – rolling front year price	0.24	0.23

Nuclear power

The coalition agreement of the German government sets out the framework for current nuclear power policy: The main targets are the retention of specialist personnel and expertise, quick progress in the search for a final storage site for highly radioactive waste (by 2031) and the rapid commissioning of the final storage site for low and medium-level radioactive waste (2027 according to the current plans). This should prevent the intermediate storage at the power plant sites becoming, to all intents and purposes, the final storage sites. The 16th amendment to the German Atomic Power Act came into force in July 2018. On the basis of the ruling by the German Federal Constitutional Court from 6 December 2016, operators of nuclear power plants should receive compensation payments for investment in the period between the decision to extend the lives of the nuclear power plants (28 October 2010) and the reversal of this decision (from 16 March 2011), as well as for residual volumes of electricity remaining at power plants that could no longer be distributed. A transparency ordinance from the German Federal Ministry for Economic Affairs and Energy specifies the disclosure obligations of the operators with respect to their provisions for the decommissioning and dismantling of their nuclear power plants and the packaging of radioactive waste. On the basis of the public law contract according to the Act for the Reorganisation of Responsibility in Nuclear Waste Management, EnBW has submitted an application for the approval of the return transport of radioactive waste from the reprocessing centre in France to the intermediate storage site at the Philippsburg nuclear power plant. A precise date for the transport has still not been agreed.