



## Business report

# General conditions

## External influences

A wide variety of external factors such as developments in the macroeconomic, political and regulatory environments, the market prices for primary energy sources,  CO<sub>2</sub> allowances and electricity, as well as the weather conditions, have a significant influence on the business performance of EnBW. Demand from industry for electricity and gas is strongly influenced by phases of growth and decline in the macroeconomic environment. In contrast, energy consumption in private households develops largely independent of the economy. In addition, gas sales depend heavily on weather conditions.

Political decisions at a European and national level – particularly market and competition-oriented regulations – have an influence on the energy sector. The sociopolitical will to, for example, strengthen the area of climate protection or preserve natural resources, shapes the political and regulatory requirements and the extensive legislative intervention into the energy sector. As a result, EnBW constantly faces new challenges, which it tackles with flexible concepts that are sustainable in the long term.

Market prices for fuel and CO<sub>2</sub> allowances, as well as prices on the electricity wholesale market, influence the business performance of EnBW in terms of its costs and income. EnBW strives here to reduce the uncertainty in the generation margin. The quantities of primary energy sources and CO<sub>2</sub> allowances required for generating electricity are thus procured in advance on the  forward market. We sell the planned electricity production on the forward market and through the sales channels utilised by EnBW. Consequently, the terms and conditions of the supply contracts agreed upon in previous years formed the basis for the costs and income in 2015. On the other hand, the development of prices on the forward market in the 2015 financial year will impact earnings in following periods. This relationship is also true on the sales side of the business for the quantities of electricity procured from the company on the forward market.

## Macroeconomic trends

The economies relevant for the business activities of EnBW largely experienced positive macroeconomic growth in 2015. The only exception was Switzerland where the significant appreciation of the Swiss franc dampened economic growth.

The rate of growth in the global economy is set to accelerate in 2016. In all national markets relevant for EnBW – with the

exception of the Czech Republic – the rate of macroeconomic growth is expected to reach a similar or higher level than in 2015. Overall, the economic trends are expected to have a slightly positive influence on the business activities of EnBW.


### Development of gross domestic product (GDP)

in %	2014	2015	2016
World	3.4	3.1	3.4
Eurozone	0.9	1.5	1.7
Germany	1.6	1.7	1.7
Austria	0.4	0.8	1.7
Switzerland	1.9	1.0	1.3
Czech Republic	2.0	3.9	2.6
Turkey	2.9	3.0	2.9

## Conditions in the energy industry

### Development of the sector and competitive situation

The energy sector is experiencing a period of fundamental change – especially in Germany due to the Energiewende. The politically desired and funded expansion of renewable energies is increasingly calling into question the business models of the established large energy supply companies whose generation infrastructure is still primarily based around large power plants.



The pressure on conventional generation, particularly in Germany, has intensified to an unprecedented level. Already, the electricity generated by large power plants is at times forced out of the market entirely by renewable energies so that it is becoming ever more difficult to operate these power plants economically. Furthermore, new competitors are emerging in all subsectors of the market, such as the owners of decentralised generation units or suppliers of autonomous generation solution systems. Against this background, the price of electricity has fallen continuously on the electricity exchanges so that today it barely covers the costs of fuel and emission allowances. At the same time, electricity prices for consumers are rising year after year due to taxes and levies because an increasing amount of electricity is generated from state-subsidised renewable energy sources. In this challenging environment, companies in the sector need to review their business models and orientate themselves to the new market conditions ( p. 14f. and 22).

## International, national, regional and new competitors

Competitor segment	Companies	Characteristics
International competitors	EDF, E.ON, RWE, Enel, Engie, Iberdrola	<ul style="list-style-type: none"> <li>&gt; Broad-based, internationally oriented growth strategy</li> <li>&gt; Provide around 25% of the generation capacity in Germany</li> </ul>
National competitors ("DACH" region)	EnBW, EVN, Verbund, ALPIQ	<ul style="list-style-type: none"> <li>&gt; Stable national position, activities in individual foreign markets focus on market penetration</li> <li>&gt; Opportunities due to decentralised and renewable energy generation</li> </ul>
Regional competitors	MVV, SWM, Thüga, Stadtwerke	<ul style="list-style-type: none"> <li>&gt; Focus on regional markets</li> <li>&gt; Own generation capacity very limited</li> </ul>
New competitors	BOSCH, Telekom, Google, Vaillant	<ul style="list-style-type: none"> <li>&gt; Expansion of previous core expertise to include value-added stages of energy supply</li> </ul>

## Energy policy measures and climate protection

## Energy and climate strategy


In its press release on the Energy Union at the end of February 2015, the European Commission presented its energy and climate strategy including a concrete plan of action for the next few years. In particular, it contains a comprehensive examination of the design of the market and further strengthens the solidarity mechanisms for ensuring the security of supply. It also contains measures to realise the decarbonisation targets by 2030. The agenda is ambitious and the commission still needs to prove it has the commitment to implement it in view of the widely divergent interests amongst the member states. From the perspective of the energy industry, highly important aspects include the expansion of cross-border infrastructures, the functioning of common wholesale markets including the coupling of the  Intraday markets and the desired close coupling of wholesale and end customer markets, as well as regulations on integrating renewable energies into the market, including regulations for state funding. The period 2016/2017 will be decisive because this is when the majority of the planned legislative measures for the Energy Union strategy will be presented and negotiated. EnBW supports the fast and effective broadening of the internal energy market to prevent further fragmentation due to national capacity mechanisms. Moreover, the rapid strengthening of the European  Emissions Trading System is also of paramount importance. Developments in this area are still taking far too long in the opinion of EnBW and will continue to be difficult to achieve despite the Climate Change Conference in Paris.

## United Nations Climate Change Conference in Paris

In December 2015, 195 countries successfully reached an internationally binding climate protection agreement including obligations for all signatories at the United Nations Climate Change Conference in Paris. The core element of the agreement is the commitment to limit the rise in global temperature to "well below 2°C" and if possible even to only 1.5°C above


preindustrial levels. In the second half of the century, the aim is to make the world carbon neutral, i.e. free of emissions. All signatories to the agreement must develop national strategies for the achievement of these targets by 2020. In addition, it was agreed that the national targets will be checked and raised every five years. The agreement should send a clear signal to global investors that the age of fossil fuels is coming to an end and the future belongs to environmentally friendly technologies. The decarbonisation of the global economy now has a legal framework and should thus accelerate. EnBW welcomes the successful negotiation of the agreement: The strategy being followed by EnBW of concentrating its investments on renewable energies, expanding the grids and developing new and increasingly decentralised business models ( p. 14f. and 22) is supported by the agreement. In this context, EnBW published a five point position paper in December 2015 on the negotiations for a global climate protection agreement at the Climate Change Conference in Paris ( [www.enbw.com/klimaschutzabkommen](http://www.enbw.com/klimaschutzabkommen)). Furthermore, the Financial Stability Board announced the foundation of a task force on climate-related financial disclosures consisting of representatives from the industry at the Climate Change Conference in Paris. EnBW is also represented on this international task force through its Chief Financial Officer Thomas Kusterer.

## Targets for 2030

The implementation of the climate and energy policy targets for 2030 that were issued in 2014 (a binding -40% reduction in greenhouse gases and at least 27% share of renewable energies in the final energy consumption, non-binding minimum 27% increase in energy efficiency) continues to progress. Above and beyond the ongoing legislative process for the reform of the  Emissions Trading System (ETS) directive, the proposals for adapting the renewable energy, energy performance of buildings and energy efficiency directives in the second half of 2016 are particularly important. EnBW believes that the governance process for ensuring the fulfilment of targets by the member states needs to be more stringent.

### Climate Action Programme 2020/ Climate Action Plan 2050

The Climate Action Programme agreed by the German Federal Cabinet at the end of 2014 envisages, amongst other things, further reductions in CO<sub>2</sub> emissions from conventional power plants to the amount of 22 million tonnes of CO<sub>2</sub> by 2020. Following lengthy discussions, the gradual decommissioning of brown coal power plant units equivalent to an output of 2.7 GW in the period between 2016 and 2020 was incorporated into the draft bill for the Electricity Market Act (Strommarktgesetz). The affected power plant units will initially be removed from the market for four years on a contractual basis, for which the operators will receive cost-based compensation. Subsequently, the units will be finally decommissioned. The German government expects that these measures will deliver CO<sub>2</sub> savings of between 11 and 12.5 million tonnes by 2020. In our opinion, this should help to cushion possible social hardships relating to this structural change. EnBW is not directly affected by this measure. Outside of the electricity sector, energy efficiency measures will make the greatest contribution to the Climate Action Programme.

The German government has also set itself the target of finalising the Climate Action Plan 2050 in the German Federal Cabinet by the summer of 2016. This plan will define intermediate national targets for reductions in CO<sub>2</sub> emissions for the years 2030 and 2040 and outline proposals for suitable measures for reducing greenhouse gases in all sectors by 2050. For this purpose, the German Federal Ministry for the Environment as the main coordinator has already started a comprehensive process of dialogue with the federal states, local authorities, associations and citizens last year, the results of which will be used to develop the first policy proposals. In terms of the energy industry, there are also a variety of proposals for a politically regulated and administered phase-out of coal generated power. Alongside a rapid and ambitious reform of the  ETS, EnBW believes that increasing the electrification of heating and mobility, in combination with strong incentives for energy conservation, is key to achieving Germany's climate protection goals.


### National Action Plan on Energy Efficiency (NAPE)


The main focus of the National Action Plan on Energy Efficiency, which was agreed in December 2014, lies in reducing final energy consumption, particularly in the heating sector. Furthermore, the German government plans to introduce other initiatives to promote the market for energy services. EnBW believes there will be significant market opportunities in the energy service sector as a consequence of the implementation of the announced NAPE measures, particularly the new investment incentives in the funding programme and the competitive energy-efficient auction system. Nevertheless, EnBW believes there continues to be a need for action in removing barriers to entering the market; it is only in this way that a fair energy services market in the sense of NAPE can be established.

## Electricity and gas market in Europe and Germany

### Cross-segment framework conditions

#### Design of the electricity market

The European Commission initiated the consultation process on the future design of the market by issuing a communication package on 15 July 2015, in order to adapt the market to challenges posed by a decentralised and digitalised energy world. EnBW welcomes this approach, especially the cross-border consideration of the security of supply and the opening of national capacity mechanisms. The integration of renewable energies into the market also requires further measures. Issues that need to be examined critically are the future role of the grid operators and changes to the institutional framework. Concrete proposals for legislation or policy measures are expected at the end of 2016 that are anticipated to include, amongst other things, the reform of the directive and regulation governing the internal electricity market, the security of electricity supply directive, the  ACER regulation and the renewable energy directive.

In accordance with the Electricity Market Act, the German government will strengthen the  Energy-only-Market (EOM 2.0) and allow prices to spike. This will give the electricity market a strong market orientation which is welcomed by EnBW. We view the agreed reform of the electricity market to be a low-risk and inexpensive option for continuing to guarantee a secure supply by strengthening market forces. The parliamentary procedure for the Electricity Market Act is currently ongoing and the law is expected to come into force in the summer of 2016.

Market conditions are increasingly necessitating the decommissioning of conventional power plants. At the same time, power plants that have been selected for decommissioning, especially those in Southern Germany, are still required in order to guarantee the stability of the grid and thus the supply of electricity. In order to prevent the decommissioning of system-relevant power plants, the law intends to obligate operators to maintain these facilities as reserve power plants ("grid reserve"). In this context, the power plant operator has a right to be reasonably reimbursed for the costs that arise. Politicians are also planning the introduction of an additional capacity reserve, which will be maintained for times when there is an extreme shortage of generating capacity on the electricity market. EnBW welcomes the establishment of a competitively oriented process for procuring the capacity reserve. As an operator of grid reserve power plants, EnBW can decide in future whether these power plants should remain in the grid reserve or, alternatively, EnBW can choose to bid for them to become part of the capacity reserve and, if successful, transfer them to it.

### Security of the gas supply

The European Commission presented a package of measures on 16 February 2016 that, alongside strategies for Liquefied Natural Gas (LNG), gas storage facilities and the heating/cooling sector, will include in particular a proposal for the reform of the security of gas supply directive and for the decision on intergovernmental energy agreements. A planned obligation in this package of measures to disclose commercial gas supply contracts should be viewed critically in the opinion of EnBW. Attention should also be paid to the planned strengthening of the solidarity mechanisms to avoid any negative financial effects for companies.

### Smart metering systems

The German Federal Cabinet agreed the draft law on “digitalising the Energiewende” on 4 November 2015. It includes the path for the roll-out of smart meters, as well as the refinancing and design of competitive elements and secure data communications. A comprehensive roll-out of these smart meters is not envisaged but rather a gradual introduction in line with the greatest available benefits for the grid and efficiency. The installation obligation starts for consumers from >6,000 kWh or for RE/CHP power plants from >7 kW. In addition, the law regulates the changing responsibilities relating to market communication. The legislative process should be completed by the summer of 2016 and the law is expected to come into force by the beginning of 2017. The key issues for EnBW are the prompt refinancing of investments in smart energy grids, non-discriminatory competition and efficient market and data communication.

### Combined heat and power (CHP)

Since the reformed Combined Heat and Power Act (Kraft-Wärme-Kopplungs-Gesetz) came into force on 1 January 2016, there have been modified funding conditions for the achievement of the new CHP expansion targets of 110 TWh by 2020 and 120 TWh by 2025. New funding has thus been introduced for existing power plants that is limited to gas-fired power plants from a size of 2 MW. The annual CHP funding cap has been raised in future to €1.5 billion. Additional funding is also available for the replacement of existing coal power plants with gas-fired power plants. In addition, the law also eliminates all surcharges for own consumption on power plants >100 kW. The previous funding subsidies continue to apply in the case of CHP power plants in electricity-intensive companies. Furthermore, a new funding category has been introduced that benefits energy service providers with contracting solutions: CHP power plants that supply CHP electricity to end customers in a customer's plant or in a closed distribution grid and who therefore pay the full EEG (German Renewable Energies Act) cost allocations will also receive funding. Funding is being provided to CHP power plants that are placed into operation by the end of 2022.

### Sales segment

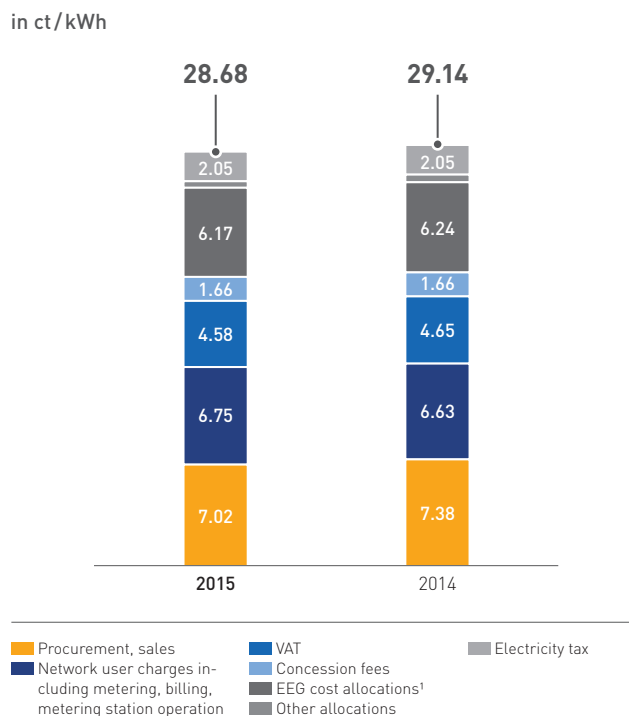
#### Electricity and gas prices for retail and industrial customers

According to an analysis of electricity prices by the German Association of Energy and Water Industries (BDEW) published in January 2016, the average monthly electricity bill for a household with an annual consumption of 3,500 kWh in 2015 came to €83.64 compared to €84.99 in the previous year. Taxes and levies accounted for more than half of this amount. As a result of lower procurement costs, EnBW was able to slightly lower electricity prices for most customers in 2015 (-1.4%). In the area of heat transfer applications, EnBW had lowered prices by between 2.4% and 5% at the turn of the year 2014/2015. However, an increase in the price for the basic supply of electricity of around 2.4% was necessary as of 1 January 2016 because an increase in the network user charges and state levies such as the EEG and CHP cost allocations could not be fully offset by the lower wholesale price for electricity.

For industrial customers receiving a medium-voltage supply, the average electricity price including electricity taxes fell according to calculations made by BDEW by 0.6%, from 15.32 ct/kWh in the previous year to 15.23 ct/kWh in 2015.

According to calculations by the German Federal Statistical Office, natural gas prices for private households in 2015 fell by 0.9% compared to the value in the previous year; in contrast, the price of natural gas for industrial customers fell by 11.9%.

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



<sup>1</sup> Application of the German Compensation Mechanism Ordinance (AusglMechV) since 2010.

Source: BDEW As of January 2016

## Grids segment

The basis for the success of the Energiewende will be the expansion of the energy grids to meet requirements. In particular, the connection of renewable energies and their integration into the market will require further construction measures at both the transmission and distribution grid level. These measures require a high level of investment in the grid infrastructure. In this context, the further development of the regulatory framework for distribution grids is in full swing as part of the reform of the incentive regulations. The expansion of the gas grid is characterised by the switch on the market from L-gas (low calorific gas) to H-gas (high calorific gas).

### Future role of the distribution grid operators

The future role of the distribution grid operators has and is being discussed at a European level as part of the examination of the design of the electricity market – in relation to the market but also in relation to the transmission system operators (TSO). It is not expected that any clear assignment or allocation of roles will be issued by the EU, although there may be stricter neutrality requirements, depending on how actively the distribution grid operators are engaged in maintaining the security of the system in the future. Corresponding legislative proposals will be presented at the end of 2016. EnBW believes that the current ownership unbundling regulations are sufficient and the focus should instead be placed on the effective implementation of these regulations or the elimination of exceptions.

### Network charges for electricity

The second regulatory period began on 1 January 2014. Most of the grid operators in the EnBW Group received their final notification on their upper revenue limits from the Federal Network Agency (BNetzA) or the state regulatory authorities in Baden-Württemberg by the end of 2015. One grid operator is still waiting for their notification. Therefore, there may be slight deviations in the final upper revenue limits.

### Further development of the regulatory regime for network charges for electricity/gas

The BNetzA published a report in January 2015 evaluating the incentive regulations in which they analysed the effects of the previous incentive regulations and made proposals for the further development of the regulatory regime. On the basis of this report, the German Federal Ministry of Economic Affairs and Energy (BMWi) presented key points on the reform of the Incentive Regulation Ordinance (ARegV). The reform of the ARegV is then expected to be completed by the end of the third quarter of 2016. The adjustments to the regulatory regime for network charges for electricity and gas is then due to become effective from the third regulatory period (electricity in 2019, gas in 2018). EnBW AG and its subsidiary Netze BW are actively participating in the currently ongoing reform process for the ARegV.

### Network Development Plan (NDP) Electricity 2025, Offshore Network Development Plan (O-NDP) 2025 and the Federal Requirements Plan

The network development plans describe the required expansion of the electricity grids and the expansion plans for the connection lines for the offshore wind farms in the North Sea and the Baltic Sea in the coming 10 and 20 years. These plans are created by the four German TSOs every two years. Taking the views of the interested general public into consideration is an integral part of this process.

Alongside the gradual decommissioning of brown coal power plants, the current first draft of NDP Electricity 2025 also includes for the first time a peak cap set at a maximum of 3% of the annual energy from onshore wind and photovoltaic power plants. On this basis and according to calculations made by the TSOs, there is a requirement for 3,100 to 3,300 km of new transmission lines and for the reinforcement of around 5,900 to 6,400 km of existing lines. In the process, the great necessity for the transmission of electricity between north and south Germany should be fulfilled through high-voltage direct-current transmission lines (HVDC) or direct-current lines (DC). Our subsidiary TransnetBW is responsible for the optimisation and expansion of the high-voltage grids in Baden-Württemberg and is involved, for example, in the HVDC projects ULTRANET and SuedLink.

The expansion requirements for the offshore grid are dependent on the predicted additional installed output from wind power plants at sea. According to the draft O-NDP 2025, the requirement is between 397 km and 902 km.

The draft NDP and O-NDP developed by the TSO will be examined by the BNetzA and are subject to a new public consultation.

### Network Development Plan (NDP) Gas 2025

The NDP Gas 2025 from the German gas transmission system operators (FNB) has been available since November 2015. It includes more than 80 measures for the expansion of the national gas infrastructure over the next ten years. The volume of investment for the planned expansion comes to around €2.8 billion up to 2020, and will rise to a total of €3.3 billion by 2025. In particular, major expansion measures are planned in the south-east and north-west of Germany. The network development plans will only be produced every two years from 2016 – previously they were published annually. This has the advantage of eliminating the current overlaps in the preparation of the network development plans.

### Concession award process

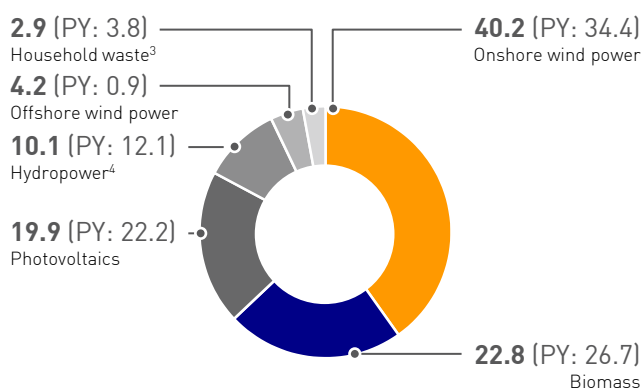
According to a coalition agreement by the political parties CDU, CSU and SPD from 2013, section 46 of the Energy Industry Act (EnWG) on the award of concessions is to be reformed. The first proposals from the BMWi aim to clearly and legally regulate the assessment process for the new award of concessions for distribution grids and improve legal certainty about transitions between grids. A cabinet resolution on this matter was passed at the beginning of February 2016.

## Renewable Energies segment

### Expansion of renewable energies

#### Gross electricity generation from renewable energies 2015<sup>1</sup> in Germany

in %<sup>2</sup>



<sup>1</sup> Preliminary data, partially estimated.

Source: AGEB

<sup>2</sup> Deviation in the first decimal place due to rounding differences. As of: December 2015

<sup>3</sup> Only generation from the biogenic portion of household waste (approximately 50%).

<sup>4</sup> Generation in run-of-river/storage power plants, as well as generation from pumped storage power plants using the natural flow of water.

The expansion of renewable energies is progressing steadily. According to the German Working Group on Energy Balances (AGEB), its share of overall electricity generation increased in 2015 to 30.0% (previous year: 25.9%). The electricity generated by photovoltaic power plants was 6.6% higher and from wind power more than 50% higher than the values in the previous year (p. 66 f.). The foundations for this rapid expansion have been laid by the EEG.

The funding of renewable energies will be provided based on a competitive auction system in future and thus replace the existing feed-in tariffs. This change was already agreed upon in EEG 2014 and is seen as the next step in bringing greater market proximity and competitiveness to the EEG. The design of the auctions aims to maintain the expansion corridor for renewable energies, enabling sufficient competition and guaranteeing a diverse range of stakeholders. Due to the different framework conditions for the individual types of generation, the auctions have been designed according to the specific technologies in each case. For offshore wind, onshore wind and large photovoltaic (PV) plants, more than 80% of the volume of electricity generated per year that is attributable to the expansion of new renewable energy power plants will be auctioned from 2017. The remaining approximately 20% will be based on PV plants with an output of less than 1 MW, hydropower, geothermal power and presumably biomass for which the funding subsidies are valid according to EEG 2014.

The design of the auctions for offshore wind and onshore wind power are currently being developed. In the case of offshore

wind power, the target values of 6.5 GW by 2020 and 15 GW by 2030 have been set. All wind farms that are placed into operation by 2020 will receive funding in accordance with the EEG 2014. The auctions are valid for all power plants that start operating from 2021. The plans include the predevelopment of areas by the state. These areas will then be subsequently auctioned (the so-called "central model"). As the development of these areas requires long lead times for planning and approval processes, the central system will only become effective after a transitional period – presumably from 2024. In order to guarantee the continuous expansion of wind power, it is expected that auctions for already planned and approved wind farms will be carried out in the transitional period from 2021 to 2023.

The first auctions for onshore wind power will take place from May 2017. Alongside the general changes to the funding system, there have also been profound changes to the regionalisation and evaluation of the reference site, which could have an impact on the project pipeline. Moreover, the size of the actual expansion corridor is questionable. This is currently the subject of heated political discussion.

In the case of PV, it is expected that the already existing design used for the pilot auctions will largely continue to be used for ground mounted photovoltaic plants. The ongoing auctions for ground mounted photovoltaic plants will be supplemented by auctions for PV plants on other structural facilities such as landfill sites. In addition, there will also be a new auction for large PV plants on buildings. EnBW participated in the pilot auctions for ground mounted photovoltaic plants in 2015 and was successful with six projects in Baden-Württemberg and Rheinland-Pfalz.

EEG 2016 is due to be agreed by the Bundestag and the Bundesrat in the summer. As a company with ambitious expansion targets in the area of renewable energies, these system changes will impact our portfolio. EnBW is monitoring the legislative process and participating in the relevant consultations in order to point out the required level of security for existing plans and investments, as well as to ensure the most unbureaucratic and competitive implementation of the new system.

### Reform of the EU renewable energy directive

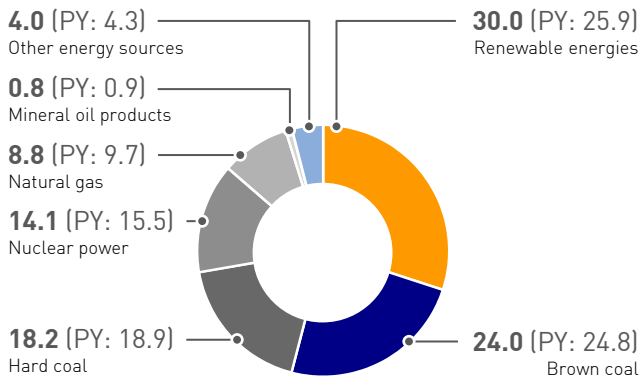
The European Commission started the consultation process for the examination of the EU renewable energy directive at the end of November 2015. This is necessary for the implementation of the agreed EU renewable energy target of 27% by 2030. The reform of the directive will also have the goal of achieving greater market integration and a stronger cross-border cooperation in the expansion of renewable energies (RE), including its funding, the greater integration of other sectors, such as heating and transport, and strengthening the position of consumers, for example with respect to own consumption. Its impact on the expansion of RE in Germany is expected to be limited. EnBW finds the possible development of a European body for guaranteeing the achievement of the EU-wide expansion targets for RE particularly interesting.

## Generation and Trading segment

### Electricity generation

#### Gross electricity generation by energy source 2015<sup>1</sup> in Germany

in %<sup>2</sup>



<sup>1</sup> Preliminary data, partially estimated.  
<sup>2</sup> Deviation in the first decimal place due to rounding differences.

Source: AGEB  
As of December 2015

According to the German Working Group on Energy Balances (AGEB), gross electricity generation in Germany in 2015 stood at 647.1 billion kWh in 2015, which was 3.1% above the level in the previous year (627.8 billion kWh). The use of brown coal, hard coal and hydropower (without pumped storage) in the generation of electricity fell in each case by 0.5%; the use of natural gas fell more sharply by 6.7%. The contribution made by nuclear power fell by a further 5.8% due to the decommissioning of the Grafenrheinfeld power plant in the middle of the year. This was offset by an increase of 19.4% in the share accounted for by renewable energies (p. 66f.). In 2015, German electricity exports exceeded imports by around 50.1 billion kWh. The largest net suppliers of electricity in 2015 were France and the Czech Republic; the highest export surpluses were primarily attributable to the Netherlands, Austria, Switzerland and Poland.

#### Nuclear power

The phasing out of nuclear power in accordance with the political guidelines from 2011 continued in 2015 with the decommissioning of the Grafenrheinfeld power plant. The issue of financing the phasing out of nuclear power dominated discussions about nuclear energy policy in the second half of 2015. A commission (KFK) appointed by the German government in the middle of October 2015 will issue recommendations for the amendment of the financing system for the phasing out of nuclear power by April 2016. It can be assumed that the current system of maintaining provisions will be (partially) replaced by a solution involving a fund or foundation whose details still require clarification. EnBW favours a foundation solution, which can aid in ensuring that the financial side of the phase-out of nuclear energy can be achieved both reliably and efficiently. In

parallel, the legislative process for the law governing continued liability for the costs of nuclear decommissioning and disposal is currently underway. The aim is to maintain the current situation with regards to liability and thus to reduce the risks to public finances. There is still some disagreement about when the law will come into force.

The commission tasked with searching for a final storage site continued its work in 2015. Criteria for the selection of a final storage site for highly radioactive waste are due to be defined on the basis of the Site Selection Act (Standortauswahlgesetz) by the middle of 2016. In addition, the affected energy supply companies agreed the main aspects of the repatriation of reprocessing waste to Germany from France and Great Britain with the German Federal Ministry for the Environment in the middle of 2015. Whether EnBW will submit an application for the storage of five containers of waste from the reprocessing plant in La Hague at the intermediate storage site in Philippsburg is dependent on the precise details that will be agreed by a working group consisting of representatives from the German government and operators.

#### Financial services legislation

The processes for clarifying the Markets in Financial Instruments Directive (MiFID 2) in terms of its effects on the energy industry continues to be of particular importance. Issues such as the final design of the specific exemptions for commodity dealers and the definition of when electricity and gas transactions are to be classified as financial instruments are still especially critical – if these areas are too narrowly defined there is a danger that, for energy supply companies such as EnBW, corresponding licence requirements and the application of further financial market regulations such as the Regulation on Energy Market Integrity and Transparency (REMIT) will result in a higher cost burden.

#### Fuel and CO<sub>2</sub> markets

Fuel and CO<sub>2</sub> allowances are important input factors for the generation of electricity. The global markets for oil, gas and coal are particularly relevant.

**Oil market:** Oil prices (front month) fell further in the 2015 financial year from US\$57.33/bbl at the end of 2014 to US\$37.28/bbl at the end of 2015. The fall in prices was due to a continuous and persisting oversupply of oil. In November 2014, OPEC decided to no longer actively control supply to maintain a minimum price on the oil market. Instead, the new strategy is more concerned with defending market shares. As the low prices did not lead to the generally expected slump in US oil production despite the sharp reduction in investment in new sources of oil, the oversupply continued throughout the whole of 2015. Hopes of a decline in American production had led to a temporary rise in prices up to May. Once it was clear that there was not going to be a decline in production, the trend of falling oil prices continued. The growing demand for oil – also due to the price – was not sufficient to reduce the surplus supply. Concerns about the Chinese economy at the end of the year also contributed to this fall in prices. Market participants expect oil prices to rise in the future.

## Development of prices on the oil markets

in US \$/bbl	Average 2015	Average 2014
Crude oil (Brent), front month (daily quotes)	53.60	99.45
Crude oil (Brent), rolling front year price (daily quotes)	60.45	98.72

**Gas market:** Long-term procurement agreements form the basis of gas imports to Germany. According to information from the German Association of Energy and Water Industries (BDEW), 40% of Germany's natural gas supply was sourced from Russia in the first nine months of 2015 (previous year: 38%), 30% from the Netherlands (previous year: 26%) and 19% from Norway (previous year: 22%). The share of domestic production in relation to total supply amounted to 8% in this period following 10% in the previous year. As an alternative to transmission via pipelines, importing liquefied natural gas (LNG) can open up access to gas producing regions that are not linked by pipeline to the European market. This alternative means of procurement is gaining importance as new import terminals go into operation.

The border price index for natural gas published monthly by the German Federal Office for Economic Affairs and Export Control (BAFA) stood at €18.30/MWh in November 2015, which was 24% below the December 2014 figure (€24.10/MWh).

Following a price increase at the beginning of the year and lateral movement in the second quarter, the average spot and forward prices for gas on the Dutch Title Transfer Facility (TTF) fell noticeably during the rest of the year. Market participants are not anticipating higher gas prices in the near future.

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

in €/MWh	Average 2015	Average 2014
Spot	19.86	20.88
Rolling front year price	20.09	24.36

**Coal market:** The downward trend in prices on the coal market continued in 2015. The spot price at the end of 2015 was US\$48.65/t (previous year: US \$66.89/t), which was around 27% below the figure in the previous year. Against the background of a very good supply situation on the global market for coal, this fall in prices was primarily due to lower import demand in China and slower growth in Indian imports as a result of their increasing domestic coal production. In particular, economic problems in China as a consequence of the restructuring of the economic system have caused prices to fall on the commodity markets since the beginning of 2014. In addition, currency devaluations in important producing countries and lower freight and production costs due to the significantly lower price of oil also pushed prices downwards. Forward market prices indicate that the price of coal will continue to fall. The front month price for coal stood at US\$44.03/t at the end of 2015 (previous year: US\$65.88/t).

## Development of prices on the coal markets

in US \$/t	Average 2015	Average 2014
Coal – API #2 rolling front year price	54.68	78.25

**CO<sub>2</sub> allowances:** Under the European Emissions Trading System, proof must be provided of allowances for the amount of CO<sub>2</sub> emissions from power plants. Following the EU resolution on backloading, the price of emission allowances (EU Allowance – EUA) had already increased to over €6/t CO<sub>2</sub> during the course of 2014. The prices for emission allowances experienced sideways movement in the first half of 2015. In the second half of the year, the agreement by the Environment Committee of the EU Parliament for the introduction of a market stability reserve in 2019 and the transfer of the backloading volumes into the reserve pushed prices up further. The future development of prices for CO<sub>2</sub> allowances will be primarily influenced by the volumes of fossil fuels used and the feed-ins from renewable energies.

The legislative proposal to reform the ETS directive presented on 15 July 2015 for the implementation of the 2030 greenhouse gas emission targets of -40% are generally welcomed by EnBW. The process is expected to run until the beginning of 2017.

## Development of prices for emission allowances/daily quotes

in €/t CO <sub>2</sub>	Average 2015	Average 2014
EUA - rolling front year price	7.70	5.96
CER - rolling front year price	0.48	0.17

## Demand for energy

According to calculations by the German Working Group on Energy Balances (AGEB), primary energy consumption in Germany in 2015 was overall 1.3% higher than the previous year. The most important reason for the increase in energy consumption was the cooler weather in 2015 compared to the very mild weather in the previous year and the associated higher demand for heating. Despite positive macroeconomic trends and a population growth of around one million people, the energy consumption adjusted for weather conditions fell by almost 2.0% due to improvements in energy efficiency. The consumption of hard coal decreased by 0.7%. This was primarily due to the decrease in the use of hard coal in power plants for generating electricity and heat. The consumption of mineral oil in 2015 was 0.1% below the figure for the previous year. In contrast, natural gas consumption rose by 4.7% due to a higher demand for heating. Domestic electricity consumption in Germany increased by 0.8% from 592.2 billion kWh in the previous year to 597.0 billion kWh in 2015. The consumption of brown coal, which is mainly used for generating electricity, increased by 0.9%. The share of nuclear energy in overall energy consumption fell by a further 5.8%. This was in contrast to an increase of 10.5% for renewable energies. The proportion of renewable energy sources in primary energy consumption increased to 12.6% (previous year: 11.5%).



### Wholesale market prices for electricity

The average price on the spot market of the European Power Exchange (EPEX SPOT for the immediate delivery of electricity (base load product) to the German/Austrian market for 2015 was €31.63/MWh, which was €1.13/MWh or 3.5% below the level in the previous year. This development was primarily due to significantly higher feed-ins from renewable energies as a result of the large expansion in capacity of onshore and offshore wind farms and the commissioning of new power plants. Factors driving prices upwards, such as temporarily higher logistics costs for coal power plants in the form of so-called low water surcharges as a result of low water levels caused by a lack of rain, were not able to offset this effect.

Forward market price trend for electricity (EEX)  
Daily quotes



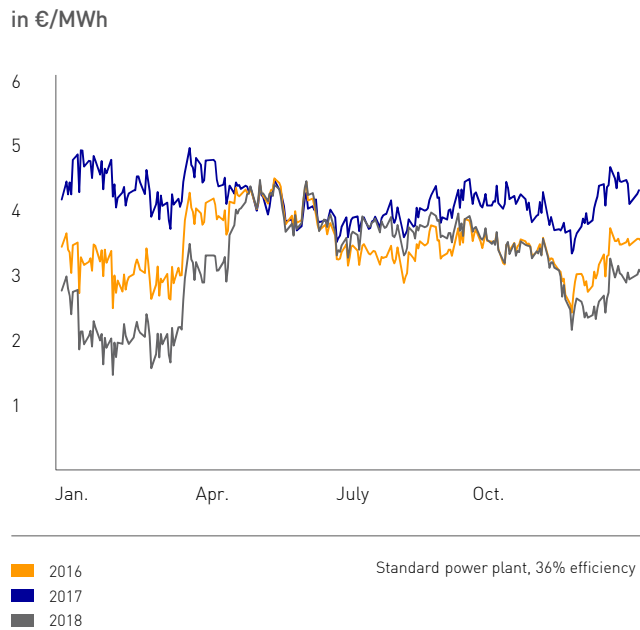
Peak 2016  
Base 2016

Source: EEX

The forward market prices for electricity for front year delivery were on average €30.96/MWh in 2015 and were again thus slightly below the spot market price. In comparison to the previous year, prices were around €4.13/MWh or 11.8% lower. This reflected the expectation for the continued expansion of renewable energies – above all onshore and

offshore wind power plants – and the falling prices for coal and gas. The expansion of renewable energies increases the probability that very low or negative prices will occur at certain hours on the spot market. In addition, the commissioning of modern and more efficient coal power plants has placed a downward pressure on prices. In 2017 and 2018, market participants expect a further decline in the price of electricity to €26.61/MWh and €25.90/MWh, respectively (settlement price as of 30 December 2015).

### Clean Dark Spreads (base)



Standard power plant, 36% efficiency

The energy generation spreads (Clean Dark Spreads – CDS) for standard coal power plants resulting from the forward prices for electricity, coal and CO<sub>2</sub> – based on an efficiency level of 36% – indicated a falling trend with an annual average of €4.08/MWh for front year delivery and only €3.40/MWh for the 2017 delivery year and €3.14/MWh for the 2018 delivery year. The CDS for the front year was around €1.72/MWh lower than in the previous year. Reasons for this are the expansion of renewable energies and the commissioning of more efficient coal power plants.