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   › Political environment
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3. Strategy ............................................................................. page 34 >>
   › EnBW 2020 Strategy
   › EnBW 2025 Strategy
   › Further strategic aspects:
     Broadband, Contracting, Digitization, Research and Development,
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     Decarbonisation, Corporate Governance,
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   › Grids
   › Renewable Energies
   › Generation and Trading

5. EnBW’s Main Shareholdings ........................................... page 111 >>
   › Energiedienst Holding AG
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   › Stadtwerke Düsseldorf Group
   › VNG AG
   › Borusan EnBW Enerji yatırımları ve Üretim A.S

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   › Five-year summary
   › Fiscal year 2018
   › Half year 2019
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7. Capital Markets ............................................................ page 143 >>
   › Financial Asset Management
   › Bonds
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   › Credit Ratings
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   › Share
   › Key financial indicators

8. Service ............................................................................ page 155 >>
   › Financial calendar
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1.1 EnBW at a glance

One of the largest German utilities
- 5.5 m customers
- 13,399 MW generation portfolio
- Stable shareholder structure
- 21,775 employees
- Strong roots in Baden-Württemberg

Balanced risk-return profile
- Focus on renewables and grids
- ~68% EBITDA contribution from low-risk business
- Solid investment grade ratings
- Active in selected foreign markets

Key financial figures
- Revenue: €20.6 bn
- Adj. EBITDA: €2.2 bn
- Group net profit: €334.2 m

Fully integrated utility in Germany

Four Business Segments
- Sales
- Grids
- Renewable Energies
- Generation & Trading

1 As of 31 December 2018
### 1.2 Key figures\(^1\)

#### Key financials

<table>
<thead>
<tr>
<th>KPI</th>
<th>2018</th>
<th>Forecast 2020</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted EBITDA € bn</td>
<td>2.2</td>
<td>2.3 - 2.5</td>
<td>Securing profitability</td>
</tr>
<tr>
<td>Internal financing capability %</td>
<td>93.2</td>
<td>&gt;100</td>
<td>Maintain financial discipline</td>
</tr>
<tr>
<td>ROCE %</td>
<td>6.5</td>
<td>8.5 - 11</td>
<td>Raising the Group’s value</td>
</tr>
</tbody>
</table>

#### Key non-financials

<table>
<thead>
<tr>
<th>KPI</th>
<th>2018</th>
<th>Forecast 2020</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE share of generation capacity %</td>
<td>27.9</td>
<td>&gt; 40</td>
<td>Expand renewable energies</td>
</tr>
<tr>
<td>CO₂ intensity g/kWh</td>
<td>553</td>
<td>-15 % to -20%</td>
<td>Reducing CO₂ intensity by 15 to 20%</td>
</tr>
<tr>
<td>Customer Satisfaction Index (EnBW / Yello)</td>
<td>120/152</td>
<td>&gt;136 / &gt;159</td>
<td>Customer proximity</td>
</tr>
<tr>
<td>Employee Commitment Index</td>
<td>62</td>
<td>65</td>
<td>Employee commitment</td>
</tr>
</tbody>
</table>

\(^1\) As of 31 December 2018
1. EnBW at a glance........................................................................................................ page 3 »»
   › Key financials
   › Key non-financials

2. Environment ........................................................................................................ page 6 »»
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8. Service ................................................................................................................. page 155 »»
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2.1 Political & regulatory environment

Paris Climate Agreement: Hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels

<table>
<thead>
<tr>
<th>EU 2020 goals</th>
<th>EU 2030 goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20% GHG emissions</td>
<td>-40% GHG emissions</td>
</tr>
<tr>
<td>20% RE in final energy consumption</td>
<td>32.0% RE in final energy consumption</td>
</tr>
<tr>
<td>20% Energy savings</td>
<td>32.5% Energy savings</td>
</tr>
</tbody>
</table>

German Climate & Energy Policy Goals

-60% GHG emissions by 2020
-20% primary energy consumption by 2020

Nuclear phase-out

Goal

- Last NPP to shut down by end of 2022
- Responsibility for financing of phase-out split between operators and government
- State-owned fund established in mid 2017
- Operators have partly transferred nuclear provisions and related liabilities to state

Renewables

Goal

- 2025: 40–45% RE
- 2035: 55–60% RE
- in electricity production
- RE share goal to be increased to 65% by 2030 in current legislative period
- Additional tenders for 4 GW onshore wind and 4 GW PV in 2019-2021
- Debate on tariff system and costs of power ongoing. Changes to charges expected

Coal phase-out

Goal

- Federal Government about to implement Coal Commission recommendations:
- Reduction of coal-fired capacity from ~40 GW to 30 GW in 2022 and 17 GW in 2030
- Coal to be phased out completely in 2038; end date may be subject to revision: earlier end date (2035) possible

Electricity grid expansion

Goal

- Remove bottleneck in energy transmission (slowing grid expansion)
- Underground cabling given priority over overhead powerlines
2.2.1 Decarbonisation: Global regulatory framework on climate change

The Paris Agreement

- Adopted at the UN Climate Change Conference COP21 in December 2015 by the 196 Parties to the UN Framework Convention on Climate Change (UNFCCC)
- Established a global warming goal well below +2°C on pre-industrial average with efforts to limit warming to +1.5°C in 2100 in relation to pre-industrial levels
- Aims at achieving net-zero emissions in the second half of this century
- Defined a universal, legal framework where all countries develop and communicate their mitigation measures and “nationally determined contributions” (NDCs)
- Will be further defined at COP25 in Santiago (Chile) in 2019

Effect of current pledges and policies on global GHG emissions

Current pledges lead to global warming of roughly +3°C (without yet calculating the impact of tipping points, which are likely to occur at temperature increases >1.5°C)

Source: Climate Action Tracker / Vox
2.2.2 Decarbonisation: National GHG emissions and climate protection targets

German GHG emissions by sector
(in m t CO₂–equivalent)

<table>
<thead>
<tr>
<th>Sector</th>
<th>1990 (in m t CO₂-eq.)</th>
<th>2018¹ (in m t CO₂-eq.)</th>
<th>2030 (in m t CO₂-eq.)</th>
<th>2030 (reduction compared to 1990)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>466</td>
<td>311</td>
<td>175-183</td>
<td>62-61%</td>
</tr>
<tr>
<td>Industry</td>
<td>284</td>
<td>196</td>
<td>140-143</td>
<td>51-49%</td>
</tr>
<tr>
<td>Buildings</td>
<td>210</td>
<td>117</td>
<td>70-72</td>
<td>67-66%</td>
</tr>
<tr>
<td>Transportation</td>
<td>163</td>
<td>162</td>
<td>95-98</td>
<td>42-40%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>90</td>
<td>70</td>
<td>58-61</td>
<td>34-31%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,213</td>
<td>856</td>
<td>538-557</td>
<td>56-54%</td>
</tr>
<tr>
<td>Waste and others</td>
<td>38</td>
<td>10</td>
<td>5</td>
<td>87%</td>
</tr>
<tr>
<td>Total amount</td>
<td>1,251</td>
<td>866</td>
<td>543-562</td>
<td>56-55%</td>
</tr>
</tbody>
</table>

The emission reduction target for 2020 will be missed by at around 85 m t CO₂

2040 emissions target at least 70% below 1990 and 2050 target 80-95% below 1990

Source: German Federal Environmental Agency, 4 April 2019
¹ Estimation
2.2.3 Decarbonisation: Significant reduction in coal-based generation decided

**Situation in Germany**

- 2020 targets no longer attainable in Germany
- Reduction in coal-based emissions from current levels essential to attainment of 2030 targets
- Government announced to follow Coal Commission recommendations for coal decommissioning path until 2038

- Coal phase-out to be implemented in three phases:
  - Ad-hoc action (3 GW lignite; ~6 GW hard coal) to 2022
  - Ongoing closures based on negotiations [lignite] and auctions [hard coal] 2023 – 2029 (expected)
  - Ongoing closures 2030 – 2038 (details not yet known)

**Coal capacity development** as recommended by Coal Commission in GW

- Lignite: 19.6 (2018), -2.2 (2022), ~6 (2030)

**Significant policy-driven cuts in coal generation by 2030; initial action expected to be effective for 2020**
2.2.4 Decarbonisation: Federal Government climate protection policies

Climate Protection Program 2030

› In September 2019, Federal Government has published a key issues paper of planned Climate Protection Program.

› Germany’s 2030 target is composed of several sector targets. Climate Protection Program designated to attain both.

› Ministries’ proposals to close emission reduction gaps to be enacted with legislative measures, expected by end of 2019.

CO₂ pricing

› German government decided to implement CO₂ pricing system in transport and heating sectors. System to start in 2021 with “fixed prices”, followed by cap-and-trade system with price corridor in 2026.

› Government announced to support Carbon Price Floor on European level.

Renewable energy sources

› RE expansion goals raised from 55% to 65% by 2030 (provided that the national grid is developed accordingly)

› Special tenders in 2019-2021: 4 GW each for onshore wind and Photovoltaics; additional expansion of offshore capacity from 15 to 20 GW in 2030 envisaged in Climate Protection Program.

The autumn of 2019 will be crucial for Germany’s climate protection policies: Coalition Parties attempt to overcome disagreements on ambition and instruments. Lines of compromise now manifested in Climate Protection Program. Regulatory implementation however expected to remain complex and difficult.
## Regulatory environment

- Electricity transmission, gas transport and distribution grids remain regulated, including in the long term, as a natural monopoly.
- Regulatory risks manageable due to the increasing stability of the regulatory framework.
- Revenue cap regulation enables grid revenues to remain independent of consumption fluctuations.
- Pressure to be as efficient as possible ongoing due to regulation.
- Improved investment conditions for transmission/transport grids on account of changes in the regulatory framework.
- The regulatory framework for investment in distribution grids has been improved in some respects as of the third electricity regulation period (from 2019) and gas (from 2018) due to the reform of the Incentive Regulation Ordinance.
- Amendment of Incentive Regulation Ordinance generally leads to no substantial change in the regulatory framework for transmission and distribution grid operators.

### Challenges for grids in Europe

#### Three main challenges for grids:

- Electricity generation is becoming increasingly uneven – fluctuations have an impact on grid stability.
- Many decentralised electricity generation plants connected to the grid – load flow reversals possible in some instances.
- Coal-to-gas fuel switching leads to a great increase in demand for gas transport capacity.
- Germany as a transit country – large proportion of cross-border trading.

#### EnBW’s approaches to solutions:

- **TSOs:** New electricity transmission lines can bridge the distance between focal point of production and consumption centres; use of HVDC transmission lines and underground cables. Expansion of the gas transport network to cover capacity requirements.
- **DSOs:** Expansion of the grids to integrate renewables and charging infrastructure for electric cars, smart expansion of distribution grids, efficient and swift expansion of the distribution grids by municipal partners.
2.3.2 Regulated grids business: Incentive regulation in Germany

Introduction of incentive regulation
as of 1 January 2009

<table>
<thead>
<tr>
<th>Gas</th>
<th>Base year for 2nd regulation period</th>
<th>Base year for 3rd regulation period</th>
<th>Base year for 4th regulation period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st regulation period</td>
<td>2nd regulation period</td>
<td>3rd regulation period</td>
</tr>
<tr>
<td></td>
<td>2019-2022</td>
<td>2023</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electricity</th>
<th>Base year for 2nd regulation period</th>
<th>Base year for 3rd regulation period</th>
<th>Base year for 4th regulation period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st regulation period</td>
<td>2nd regulation period</td>
<td>3rd regulation period</td>
</tr>
<tr>
<td></td>
<td>2009-2012</td>
<td>2013-2016</td>
<td>2017-2023</td>
</tr>
<tr>
<td></td>
<td>2019-2022</td>
<td>2023</td>
<td></td>
</tr>
</tbody>
</table>
2.3.3 Regulated grids business: Return on new systems for the 3rd regulatory period

**EK\(^1\)-I <= 40%**
- **EK-I rate of return**: 5.64\% after KöSt\(^2\), after GewSt\(^3\)
- Base rate: 2.49\%
- Risk premium: 3.15\%

**EK-II >40%**
- **EK-II rate of return**: 3.03\% before KöSt, after GewSt
- 10-year average over Bundesbank interest rate series

**Factor 1.225**
- **EK-II rate of return**: 6.91\% before KöSt, after GewSt
**Factor 1.1365\(^4\)**
- **EK-II rate of return**: 7.85\% before KöSt, after GewSt

**Weighted rate of return**
- **Rate of return before KöSt, after GewSt**: 5.21\%
- **Rate of return before KöSt, after GewSt**: 5.00\%
- **Rate of return before KöSt, after GewSt**: 3.44\%
- **Rate of return before KöSt, after GewSt**: 3.09\%

> Irrespective of the actual financing structure, a maximum of 40\% of capital employed is subject to the EK-I rate of return as this is capped at 40\% of equity by law (Stromnetzentgeltverordnung)

> Capital employed in excess of this amount is subject to the EK-II rate of return.

---

\(^1\) Equity  
\(^2\) KöSt: Körperschaftssteuer – corporate tax  
\(^3\) GewSt: Gewerbesteuer – trade tax  
\(^4\) At tax rate 3.50\% and multiplier 390\%
2.3.4  Regulated grids business
German high-voltage grid

6,700 km upgrading in existing line routes
› AC – reinforcement/recabling: ~1,900 km
› AC – new lines in existing routes: ~4,500 km
› DC – recabling: ~300 km

4,800 km network expansion in new line routes
› AC – new lines: ~1,000 km
› DC – new lines: ~1,000 km

Existing grid to be expanded by more than 30% over current grid length

€61 bn estimated investment needed, of which €30 bn for DC projects

A further €18 bn in investment to connect new offshore wind farms
2.4 Market development

### Generation and trading
- Sustained trend towards renewable energies\(^1\):
  - > 120 GW by 2020
  - > 160 GW by 2030
- Time of profitable operation of conventional power plants in steady decline
- Increasing power generation from gas power plants due to coal-to-gas fuel switching
- Increasing volatility of prices and volumes

### Power and gas grids
- Volatile electricity generation detrimental to grid stability
- Transmission grid expansion accelerated by raising the renewable energy target to 65% by 2030
- Further investment needed for expansion of power distribution grids, e.g. due to the increase in e-mobility
- Conventional power stations increasingly in back-up role
- Accelerating expansion of smart grids
- Strong expansion of gas transportation grids in Baden-Württemberg, due to fuel switch

### Customers
- Downturn in demand for electricity and gas due to energy efficiency and rise in demand from electric vehicles and residential heating sector\(^1\) in the future.
- Renewables for the most part in the hands of non-PSCs\(^2\)
- Consumer playing an increasingly active role with PV and battery systems and electromobility\(^3\)
- Landlord-to-tenant electricity supply still uneconomic (inhibited by EEG levy)
- Number of energy co-operatives has increased since 2008 from ~150 to 860
- Continued importance of developing new (digital) business models

### Technological developments
- More diversity, modularity and granularity in the energy system

### New market participants
- More competition and fragmentation of the value chain

### Regulatory framework
- Undergoing constant change, rising complexity

---

\(1\) Depending on regulatory policies
\(2\) Power supply companies
\(3\) Rising new registrations compared to previous years

Business models of large utilities are changing; accelerating development of renewable energies and grids as well as new services for customers
## 2.5.1 German electricity market: Installed capacity and generation

### Installed capacity in GW

<table>
<thead>
<tr>
<th>Year</th>
<th>Installed capacity in GW</th>
<th>Renewable energies</th>
<th>Conventional thermal power plants and other</th>
<th>Nuclear power</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>195</td>
<td>90</td>
<td>93</td>
<td>12</td>
</tr>
<tr>
<td>2015</td>
<td>203</td>
<td>97</td>
<td>95</td>
<td>11</td>
</tr>
<tr>
<td>2016</td>
<td>210</td>
<td>104</td>
<td>95</td>
<td>11</td>
</tr>
<tr>
<td>2017</td>
<td>216</td>
<td>112</td>
<td>93</td>
<td>11</td>
</tr>
<tr>
<td>2018</td>
<td>220</td>
<td>118</td>
<td>92</td>
<td>10</td>
</tr>
</tbody>
</table>

### Generation in bn kWh

<table>
<thead>
<tr>
<th>Year</th>
<th>Renewable energies</th>
<th>Lignite</th>
<th>Natural gas</th>
<th>Nuclear power</th>
<th>Hard coal</th>
<th>Other (oil, pumped storage, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>628 (5%)</td>
<td>25%</td>
<td>19%</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>2015</td>
<td>648 (5%)</td>
<td>24%</td>
<td>18%</td>
<td>10%</td>
<td>13%</td>
<td>5%</td>
</tr>
<tr>
<td>2016</td>
<td>651 (5%)</td>
<td>23%</td>
<td>17%</td>
<td>13%</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>2017</td>
<td>654 (5%)</td>
<td>23%</td>
<td>14%</td>
<td>13%</td>
<td>13%</td>
<td>5%</td>
</tr>
<tr>
<td>2018</td>
<td>647 (5%)</td>
<td>23%</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: BDEW, March 2019
2.5.2 German electricity market: Development of household energy prices and electricity consumption

Energy prices in Germany
in €/MWh

Electricity consumption in Germany
in TWh

Net electricity consumption stable in the past few years; reduction due to efficiency is compensated by changes in consumption habits and economic growth

Figures as of April 2019; Source: Federal Statistical Office (FS 17, R 2), BDEW (electricity 3,500 kWh/a)
The chart shows the development of prices (indexed rates of increase, not absolute fuel prices) for heating oil, gas, electricity and district heating for households since January 2014 relative to the 2015 base year (annual average).

Figures as of February 2019; Source: AGEB
2.5.3 German electricity market: Electricity price

Electricity price for private households 2019

- VAT 19%
- Concession fee¹
- Electricity duty
- EEG levy
- CHP Act levy

52.5% share of electricity price for private households

Average electricity price for a 3-person household
(Annual consumption of 3,500 kWh)
€ cents/kWh

<table>
<thead>
<tr>
<th>Year</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>28.70</td>
</tr>
<tr>
<td>2016</td>
<td>28.80</td>
</tr>
<tr>
<td>2017</td>
<td>29.28</td>
</tr>
<tr>
<td>2018</td>
<td>29.47</td>
</tr>
<tr>
<td>2019</td>
<td>30.43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAT 19%</td>
<td>14.91</td>
<td>15.53</td>
<td>16.06</td>
<td>15.98</td>
<td>15.98</td>
</tr>
<tr>
<td>Concession fee¹</td>
<td>6.74</td>
<td>7.01</td>
<td>7.51</td>
<td>7.29</td>
<td>7.39</td>
</tr>
<tr>
<td>Electricity duty</td>
<td>7.05</td>
<td>6.26</td>
<td>5.71</td>
<td>6.20</td>
<td>7.06</td>
</tr>
<tr>
<td>EEG levy</td>
<td>0.9%</td>
<td>1.37%</td>
<td>1.00%</td>
<td>0.02%</td>
<td></td>
</tr>
<tr>
<td>CHP Act levy</td>
<td>21.0%</td>
<td>6.7%</td>
<td>5.5%</td>
<td>6.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Interruption load levy</td>
<td>0.9%</td>
<td>1.37%</td>
<td>1.00%</td>
<td>0.02%</td>
<td></td>
</tr>
<tr>
<td>Offshore liability surcharge</td>
<td>21.0%</td>
<td>6.7%</td>
<td>5.5%</td>
<td>6.7%</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

Source: German Federal Association of Energy and Water Management (BDEW), figures as of January 2019

¹ Average concession fee; varies according to size of community

Figures as of July 2019; Source: BDEW
2.5.4  German electricity market: Wholesale forward price

Forward price for baseload electricity in Germany
in €/MWh
2.5.5 German electricity market: CSS above CDS

Clean-dark-spread base
in €/MWh

- Gross margin of a coal-fired power plant
  (plant efficiency: 36%)

Clean-spark-spread peak
in €/MWh

- Gross margin of a gas-fired power plant
  (plant efficiency: 50%)

Clean-dark-spread is the corresponding indicator for coal-fired generation of electricity.

Clean-spark-spread represents the net revenue a generator makes from selling power, having bought gas and the required number of carbon allowances.
### 2.5.6 German electricity market: Comparison for electricity transmission and distribution grids

<table>
<thead>
<tr>
<th>Transmission grids</th>
<th>Distribution grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>380 kV, 220 kV</td>
<td>≤ 110 kV</td>
</tr>
</tbody>
</table>

#### Organisation

<table>
<thead>
<tr>
<th>Transmission grids</th>
<th>Distribution grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 operators: 50Hertz, Amprion, TenneT, TransnetBW</td>
<td>890 operators</td>
</tr>
<tr>
<td>Grid length: ~37,500 km</td>
<td>Grid length: ~1,808,000 km</td>
</tr>
<tr>
<td>Grids owned by operators</td>
<td>Franchises issued by municipalities</td>
</tr>
<tr>
<td></td>
<td>Competition for franchises</td>
</tr>
</tbody>
</table>

#### Tasks

<table>
<thead>
<tr>
<th>Transmission grids</th>
<th>Distribution grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring balance between generation and consumption</td>
<td>Connecting consumers and local providers</td>
</tr>
<tr>
<td>Using balancing power</td>
<td>Recording incidents and troubleshooting</td>
</tr>
</tbody>
</table>

#### Challenge of the Energiewende

<table>
<thead>
<tr>
<th>Transmission grids</th>
<th>Distribution grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport of wind-generated electricity from northern to southern Germany</td>
<td>Connection of decentralised renewables (e.g. photovoltaics, wind)</td>
</tr>
<tr>
<td>Building new high voltage direct current (HVDC) transmission lines using underground cables</td>
<td>Integration of charging infrastructure for electric cars</td>
</tr>
<tr>
<td>Connecting offshore wind farms</td>
<td>Use of smart grid tech and digitization of metering operation (e.g. smart meters)</td>
</tr>
</tbody>
</table>

#### Unbundling regulations

<table>
<thead>
<tr>
<th>Transmission grids</th>
<th>Distribution grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership unbundling, independent transmission operator (ITO)</td>
<td>Functional and financial unbundling of the grid business and obligation as to non-discriminatory use of grid information</td>
</tr>
</tbody>
</table>

---

Source: BNetzA/BKartA Monitoring Report December 2018

HVDC: high-voltage direct current transmission technology
2.5.7 German electricity market: Electricity grids are the backbone of the “Energiewende”

Electricity grids

General
- The electricity grid business has become a growth business due to the remodelling of the energy market
- Changes in legislation have simplified reimbursement for costs of investment in grids: e.g. revision of the Incentive Regulation Ordinance (ARegV)

Transmission grid
- Growing geographical imbalance between generation and consumption
- Expansion of transmission grid – primarily construction of high voltage direct current (HVDC) transmission lines and connection of offshore wind farms

Distribution grid
- Feed-in growing due to local generation
- Still strong trend back to municipal ownership (large share of concession already extended, however)

Capex for expansion of the German electricity grid through to 2030 in € bn

2.6.1 German gas market: Gas price

Gas price

Taxes and duties

Regulated network user charges\(^1\)
(including metering, billing and metering station operation)

Gas procurement and sales
(market-determined)

Single-family home, gas central heating
Single-family home, gas central heating including hot water, customer on contract with regional default supplier\(^2\)
(annual consumption 20,000 kWh)

\[ \text{€ cents/kWh} \]

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes and franchise fees</td>
<td>3.15</td>
<td>2.75</td>
<td>2.65</td>
<td>2.77</td>
<td>3.05</td>
</tr>
<tr>
<td>Network user charges, including metering, billing and metering station operation</td>
<td>1.58</td>
<td>1.52</td>
<td>1.49</td>
<td>1.51</td>
<td>1.56</td>
</tr>
<tr>
<td>Procurement and sales</td>
<td>1.53</td>
<td>1.62</td>
<td>1.59</td>
<td>1.53</td>
<td>1.55</td>
</tr>
</tbody>
</table>

\(^1\) Average net network user charge including charges for metering, metering station operation and billing, subject to large regional variation, figures as of 07/2019; source: BDEW

\(^2\) Most heating gas customers are customers on contract with the regional default supplier with a reduced concession fee (0.03 ct/kWh); figures as of 07/2019; source: BDEW
2.6.2 German gas market: Front month price and spot market development

Front month reference prices¹
in €/MWh

Spotmarket reference prices¹
in €/MWh

¹ Average of Gaspool and NetConnect Germany (NCG)
2.6.3 German gas market: Comparison for gas transport and distribution grids

**Gas transport grids**
- 380 kV, 220 kV
- 16 grid operators
- Grid length: ~38,800 km
- Grids owned by operators
- Two market areas (NetConnect Germany and Gaspool) [consolidation planned in 2021]

**Gas distribution grids**
- ≤ 110 kV
- 718 grid operators
- Grid length: ~498,000 km
- Franchises issued by municipalities
- Competition for franchises

**Organisation**
- 16 grid operators
- Grid length: ~38,800 km
- Grids owned by operators
- Two market areas (NetConnect Germany and Gaspool) [consolidation planned in 2021]
- 718 grid operators
- Grid length: ~498,000 km
- Franchises issued by municipalities
- Competition for franchises

**Tasks**
- Transport gas from import to export points (transit) and vice versa (DSOs and industry or other market areas)
- Connecting consumers and local providers
- Recording incidents and troubleshooting

**Challenge of the Energiewende**
- Long term: potential use of natural gas grid as storage medium for electricity generated from renewables
- Integration of bio natural gas and synthetic natural gas via power-to-gas plants
- Degree of utilisation if electricity heating and long distance heating increases

**Unbundling regulations**
- Ownership unbundling, independent transmission operator (ITO)
- Functional and financial unbundling of the grid business and obligation as to non-discriminatory use of grid information

Source: BNetzA/BKartA Monitoring Report December 2018
DSO: Distribution system operator
2.6.4 German gas market: Gas grids are a major element of the “Energiewende”

Gas grids

Transport grid
› Increasing capacity requirements from changes in regulatory environment: Switch in the market from L-gas to H-gas (approx. half of L-gas from Netherlands to be replaced by H-gas from Russia/Norway by 2025)
› In addition, the capacity requirement increases due to the coal-to-gas fuel switch, especially in Baden-Württemberg

Distribution grid
› Smaller scale of expansion compared to electricity because “Energiewende” has less pronounced effect on gas market
› Growth potential due to the connection of new communities to the natural gas grid
› Still strong trend back to municipal ownership

Expansion of the gas transport grid in Germany through to 2028

<table>
<thead>
<tr>
<th>Compressors in MW</th>
<th>Increase</th>
<th>2028</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>499</td>
<td>2,700</td>
</tr>
<tr>
<td>2028</td>
<td>~3,200</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport lines in km</th>
<th>Increase</th>
<th>2028</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>1,364</td>
<td></td>
</tr>
<tr>
<td>2028</td>
<td>~40,150</td>
<td></td>
</tr>
</tbody>
</table>

L-gas: low calorific gas  
H-gas: high calorific gas

1 Source: Gas network development plan 2018-2028
2 Source: BNetzA/B KartA Monitoringbericht (Monitoring Report) 2018

2018-2028: Investment of ~ €6.9 bn in transport grids in Germany
2.7 Broadband/telecommunications market to see strong growth in coming years

Market trends & development

- Broadband/telecommunications market increasingly dynamic: nationwide presence a key success criterion
- Expected development boost for new infrastructure technologies:
  - Nationwide rollout of optical fibre essential in medium term with around €100 bn expected investment in infrastructure
  - €12 bn in grants available through to 2025
- Rollout of new regional and nationwide optical fibre networks planned by EnBW
- 5G emerging as a key technology in digital transformation – optical fibre infrastructure needed for 5G to work
- Market growth of approx. 17%¹ expected in telecommunications/broadband by 2025

EnBW’s ambitions & goals

- EnBW provides telecommunications services throughout Germany
- New chapter for EnBW – successive rollout – focus on B2B and municipal utilities
- EnBW prepared to provide massive support in 5G infrastructure rollout

¹ Source: IDC (2015), VATM (2015), Deloitte analysis

Profitable growth, especially in asset sector and B2B, an overarching goal for EnBW
## 2.8 Competitors:
International, national, regional and new competitors

<table>
<thead>
<tr>
<th>Competitors</th>
<th>Companies</th>
<th>Characteristics</th>
<th>Position of EnBW</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>e-on, uniper, ENEL, Iberdrola, innogy, RWE, EDF</td>
<td>Broad-based, internationally oriented growth strategy. Growth especially in renewable energies, grids and sales/solutions.</td>
<td>EnBW is positioned as an integrated energy company focusing on Germany and selected foreign markets.</td>
</tr>
<tr>
<td>National (DACH region)</td>
<td>EVN, ALPIQ, Verbund</td>
<td>Stable national position, activities in selected foreign markets. Focus on market development, for example in renewable energies, grids, sales and/or solutions.</td>
<td></td>
</tr>
<tr>
<td>Regional</td>
<td>MVV-Energie, EWE, 1&amp;1, badenova</td>
<td>Focus on regional markets. Business activities mainly focused on grids and sales.</td>
<td>Main growth areas: - Renewable Energies - Grids - Customer Solutions</td>
</tr>
<tr>
<td>New</td>
<td>ENCAVIS, sonnen, Google, TESLA, WPDL, NEXT Kraftwerke</td>
<td>Entry of new market participants. Focused on single parts of the value-added chain – high degree of specialisation within each field leads to growing impact of specific success factors.</td>
<td></td>
</tr>
</tbody>
</table>
2.9 The “Energiewende” increases competition

Retail and customers – trends

› Growing price sensitivity\(^1\) and new competitors lead to fiercer competition
› Lateral entrants, disruptive suppliers and intermediaries are increasingly competing for customers and market shares
› Commodity business (electricity and gas) is still significant. In order to make pure electricity and gas products more interesting and/or emotive for customers, utilities are increasingly supplementing their products with energy-related or non-energy-related additional services.
› Local energy production by customers on the rise: Consumers are becoming prosumers
› Intelligent meters change customer access and are a prerequisite for the development of future energy solutions business
› Increasing convergence on the markets due to sector coupling and the electrification of heating and transport (car manufacturers, CHP manufacturers as electricity suppliers and virtual power plant platform operators)
› Non-industry companies continue to be popular sales partners. The aim is often to increase reach and develop new customers groups
› Eco-energy again has a greater influence on the customer’s supplier decision\(^1\)

Strong competition:
Cumulative churn rate of retail customers\(^2\)
in %

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>36.1</td>
<td>27.6</td>
</tr>
<tr>
<td>2015</td>
<td>39.5</td>
<td>30.9</td>
</tr>
<tr>
<td>2016</td>
<td>42.0</td>
<td>32.3</td>
</tr>
<tr>
<td>2017</td>
<td>42.6</td>
<td>33.2</td>
</tr>
<tr>
<td>2018</td>
<td>43.8</td>
<td>34.5</td>
</tr>
</tbody>
</table>

\(^1\) Source: Kreutzer Vertriebskanalstudie 2018  
\(^2\) Source: BDEW 2019  

CHP: cogeneration combined heat and power
2.10 Market potential for energy-related services

Operations
- Market for energy-related services very fragmented
- Market volume in Germany €5.5 bn
- Intense competition with new players from the energy industry, and from other industries, continually surging onto the market
- Growing challenges for municipal utilities from rising pressure on costs, the need to meet regulatory requirements and billing technology for the remodeling of the energy market
- High fixed costs mean that the business is heavily influenced by economy of scale
- Cost advantages for large providers
- Technology shift and economies of scale offer significant growth opportunities in the market, especially in the area of smart metering solutions

Services and key competencies
- EnBW services cover the complete meter-to-cash value chain. Services can be chosen to suit the individual needs of utility companies
- Services for non-commodity products and solutions, e.g. e-mobility and bundled prosumer products
- Services either as software-as-a-service (SaaS) only or full-scale business process outsourcing
2.11.1 Contracting: Media and services from a single source

**Growth in German contracting market to 2025**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value pool in € m</th>
<th>Profit pool in € m</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3,925</td>
<td>246</td>
</tr>
<tr>
<td>2020</td>
<td>5,004</td>
<td>310</td>
</tr>
<tr>
<td>2025</td>
<td>6,408</td>
<td>394</td>
</tr>
</tbody>
</table>

- **Continuous market growth through to 2025**
  (also aided by energy price increase)

- **Growth opportunities to be exploited**, primarily by:
  - Expanding and adding versatility in the service portfolio
  - Expanding activities in the role as **infrastructure service provider** (e.g. combining energy supply with charging infrastructure, storage systems, etc.)

**EnBW’s market position**

- Custom contracting solutions for industry, housing sector, public sector and commercial/retail/service customers – spanning the entire value chain
- 200 plants under contract
- Core contracting activities complemented with additional services around plant energy efficiency
- Wide range of plant types (including large complex plants, currently up to 100 MWth) for diverse customer needs; focus on heat and/or power (CHP)
- Targeting German national market
- Main focus in housing sector projects currently on Baden-Württemberg and selected regions

---

1 Source: Marktperspektive (Market Outlook) 2016 – sales segment CHP: cogeneration combined heat and power
### General market trends
- Increasing importance of distributed energy systems
- Slight rise in energy prices in next few years
- Slight medium-term rise in interest rates
- Increasingly complex regulatory framework, such as building energy efficiency requirements (smart buildings)
- Current customer segments to retain relevance through to 2025 (in terms of value pool) – industry remains biggest segment

### Customer trends
- Growing numbers of (complex) distributed energy systems
- Focus on core business: capex optimisation, reduction of operating risks in energy provision
- Increasing demand for outside staff (rather than maintaining in-house resources) for “special” task area of distributed energy
- Key importance of energy efficiency (energy is the biggest cost factor)
- Majority of residential housing stock outdated in terms of energy efficiency; interest in modernisation, with focus on heating and additional services

### Provider/product trends
- Integration of additional services, such as energy management (and energy management systems)
- Increasing use of combination packages and new contracting models, such as landlord-to-tenant electricity supply and combining with other services [e.g. direct marketing] and systems [e.g. charging infrastructure]
- Ongoing need for complex custom solutions, with partial standardisation for smaller-scale projects and housing sector
- Expansion of [direct] marketing and local presence; more alliances
- Digitization, such as systems monitoring and energy data monitoring

---

**Market and customer trends require contracting providers to adjust their capability portfolios, mostly in terms of media mix, increased versatility and additional services**

Source: trend:research market study, “Markt und Marktentwicklung für Contracting” [“Contracting market and market development”], reference scenario, January 2017; own market analysis
Agenda 3 – Strategy

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   - Key non-financials

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   - Regulatory environment
   - Markets

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   - EnBW 2025 Strategy
   - Further strategic aspects: Broadband, Contracting, Digitization, Research and Development, Innovation, Corporate Sustainability, Decarbonisation, Corporate Governance, Compliance, Data Protection

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   - Grids
   - Renewable Energies
   - Generation and Trading

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   - Pražská energetika, a. s.
   - Stadtwerke Düsseldorf Group
   - VNG AG
   - Borusan EnBW Enerji yatırımları ve Üretim A.Ş

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   - Bonds
   - Maturity profile
   - Credit Ratings
   - Shareholder structure
   - Share
   - Key financial indicators

8. Service .............................................................................. page 155 >>
   - Financial calendar
   - Contact details
   - Important links
3.1 EnBW 2020 strategy: Corporate strategy

**Customer proximity**

- End customer business for electricity and gas
- Energy-related services/energy efficiency (defined B2C and B2B segments, increasingly for municipal utilities and local communities)
- Trading and origination

**Engine room of the Energiewende**

- Wind (onshore and offshore) and hydropower
- Conventional generation, located mainly in Baden-Württemberg
- Transmission and distribution grid infrastructure managed from Baden-Württemberg into neighbouring regions (also as service provider)

**Where shall we play?**

- From the region of Baden-Württemberg into Germany, Austria, Switzerland and Turkey

**How can we win?**

- Operational excellence
- Infrastructure in the energy industry
- Regulatory management
- Active opportunities for third parties to invest and participate

**What should our structure be?**

- Operational excellence
- Stringent performance management
- Partnerships and fostering dialogue

- Maximum efficiency
- Stringent cost orientation for defined quality level (target costing)
- Simplicity and standardization
- Technological development partnerships

- System expertise for energy
- Innovative capability and innovation management
- Strong brand portfolio

- Building up of an Innovation campus
- Acquisition of/joint ventures with energy-related companies

- Simple and functional management with simple structures, flat hierarchies and lean processes

- From the region of Baden-Württemberg into Germany, Austria, Switzerland and Turkey

- Maximum efficiency
- Stringent cost orientation for defined quality level (target costing)
- Simplicity and standardization
- Technological development partnerships

- System expertise for energy
- Innovative capability and innovation management
- Strong brand portfolio

- Building up of an Innovation campus
- Acquisition of/joint ventures with energy-related companies

- Simple and functional management with simple structures, flat hierarchies and lean processes
3.2 Strategy: Implementing the EnBW 2020 Strategy requires major portfolio transformation

Adjusted EBITDA
in € bn

<table>
<thead>
<tr>
<th>Category</th>
<th>2012</th>
<th>2020</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation and Trading</td>
<td>1.2</td>
<td>0.3</td>
<td>-80%</td>
</tr>
<tr>
<td>Renewable Energies</td>
<td>0.2</td>
<td>0.7</td>
<td>+250%</td>
</tr>
<tr>
<td>Grids</td>
<td>0.8</td>
<td>1.0</td>
<td>+25%</td>
</tr>
<tr>
<td>Sales</td>
<td>0.2</td>
<td>0.4</td>
<td>+100%</td>
</tr>
</tbody>
</table>

Adjusted EBITDA
in € m

Outlook 2019:
2,350 to 2,500

EnBW Factbook 2019
3.3 Strategy: Efficiency targets already to be met by 2019

Efficiency programs: Launch
in € m

- 2012: 750
- 2014: 400
- 2016: 250
- 2020: 1,400

FOKUS program

Efficiency measures: Ramp-up
in € m

- 2016: 1,050
  - Additional: 300
  - FOKUS: 750
- 2017: 1,250
  - Additional: 500
  - FOKUS: 750
- 2019: 1,400

› Unprofitable power plants incorporated in German power plants network reserve
› 2016: Exit from unprofitable B2B commodity business
› ~€150 m p.a. contribution from functional units, including holdings such as VNG
3.4 Strategy: Share of adjusted EBITDA from low-risk activities will increase from around 40% to at least 70% in 2020

Earnings share per business segment\(^1\)

- **2012**: 48% Renewable Energies, 33% Grids, 10% Sales, 10% Generation & Trading
- **2018**: 20% Renewable Energies, 14% Grids, 12% Sales, 54% Generation & Trading
- **2020 Strategic target**: ~15% Renewable Energies, ~15% Grids, ~15% Sales, ~30% Generation & Trading

\(^1\) May not add up to 100% due to rounding
3.5 Strategy: Infrastructure investments fit well with EnBW’s business model

### Investment/divestment volume 2012-2020

<table>
<thead>
<tr>
<th>Total</th>
<th>Total investment divestment investment</th>
<th>REMAINING (2019-2020)</th>
<th>COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1</td>
<td></td>
<td>2.6</td>
<td>11.5</td>
</tr>
<tr>
<td>11.5</td>
<td></td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>9.0</td>
<td></td>
<td>1.9</td>
<td>7.1</td>
</tr>
</tbody>
</table>

**Total investment**: €4.4 bn

**Total divestment**: €5.8 bn

**Net investment**: €14.1 bn

~€1 bn divestments

- Investment models in onshore sector
- Disposal of remaining minority share in EWE

### Investment volume 2019–2021

- **Total investment**: €6.4 bn (58%)
- **Renewables**: €2.8 bn (28%)
- **Generation & Trading**: €1.1 bn (7%)

### Investment volume 2021-2025

- **Total investment**: €12 bn (50%)
- **System-critical infrastructure**: €3.6 bn (30%)
- **Sustainable generation infrastructure**: €3.6 bn (30%)
- **Smart infrastructure for customers**: €3.6 bn (30%)

---

1 As of 31 December 2018; 2012 reference year;
2 May not add up to 100% due to rounding

Development of earnings
Adjusted EBITDA in € bn

- Sustainable power infrastructure
  - Expansion of renewable energies:
    - Offshore wind
    - Onshore wind and photovoltaics
    - Selective international business activities: Taiwan, U.S.
    - Actively driving decarbonisation

- System-critical infrastructure
  - Profitable growth in the distribution grid
  - Significant expansion of electricity transmission grid: Suedlink together with TenneT
  - Growth of network-related service

- Smart infrastructure for customers
  - Reorganisation and digitization of B2C sales and transformation to customer infrastructure business
  - Expansion of the solution portfolio: contracting
  - New infrastructure-related business areas beyond energy
3.7 Strategy: Valeco acquisition contributes to EnBW’s strategy 2025

- Increase in **production capacity** by 100 MW (at least 35 MW fully consolidated) in 2020
- **EBITDA contribution** of approx. €15 to 20 m in 2020¹

- Significant move towards achieving the **strategic target** of 1,000 MW onshore wind capacity by 2020

- **Solid growth and business model** with a **high market potential** based on a **favourable regulatory framework** in France

- **Portfolio diversification**:  
  - Experienced management and operational team  
  - Project pipeline and strong brand

- **Ideal platform for synergies and development of business model**

- **Medium term target**:  
  One of the top five wind and solar players in France

¹May be higher depending on further full consolidation
3.8.1 Strategy: Plusnet acquisition contributes to EnBW’s strategy 2025

- Complements NetCom’s highest-capacity fibre-optic networks in BaWü serving >40% of the state’s municipalities
- Sale of higher value products (higher bandwidth) to existing B2B customers
- Plusnet will submit offers to several hundred German municipal utilities to plan and operate their networks
- Low-risk business model: Capex mainly customer driven – no strategic network investments necessary over the next few years
- Large projects with well-known large retailers in negotiation or even implementation phase
- Consolidating smaller and regional DSL networks belonging to other market players
3.8.2 Strategy: Plusnet - Leading nationwide B2B telecoms operator

Key highlights

Customers
› Well-known and loyal customer base
› Overall ~25,000 business customers
› No cluster risk – customer base well diversified by region, industry, size and products

Sales organisation
› Significant experience in B2B sales with long-term employees
› Strong direct sales channel and indirect sales network with more than 300 partners
› Seamless interaction between indirect and direct sales with strong products

Network
› Fully invested, state-of-the-art redundant 100 Gbit/s backbone
› Plusnet owns and operates third largest copper-based access network with 1,445 central offices, fully tailored to business (DSL) markets as well as the largest independent B2B WLL network in Germany with ~150 base stations and ~1,050 customer links

Municipal utility companies in Germany
› Plusnet is well positioned to be the go-to provider of network services, white label and open access solutions for municipal utility companies, offering unique white label building-blocks

Central offices network

Largest CO network besides Deutsche Telekom and Vodafone
3.8.3 Strategy: Broadband at NetCom BW

- Approx. 50,000 customers, of which 6,200 commercial and industrial
- Around 12,000 km of fibre optic cable
- Second biggest backbone network in Baden-Württemberg
- Serves >40% of municipalities in Baden-Württemberg
- Integration of customer locations outside Baden-Württemberg (in cooperation with GasLINE & Plusnet)
- 300 connected mobile phone locations in construction and expansion
3.9 Contracting: Capability portfolio and competitors

- **EnBW among the top 5 contracting providers in Germany**
  - Regions: Germany
  - Customers: Industry, Housing sector, Public sector

- **Product/service portfolio**
  - **Main focus:** Design-build-operate-finance services for distributed energy systems under energy supply/energy performance contracting
    - Integrated single-source packages, custom tailored
    - Packages linked with additional services such as direct marketing, energy efficiency optimisation, charging infrastructure, photovoltaics/storage systems
    - Operation management and efficient system management e.g. optimisation of system operation
  - Additional services such as networks and energy efficiency

- **Media**
  - Heat (hot water, steam), refrigeration, CHP power, compressed air, ventilation

- **Systems/technologies**
  - CHP plants, boilers, refrigeration systems, gas turbines, compressed air systems, ventilation systems

- **Who are our competitors?**
  - Highly fragmented market with >500 providers, most without primary focus in terms of customer segments and media; occasional takeovers
  - **Five main provider groups**
    - Contracting subsidiaries of major energy groups (e.g. E.ON Connecting Energies, MVV Energy Solutions, Enercity/Danpower)
    - Building systems providers/facility management service providers (e.g. Techem and Engie)
    - Municipal utilities
  - Energy groups’ subsidiaries and independent contractors are EnBW’s main competitors (similar capability portfolio and national presence)

- **Business area continuously built up over 15 years, positioned as established contracting provider in Germany**

CHP: cogeneration combined heat and power
### 3.10 Digitization within EnBW

#### Value chain

<table>
<thead>
<tr>
<th>CORE BUSINESS</th>
<th>Impact</th>
<th>Relevant dimensions</th>
<th>Focuses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation</td>
<td>Low</td>
<td>Products &amp; processes</td>
<td>Increased availability, Predictive maintenance</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td></td>
<td>Automated trading, Improved forecasting</td>
</tr>
<tr>
<td>Trading</td>
<td></td>
<td>Technology</td>
<td>Optimisation of maintenance, Modern customer interaction</td>
</tr>
<tr>
<td>Grids</td>
<td></td>
<td>People &amp; organisation (methods)</td>
<td>New products, Digital customer experience</td>
</tr>
<tr>
<td>Sales &amp; Operations</td>
<td></td>
<td></td>
<td>Digital business models, Interconnection of customers and systems</td>
</tr>
<tr>
<td>NEW BUSINESS</td>
<td>Connected home, e-mobility, Virtual Power Plant, smart cities</td>
<td></td>
<td>Development of digital competencies through training / further education and new talent from external sources</td>
</tr>
</tbody>
</table>

- **180+ initiatives**
- **30+ initiatives around artificial intelligence, blockchain and internet of things**
- **Significant potential planned in by 2020**
- **About 500 employees actively involved, with around 15 communities**
3.11.1 Research and development: The research process at EnBW

Research and development builds capacity for future business opportunities.
Generated through pilot and demonstration projects
Example: Offshore wind farms for deeper sea regions

1. Request
   - Wanted: how to reconstruct wind farms for floating off-shore operation in deeper sea

2. Research
   - Studies and demonstration projects together with business units, customers and suppliers

3. Commercial approach prepared
   - Capacity building
   - Reliable basis for commercial offers
   - Early-stage strategic collaborations
3.11.2 Research and development: Creating know-how for new opportunities

Learning by doing: Pilots and demonstrations with particular focus on

- Sustainable energy provision e.g. offshore wind, green gases
- Critical infrastructure
- Smart city technology

The right skills for future business opportunities

- Emerging technologies
- Game-changing technologies
- New partnerships

Explore new solutions

- New skills to succeed for the energy future
- Win public opinion with attractive solutions
- Exciting R&D projects to attract future employees

Expenditure on research, development and innovation in € m

- 2017: 39.8 m
- 2018: 40.6 m

<table>
<thead>
<tr>
<th>Category</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer-related research projects</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Dismantling</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>Smart energy world and storage²</td>
<td>4.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Generation from renewables¹</td>
<td>2.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Grids</td>
<td>5.3</td>
<td>5.8</td>
</tr>
<tr>
<td>Innovation management</td>
<td>23.0</td>
<td>21.6</td>
</tr>
<tr>
<td>Other</td>
<td>0.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

1 Also includes green gases
2 Includes e.g. electromobility and hydrogen mobility
3.12.1 Innovation

The innovation process at EnBW

Corporate Start-ups
- Internal development

Incubation
- Business model development
- From idea to market validation

Innovation portfolio
1. Connected Home
2. Connected Mobility
3. Virtual Power Plant
4. Urban Infrastructure

Start-ups
- Stakes in cooperative ventures

Venturing
- Professional investor
- VC method
- Minority stakes

M&A
- Late stage start-ups
- Majority investments

Examples of mature projects

- **WTT Campus ONE**
  - WTT CampusONE provides web-based tools and learning management system (LMS) platforms for resource management and information and knowledge sharing.
  - Other products include e-learning courses, explanatory videos and compact backgrounders.
  - Spin-off in Ludwigsburg

- **SMIGHT**
  - SMIGHT develops solutions for charging, wifi, environmental sensors, security and transport that can be integrated into existing or new urban infrastructures.
  - Corresponding product portfolio under development in the areas of technology, services and data management.
  - Internal micro business unit in Karlsruhe

- **LIV-T**
  - LIV-T incubates, scales and operates top-tier Internet of Things (IoT) use cases as a white label enterprise solution. Customer-centric, rapid and efficient development using lean startup methodology.
  - Generates revenue from hardware sales and operation of use cases via licence agreement with white label customers (software and services).
  - Joint venture in Munich

- **Virtuelles Kraftwerk** (Virtual Power Plant)
  - Virtuelles Kraftwerk (Virtual Power Plant) is a digital platform that connects independent energy producers and energy consumers with markets and each other.
  - Related business activities focus on direct marketing, flexibility management and dynamic tariffs.
  - Company builder in Stuttgart
3.12.2 Innovation management launches and develops start-up projects through incubation and scaling

- **Funnel**
- **Pre-Seed**
- **Seed**
- **Startup**
- **Scale**

**Teams adopted by Group:**
- Wärmecloud
- SMIGHT@Netze

**Spin-offs & micro business units (MBUs):**
- WTT Campus ONE
- VIRTUELLES KRAFTWERK

**Projects Summary:**
- 33 projects since launch (16 September 2014)
- 10 projects stopped
- 6 projects adopted
- 17 projects active
3.12.3 Innovation: Venture capital investment in innovative start-ups

EnBW New Ventures follows an active portfolio approach

- Evergreen VC investor with total investment amount of €100 m
- Direct minority stakes, investment in entrepreneurial founder teams
- Open for syndication in a traditional VC approach

EnBW New Ventures is the open innovation connection between startups and EnBW Group

- Win-win for both sides, with EnBW New Ventures operating as professional VC investor
- Start-ups gain access to EnBW’s energy market expertise, customers and suppliers of EnBW
- EnBW benefits from fast innovation cycles and growth options
- Cooperative approach to foster business with products and services based on innovative business models

Current portfolio

- Global cloud communications platform – enabling end-to-end customer journeys through focus on no-code integration & automation
- Smart parking solutions with overhead sensors – real-time parking data for parking operators and guidance systems
- Photovoltaics leasing provider – generate and use your own solar power on your rooftop without upfront investment
- Cloud hosting provider – innovative infrastructure-as-a-service & platform-as-a-service solutions
- Peer-to-peer energy trading utility-in-a-box – software for the decentralised and digitalised energy world
- Data centre resource analysis and virtualisation – software for a transparent view on complex IT infrastructure
- High-temperature superconductors – innovation and high-tech with unique manufacturing approach and high power density
- Artificial intelligence for better roads – AI solution to help municipalities plan and monitor their road maintenance

VC: Venture Capital  AI: Artificial intelligence
Strategy 2025

Our understanding of sustainability

› Creation of economic as well as ecological and social added value for our customers, shareholders, employees, partners and society as a whole – today and in the future.

› “We associate sustainable management with the claim to conduct all our business activities responsibly.”

Sustainability is integrated in

› Corporate strategy
› Non-financial top KPI’s and targets
› Stakeholder management
› Risk and opportunities
› Annual Reporting

“We are makers and designers of tomorrow’s infrastructure world - sustainable, innovative and reliable”
3.13.2 Corporate Sustainability: Transparent presentation of value creation for EnBW and its stakeholders

EnBW Group value added\(^1\)

\begin{align*}
\text{Value creation} & \quad \text{Cash-relevant business performance} \\
\text{EnBW Group value added} & \quad \text{in € m}
\end{align*}

\[
\begin{array}{c|c}
\text{Use of value} & \text{Suppliers and service providers:} \\
& \text{material and other operational expenditure} \\
22,195 & 17,875 \\
4,320 &
\end{array}
\]

\[
\begin{array}{c}
\text{Active and former employees} \\
\text{wages and salaries} \\
\text{EnBW Group} \\
\text{retained cash flow} \\
\text{State} \\
\text{taxes} \\
\text{Shareholders} \\
\text{dividends} \\
\text{Outside investors} \\
\text{interest}
\end{array}
\]

\(^1\) We define value added as EnBW’s cash-relevant business performance in the past financial year minus cash-relevant expenses.
3.13.3 Corporate Sustainability: EnBW Sustainable Finance Activities

EnBW memberships

- Technical Expert Group on Sustainable Finance (TEG), which supports the European Commission in the development of a legal framework for sustainable financing opportunities
- Task Force on Climate-related Financial Disclosures (TCFD) for the development of climate-related risk reporting
- Sustainable Finance Committee advises the German Federal Government on elaboration and implementation of its sustainable finance strategy

Green financing @ EnBW

- Two green hybrid bonds in July 2019:
  - Total issue size € 1 billion
  - €500 m: 60.25-year term to maturity
  - €500 m: 60-year term to maturity
  - First German green hybrid bond issuer

- First green bond in October 2018:
  - Issue size € 500 million
  - 15-year term to maturity
3.13.4 Corporate Sustainability: Ratings

<table>
<thead>
<tr>
<th>ISS ESG</th>
<th>Sustainalytics</th>
<th>CDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>B- 2018</td>
<td>73/100</td>
<td>B 2018</td>
</tr>
</tbody>
</table>

- ISS ESG: Prime Status
- Sustainalytics: Outperformer
- CDP: Leadership
3.13.5 Corporate Sustainability: Economic, environmental and social performance

Dimensions and activities

**Economic**
- Green bond with issue size of €500 m (2018)
- Two green hybrid bonds with total issue size of €1 bn (2019)
- Digitization of customer processes with EnPower
- Investment by retail investors in EnBW wind farms

**Environmental**
- Expansion of generation from renewable energies: offshore and onshore wind and photovoltaics
- Progress in transmission grid (ULTRANET and SuedLink HVDC) projects by TransnetBW
- “Impulse für die Vielfalt” (“Stimulus for Diversity”) funding programme for the protection of amphibian and reptile species

**Social**
- Projects and campaigns on occupational safety and health for employees
- Municipal Emergency and Crisis Management for Crisis Prevention concept to support local authorities
- Development of new safety services and products for local authorities and companies

HVDC: high-voltage direct current transmission technology
3.13.6 Corporate Sustainability: EnBW as a frontrunner in ESG Reporting – selected examples

<table>
<thead>
<tr>
<th>Integrated Reporting</th>
<th>Green Bond Impact Reporting</th>
<th>GRI Sustainability Reporting</th>
</tr>
</thead>
</table>
| > In the Integrated Annual Report, EnBW takes ecological and social aspects of the company’s activities into account as well as economic aspects | The Impact Report on EnBW’s Green Bonds supplements the Integrated Annual Report:  
   > Further information about how the funds are allocated  
   > Added value from our projects in terms of benefit for the climate | > Annual Sustainability reporting is based on the GRI Standards, including the Electric Utilities Sector Supplement  
   > EnBW selects the Core option, which includes essential elements for stakeholders  
   > The sustainability reporting also meets the requirements of the progress report for the UN Global Compact |

EnBW Factbook 2019

EnBW’s position on cross-sector CO₂ pricing

**Heating and transport**

- Payment of energy taxes with regard to CO₂
  - Level of ETS minimum price
  - Level of average ETS price of prior year

**Fossil power plants**

- Payment of difference between minimum price-market price in form of a tax on fossil fuel in power plants (currently €0)

**CO₂ minimum price:**
- €25 (2020)
- €30 (2025)
- €40 (2030)

**Use of tax revenue**
- Elimination of electricity tax except for legal minimum
- Reduction of EEG levy

---

ETS: Emissions Trading System  
EEG: Erneuerbare Energien-Gesetz (renewable energy act)
3.14.2 Decarbonisation: Business activities fully geared to attainment of climate targets

Why is EnBW committed to climate action?

- Low-carbon business areas are key growth markets in the energy sector
- EnBW’s strategic goals can be attained with low-carbon activities
- EnBW delivers on its social responsibility for climate action/sustainability

EnBW renewables growth<sup>1</sup>

<table>
<thead>
<tr>
<th></th>
<th>Adjusted EBITDA in € bn</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>0.2</td>
</tr>
<tr>
<td>2020 target</td>
<td>0.7</td>
</tr>
</tbody>
</table>

- Onshore wind growth to 1,000 MW by 2020/2,000 MW by 2025
- Offshore wind growth to ≥ 1,500 MW by 2025
- Renewables growth in Turkey to 1,000-1,500 MW by 2025
- Selective internationalisation of business by 2025

35.5% of household electricity consumption in Baden-Württemberg can theoretically be served by EnBW’s renewable energy activities.

By means of its energy efficiency networks for industrial customers alone, EnBW has delivered annual energy savings equivalent to ~35,000 households [300 GWh/p.a.]

<sup>1</sup> Run-of-river power plants, pumped storage power plants with natural inflow, wind power, photovoltaic and other
3.14.3 Decarbonisation / Climate protection: CO₂ Intensity key performance indicator

EnBW CO₂ Intensity
in g CO₂/kWh

EnBW Goal:
Reduction of CO₂ intensity by 15% to 20% compared to the 2015 base year

> EnBW already clearly committed itself to the "Energiewende" in 2013 with its 2020 strategy. The central focus here in the medium and long-term is low-CO₂ or zero emission electricity generation.

> The CO₂ intensity of EnBW’s own electricity generation excluding nuclear power fell slightly in comparison to the previous year by 0.5% to 553 g/kWh and was thus within our forecasted range.

> This decrease was due to higher generation from renewable sources and the simultaneously almost constant level of electricity generation from fossil fuels in comparison to 2017.

> In 2019, we expect an increase in own electricity generation from renewable energy sources due to the further expansion of renewable energies. Important factors for uncertainty in the 2019 forecast include the volatility of wind and water supplies.

> We anticipate a positive trend overall and expect a reduction in CO₂ intensity of between -10% and 0% in 2019 in comparison to the 2018 reporting year.
3.15.1 Corporate Governance: Responsible and transparent management

EnBW corporate culture

- Board of Management
  - Dr. Frank Mastiaux, Chief Executive Officer
  - Colette Rückert-Hennen, Chief Personnel Officer
  - Thomas Kusterer, Chief Financial Officer
  - Dr. Hans-Josef Zimmer, Chief Technology Officer
  - Responsible Group management
  - Represents the company legally

- Supervisory Board
  - Lutz Feldmann, Chairman of the Supervisory Board
  - 20 members: 10 shareholder representatives, 10 employees representatives, thereof 3 union representatives
  - Appoints members of Board of Management and defines their remuneration
  - Supervises the Board of Management
  - Advises them on management of the company

- Customers
- Capital providers
- Employees
- Public

Transparent & responsible
Strengthen trust and confidence in
Long-term success
3.15.2 Corporate Governance: German Corporate Governance Code

German Corporate Governance Code


Further information


- EnBW Annual General Meeting: [https://www.enbw.com/company/investors/events/annual-general-meeting/](https://www.enbw.com/company/investors/events/annual-general-meeting/)
3.15.3 Corporate Governance: Compliance

Number of participants in compliance training events\(^1\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Management personnel</th>
<th>New management personnel / employees</th>
<th>Sensitive areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1,474</td>
<td>778</td>
<td>162</td>
</tr>
<tr>
<td>2015</td>
<td>1,274</td>
<td>546</td>
<td>186</td>
</tr>
<tr>
<td>2016</td>
<td>1,274</td>
<td>523</td>
<td>184</td>
</tr>
<tr>
<td>2017</td>
<td>1,474</td>
<td>546</td>
<td>184</td>
</tr>
<tr>
<td>2018</td>
<td>941</td>
<td>182</td>
<td>13</td>
</tr>
</tbody>
</table>

Number of compliance breaches\(^1\)

- *Material compliance breaches (2018: 2)*
- *Simple compliance breaches (2018: 5)*

The Compliance Management System:

- Serves to minimise risks and avoid liability issues and a loss of reputation
- Focuses on company and sector-specific risks and priorities
- Encompasses all controlled companies with employees in the EnBW Group
- Various tools are used e.g. training/workshops, Code of Conduct, Annual Compliance Risk Assessment and Ombudsman
3.15.4 Corporate Governance: Data Protection Philosophy

Data Protection Model

- The importance of protecting customers’ and employees’ personal data has been self-evident to EnBW for many decades.
- Data protection is also key to maintaining the trust and confidence that customers place in us every day. New business models (digital/smart solutions) build on that trust.
- The entry into force of the General Data Protection Regulation (GDPR) raised the importance of data protection issues to a new level. Our aim at EnBW is full compliance in data protection at all times:

“Trust keeper” of the data which is owned by the subject.

Data protection at EnBW

- Central organisation of data protection at the EnBW Group
- 1 Head of Compliance and data protection
- 2 Data protection officers²
- 2 Data protection & compliance employees
- 1 Business Partner digitization and data protection
- 14 Local Data Protection Managers³

---

¹ As of 1 April 2019
² Data Protection Officer under Article 37-39 of the GDPR
³ Managers in the following business areas: 1 Human Resources, 1 IT, 1 Trading, 1 Generation, 1 Nuclear, 2 Operation & Sales, 1 Grids, 6 Other Businesses
3.15.5 Corporate Governance: Data protection in the value chain

There are processes involving data protection in all parts of the value chain

This has so far involved:

› Second wave in restructuring and assessing some 400 processing operations to increasing transparency and accountability
› Starting onsite audits at main suppliers with direct access to customers data.
› Revision of all processing operations in customer service to incorporate the enhanced rights of data subjects
› Ongoing training of employees to consider the new legal framework
› Implementing a multimedia training course specifically for business developers and process designers facing GDPR requirements.
› Advancement of the Data Protection Management System (DPMS) based on the IDW AsS 980 standard.
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   › Key non-financials

2. Environment ........................................................................ page 6 »»
   › Political environment
   › Regulatory environment
   › Markets

3. Strategy ................................................................................ page 34 »»
   › EnBW 2020 Strategy
   › EnBW 2025 Strategy
   › Further strategic aspects:
     Broadband, Contracting, Digitization, Research and Development,
     Innovation, Corporate Sustainability,
     Decarbonisation, Corporate Governance,
     Compliance, Data Protection

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   › Sales
   › Grids
   › Renewable Energies
   › Generation and Trading

5. EnBW’s Main Shareholdings .............................................. page 111 »»
   › Energiedienst Holding AG
   › Pražská energetika, a. s.
   › Stadtwerke Düsseldorf Group
   › VNG AG
   › Borusan EnBW Enerji yatırımları ve Üretim A.S

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   › Five-year summary
   › Fiscal year 2018
   › Half year 2019
   › Finance strategic and other goal dimensions

7. Capital Markets ................................................................. page 143 »»
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   › Bonds
   › Maturity profile
   › Credit Ratings
   › Shareholder structure
   › Share
   › Key financial indicators

8. Service ................................................................................ page 155 »»
   › Financial calendar
   › Contact details
   › Important links
## 4.1 Segment overview

### Sales
- **Adjusted EBITDA 2018:** €270.6 m
- **Employees:** 3,657
- **Investments 2018:** €132.4 m
- **Tasks:** Sale of electricity, gas, energy industry services and energy solutions; energy supply and energy-saving contracting; cooperation with local authorities; collaboration with municipal utilities

### Grids
- **Adjusted EBITDA 2018:** €1,176.9 m
- **Employees:** 8,920
- **Investments 2018:** €967.4 m
- **Tasks:** Transmission and distribution of electricity and gas as well as expansion of HVDC connections; provision of grid-related services; water supply; guaranteeing the security of supply and system stability

### Renewable Energies
- **Adjusted EBITDA 2018:** €297.7 m
- **Employees:** 1,144
- **Investments 2018:** €476.0 m
- **Tasks:** Project development and management; construction and operation of renewable energy power plants

### Generation and Trading
- **Adjusted EBITDA 2018:** €428.6 m
- **Employees:** 5,419
- **Investments 2018:** €166.5 m
- **Tasks:** Advisory services, construction, operation and dismantling of thermal power plants; storage of gas; trading of electricity and gas, provision of system services; operation of reserve power plants; gas midstream business, district heating; waste management / environmental services; direct distribution of renewable energy power plants

---

HVDC: high-voltage direct current transmission technology
4.2 Selected EnBW companies

- EnBW Energie Baden-Württemberg AG
  Karlsruhe
- EnBW Ostwürttemberg DonauRies AG
  Ellwangen
- Erdgas Südwest GmbH
  Karlsruhe
- GasVersorgung Süddeutschland GmbH
  Stuttgart
- NaturEnergie+ Deutschland AG
  Mühlacker
- Netze BW GmbH
  Stuttgart
- Sales & Solutions GmbH
  Stuttgart
- terranets bw GmbH
  Stuttgart
- TransnetBW GmbH
  Stuttgart
- ZEAG Energie AG
  Heilbronn
- Energiedienst Holding AG
  Laufenburg
- EnBW Sverige AB
  Falkenberg
- Connected Wind Services A/S
  Balle
- ONTRAS Gastransport GmbH
  Leipzig
- Stadtwerke Düsseldorf Group
  Düsseldorf
- VNG AG
  Leipzig
- Yello Strom GmbH
  Cologne
- Pražská energetika a.s.
  Prague
- Borusan EnBW Enerji yatırımları ve Üretim A.S.
  Istanbul

1 Directly and indirectly held shares.
2 Not fully consolidated, accounted for using the equity method.

4.3 Sales: Multi-brand approach (1/2)

- EnBW as premium energy brand with focus on the Baden-Württemberg mass market and public authorities. Throughout Germany for energy solutions such as e-mobility and contracting. EnBW offers the full range of decentralised solutions for the German Energiewende.

- Yello is EnBW’s single brand for the German national mass market, providing a viable alternative for every customer.

- Natur Energie Plus is the national brand for environmentally aware households.

- Erdgas Südwest is an energy service provider for residential customers, business customers and municipalities operating throughout Baden-Württemberg.

- As a regional provider, EnBW ODR combines electricity, gas, water/wastewater, energy-related services and telecommunications (in cooperation with NetCom BW) within the Ostwürttemberg, Hohenlohe and Donau-Ries region.

- goldgas GmbH is one of the leading energy suppliers in Germany. The company from Eschborn supplies gas and electricity to private households, commercial customers, housing organisations, major industrial customers and resellers. In 2008, goldgas was the first independent gas supplier in Germany. In 2012, the company added electric power and eco-power to its portfolio.
4.3 **Sales:**

**Multi-brand approach (2/2)**

- **GVS**
  - GasVersorgung Süddeutschland – partner to municipal utilities, regional energy suppliers and industry in Germany and beyond. In addition to gas and electricity, GVS provides a broad spectrum of energy-related services. Focuses include online business via platform E-Point.

- **NaturEnergie**
  - NaturEnergie is Energiedienst’s main brand and one of Germany’s first green energy brands. It is regional, green and 100% hydropower.

- **PRE**
  - PRE as premium energy brand with focus on Prague mass market for electricity and energy solutions.

- **Stadtwerke Düsseldorf**
  - Stadtwerke Düsseldorf is a multipurpose supply and disposal company with business activities in the areas of energy, water, contracting and waste management.

- **VNG**
  - VNG is the corporate brand of the VNG Group and stands for a strong group of more than 20 independent companies with more than 1,100 employees and 60 years of expertise in the energy market. VNG has a broad, future-oriented portfolio of products and services in gas and infrastructure.

- **ZEAG Energie AG**
  - ZEAG Energie AG is a regional energy supplier of electricity, gas, heat and energy services.
## 4.4 Sales: Market feedback – Brand awareness

| Full-line service provider delivering quality and inventiveness made in Baden-Württemberg: electricity, gas, water, energy/environmental services, district/local heating and connected energy solutions (e.g. e-mobility and decentralised energy generation) | 95% Baden-Württemberg Q1/2019 |
| Fair prices, excellent service and customer participation | 85% National Q1/2019 |
| Selected special products with added value | 6% National Q1/2019 |
| Retail/business/industrial customers and municipalities/municipal utilities |  |

| Retail customers in Germany |  |
| Attractive pricing |  |
| Focus on online sales and service |  |
| Electricity and gas for standard service |  |
| Innovative product bundles |  |
| Selected special products only in cooperation |  |

| Nationwide sustainability brand |  |
| Ecological products |  |
| Focus on people |  |
| Enhanced brand awareness in planning |  |
### 4.5 Sales: Electricity and gas sales

#### EnBW Group: Electricity and gas sales

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Variance in %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electricity sales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail and commercial customers (B2C)</td>
<td>136.8</td>
<td>122.0</td>
<td>12.1</td>
</tr>
<tr>
<td>Business and industrial customers (B2B)</td>
<td>14.9</td>
<td>15.0</td>
<td>-0.7</td>
</tr>
<tr>
<td>Trade</td>
<td>21.9</td>
<td>23.7</td>
<td>-7.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>83.3</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Variance in %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gas sales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail and commercial customers (B2C)</td>
<td>328.3</td>
<td>250.1</td>
<td>31.3</td>
</tr>
<tr>
<td>Business and industrial customers (B2B)</td>
<td>17.1</td>
<td>14.4</td>
<td>18.8</td>
</tr>
<tr>
<td>Trade</td>
<td>144.5</td>
<td>93.7</td>
<td>54.2</td>
</tr>
<tr>
<td>Total</td>
<td>166.7</td>
<td>142.0</td>
<td>17.4</td>
</tr>
</tbody>
</table>
4.6.1 E-mobility: Key facts

Key facts

- Fast-charging locations today: more than 230
- Goal till the end of 2020: DC fast charging locations 1,000

EnBW mobility+ app

- App downloads: >250,000
- Active users: 14,503

Our range of services

- Consulting and Sales
- Location Analysis
- Planning, Project Planning, Civil Engineering
- Access and Billing
- Operation and Service

Our partners and references

- Shell
- OMV
- ADAC
- TANK & RAST
- hagebaumarkt
- HYUNDAI
- EURONICS
4.6.2 E-mobility: What we do

- EnBW is one of the largest operators of fast charging stations in Germany, together with Allego and Innogy.
- EnBW offers the largest network coverage in DACH
- Access to over 30,000 charging points in DACH with the same price through our transparent tariff
- The award-winning EnBW mobility+ app is Germany’s most popular e-mobility app with over 250,000 downloads
4.6.3 E-mobility: EnBW mobility+ app

**EnBW mobility+ App**

**Current features:**
- **Charging station finder**
  Access to over 30,000 charge points
- **Control of charging process**
  Start, monitoring, tracing
- **Payment**
  Selection of multiple rates
- **Driving simulation**
  Over 4,000,000 km simulated
- **Data analysis**
  Cost, charge power, drive time, ...

**Upcoming releases**
- **Fleet management function (B2B)**
- **Further sectors**

**DACH roaming grid**

- **Fast charge locations (DC)**
  - EnBW owned locations
  - Other providers’ locations

- **Charge locations (AC)**
  - Low density
  - High density (> 400 locations)

**Additional digital services**

- **Smart couponing system**
  Vouchers to charge for free at a specific purchase amount
- **Proximity marketing**
  Deployment of mobile content and mobile advertising
  Partner locations along route shown in EnBW mobility+

---

1 AC charging locations of EnBW and other providers

---

DACH: German-speaking region (Germany, Austria and Switzerland)
4.6.4 E-mobility: Examples of different charge needs (AC vs. DC)

Private charging (AC)
- Examples: over night at home, hospitality industry, hotel
- Technology: AC 3–11 kW (wallbox)

Public charging (DC)
- Examples: car pool, employees, guests, electric commercial vehicles
- Technology: AC 3–22 kW (wallbox)

Live & Charge
- Examples: over night at home, hospitality industry, hotel
- Technology: AC 3–11 kW (wallbox)

Work & Charge
- Examples: car pool, employees, guests, electric commercial vehicles
- Technology: AC 3–22 kW (wallbox)

Shop & Charge
- Examples: supermarkets, fast food chains
- Technology: DC up to 50 kW

Charge = Refuel
- Examples: Charge during travel, at service areas, urban charge points, e-taxis
- Technology: DC 150–350 kW

Currently >70% of charging procedures in private areas.

Private charging (AC)
- Type 2 / Schuko
- 0-100% charge
- 10–12 h park time
- Usage: daily

Work & Charge (DC)
- CCS
- 20–80% charge
- 0–2 h park time
- Usage: weekly

Shop & Charge (DC)
- CCS
- Almost empty
- 8–10 min park time
- Usage: yearly
4.6.5 E-mobility: NETZlabor ("Grid Lab") Avenue

- Residential area with private homes in Ostfildern, Stuttgart metropolitan region
- Ten test customers (families, couples, pensioners)
- 11 electric vehicles, 10 wall boxes, 1 power circuit

What we are doing:
- Monitoring and analysing grid status
- Testing storage systems in customers’ homes and in the grid
- Testing smart charge management
- Studying customer behaviour and acceptance

- Customers’ range concerns dispelled. Far fewer charges per week than in the beginning.
- Grid load smaller than expected – due to customers’ differing charging patterns and no more than 50% charging at any one time.
- Large potential for smart charge management and battery storage. Customers have up to three times as much time to charge as they need.
E-mobility Carré grid lab – apartment block

Focus: Solutions for convenient grid connection in apartment blocks

- Grid: Urban grid area
- Where: Existing apartment block with underground parking, 30-40 chargers and electric cars, private owners’ association or housing association
- What: Convenient grid connection, scalable smart charging infrastructure, grid monitoring, charge management, home storage, customer feedback
- Who: Researchers, local authority, test customers

E-mobility Avenue in rural community

Focus: Solution for voltage disturbances caused by electric vehicles in rural area

- Grid: Rural grid area
- Where: Long power circuit, households/farm, five chargers and electric vehicles
- What: Charging infrastructure, smart charge management, grid monitoring, central battery storage, in-line power regulator
- Who: Researchers, local authority, test customers

E-mobility-ready new housing development

Focus: First e-mobility-ready new housing development

- Grid: Suburban grid area
- Where: New terraced housing development
- What: Implementation of planning assumptions, higher capacity per household, installation of empty cable ducts, space reserved for additional substation. Grid monitoring for the timely identification of e-mobility ramp-up. Support in construction planning (three-phase current in garages, cable ducts, etc.).
- Who: Local authority
4.7.1 Local authorities and municipal utilities: Activity areas

Shaping and managing great places to live and do business

- With the necessary big picture view across all areas (communication, energy, mobility, the economy and public life) and a clear understanding of the related current and future challenges for municipal authorities, we advise and support municipalities in Baden-Württemberg and beyond with our products and services. Our priority is to deliver a custom-tailored, future-ready integrated solution for each municipal customer.

Needs-driven alliances with municipal utilities across Baden-Württemberg

- Joint entities benefit from EnBW’s longstanding experience and proven full range of services for almost every business process. We have a broad capability portfolio, ranging from technical network operation to IT solutions and from billing to smart energy solutions.

Efficiently operating and managing municipal infrastructure

- With over 700 electricity and gas concessions in Baden-Württemberg and the operation of additional infrastructure such as water and broadband networks, longstanding experience and a proven team with local ties throughout the region, EnBW is a highly effective partner to municipalities in Baden-Württemberg.
4.7.2 Local authorities and municipal utilities: Municipal alliances in Baden Württemberg

**Municipal infrastructure: efficient and reliable**

- Netze BW GmbH, a wholly-owned subsidiary of EnBW and the biggest electricity, gas and water network group in Baden-Württemberg, delivers secure, reliable, efficient and cost-effective utility supply and customer-friendly network service.

- We hold over 550 electricity and over 100 gas concessions. Furthermore, we also take care of approximately 115 joint entities.

- Electricity and gas concessions are our main focus, but we are also strong in water supply and broadband infrastructure rollout – the latter with very ambitious growth targets.

- With research activities, state-of-the-art technology and our highly dedicated workforce, we make a major contribution in terms of security of supply and future-ready energy infrastructure, especially in rural regions.

**Electricity and gas concessions in Baden-Württemberg (Netze BW)**

- 2 million electricity customers
- 150,000 gas house connections
4.7.3 Local authorities and municipal utilities: Investment portfolio

In numerous joint entities with municipal authorities and utilities we are a driving force in alliances across Baden-Württemberg

- As a minority shareholder in over 100 joint entities, EnBW has deep regional ties throughout Baden-Württemberg.
- Business development in these utilities is shaped by the complementary perspectives and capabilities of their owners (municipal authorities and EnBW).
- With both established capabilities (such as network and operating services) and new business areas (such as broadband and electric mobility), EnBW contributes substantially to the business development and ensuring the long-term viability of utilities and therefore of the entire region.

**EnBW investment portfolio in Baden-Württemberg**

- **20%** Market share (electricity/gas, by volume) in Baden-Württemberg
- **€3 bn** revenue
4.8.1 Grids: Electricity and gas grids constitute EnBW’s core business

EnBW grid regions

EnBW has a thorough grasp of the grid business

- EnBW and its predecessor companies have been in the grid business for more than 100 years
- Security of supply is our highest priority – which is why we employ modern and tested technologies and maintain an extensive network of service centres
- Efficiency benchmark from most recent regulatory period certifies generally best results for EnBW grids
- High regulatory competence/market competence

Grid business has stabilising effect on portfolio

- Electricity and gas grids are subject to regulation
- Stabilising risk/return mix with stable cash flows

Excluding shareholdings in Energiedienst Holding AG, Erdgas Südwest GmbH, EnBW Ostwürttemberg DonauRies AG and ZEAG Energie AG
### 4.8.2 Grids: Electricity grids

<table>
<thead>
<tr>
<th>Grid Type</th>
<th>Voltage</th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transmission grid</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra-high voltage 380 kV</td>
<td></td>
<td>2,200</td>
<td>2,200</td>
</tr>
<tr>
<td>Extra-high voltage 220 kV</td>
<td></td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td><strong>Distribution grid</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High voltage 110 kV</td>
<td></td>
<td>8,600</td>
<td>8,600</td>
</tr>
<tr>
<td>Medium voltage 30/20/10 kV</td>
<td></td>
<td>44,400</td>
<td>45,100</td>
</tr>
<tr>
<td>Low voltage 0.4 kV</td>
<td></td>
<td>94,400</td>
<td>94,200</td>
</tr>
<tr>
<td><strong>Overall length</strong></td>
<td></td>
<td>150,600</td>
<td>151,100</td>
</tr>
</tbody>
</table>

The slight decrease in the length of the distribution grid is mainly attributable to concession agreements not being renewed with some municipalities.
4.8.3 Grids: Expansion of transmission grid to ensure security of supply

<table>
<thead>
<tr>
<th>AC grid reinforcement</th>
<th>Grid section</th>
<th>Scheduled completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 for Rhine river area in Baden</td>
<td>119 km</td>
<td>2023</td>
</tr>
<tr>
<td>2 for north Baden-Württemberg</td>
<td>142 km</td>
<td>2023</td>
</tr>
<tr>
<td>3 for north east Baden-Württemberg</td>
<td>158/+56 km</td>
<td>2022/2030</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 in corridor C &quot;SuedLink&quot; 4 GW corridor</td>
</tr>
<tr>
<td>5 in corridor A &quot;Ultranet&quot; 2 GW corridor EnBW contribution: converter, power lines in Baden-Württemberg</td>
</tr>
</tbody>
</table>

Investment up to 2025: around €6.5 bn


\(^1\) In cooperation with TenneT
4.8.4 Grids: SuedLink is the largest infrastructure project of the Energiewende

- Main investments expected to start in: **2020**
- Expected date of commissioning: **2025**
- Rated output: **2x2 GW high voltage direct current transmission**
- Voltage level: **Planned ±320 kV DC or 525 kV DC**

**Total investment: €10 bn**

Source: [www.netzausbau.de/leitungsvorhaben/bbplg](http://www.netzausbau.de/leitungsvorhaben/bbplg)
4.8.5 Grids: Investing in distribution grid to integrate renewables and electric cars whilst securing high quality supply

Challenges and activities

Challenges of the distribution grid in Baden-Württemberg ...

› Widespread use of photovoltaics in the grid area
› High expansion targets for wind power
› Growing prevalence of electric cars

... necessitate grid expansion using smart technologies (e.g. controllable local grid station, current peaks storage, etc.)

In addition to expansion of the distribution grids, EnBW is investigating smart distribution grids together with partners in several “grid laboratories”.

Through to 2025, investment of ~€2.5 bn necessary to develop the electricity distribution grid infrastructure in Baden-Württemberg

EnBW grid laboratories and grid innovations

1 Sonderbuch
Interactive smart grid demonstrator

2 Freiamt
The grid as distributed power plant; implementation of grid traffic light

3 Niederstetten
Improvement of fault isolation and voltage regulation

4 E-Mobility Avenue
Approaches for the integration of electric mobility in the low-voltage grid

5 Electric fleets
Integration of electric fleets with the use of smart charging infrastructure
### 4.8.6 Grids:
Gas grids

#### EnBW Group’s gas grids

<table>
<thead>
<tr>
<th>Grid Type</th>
<th>Pressure Level</th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-distance transmission grid</td>
<td>High pressure</td>
<td>8,900</td>
<td>8,900</td>
</tr>
<tr>
<td>Distribution grid</td>
<td>High pressure</td>
<td>2,300</td>
<td>2,300</td>
</tr>
<tr>
<td></td>
<td>Medium pressure</td>
<td>8,400</td>
<td>8,100</td>
</tr>
<tr>
<td></td>
<td>Low pressure</td>
<td>4,600</td>
<td>4,600</td>
</tr>
<tr>
<td>Overall length</td>
<td></td>
<td>24,200</td>
<td>23,900</td>
</tr>
</tbody>
</table>
4.9.1 Generation and portfolio: EnBW Group in 2018

<table>
<thead>
<tr>
<th></th>
<th>2018 in MW</th>
<th>share in %</th>
<th>2018 in GWh</th>
<th>share in %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Renewable energies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,738</td>
<td>28</td>
<td>8,414</td>
<td>16</td>
</tr>
<tr>
<td>Run-of-river</td>
<td>1,006</td>
<td>8</td>
<td>4,846</td>
<td>9</td>
</tr>
<tr>
<td>Storage/pumped storage (using natural flow of water)</td>
<td>1,507</td>
<td>11</td>
<td>1,030</td>
<td>2</td>
</tr>
<tr>
<td>Onshore wind</td>
<td>718</td>
<td>5</td>
<td>996</td>
<td>2</td>
</tr>
<tr>
<td>Offshore wind</td>
<td>336</td>
<td>3</td>
<td>1,233</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>171</td>
<td>1</td>
<td>309</td>
<td>1</td>
</tr>
<tr>
<td><strong>Thermal power plants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9,661</td>
<td>72</td>
<td>45,078</td>
<td>84</td>
</tr>
<tr>
<td>Lignite</td>
<td>875</td>
<td>6</td>
<td>6,048</td>
<td>11</td>
</tr>
<tr>
<td>Hard coal</td>
<td>3,691</td>
<td>26</td>
<td>12,868</td>
<td>24</td>
</tr>
<tr>
<td>Gas</td>
<td>1,468</td>
<td>11</td>
<td>3,518</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>349</td>
<td>3</td>
<td>198</td>
<td>-</td>
</tr>
<tr>
<td>Pumped storage (not using natural flow of water)</td>
<td>545</td>
<td>4</td>
<td>1,790</td>
<td>3</td>
</tr>
<tr>
<td>Nuclear</td>
<td>2,933</td>
<td>22</td>
<td>20,656</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,399</td>
<td>100</td>
<td>53,492</td>
<td>100</td>
</tr>
</tbody>
</table>
### Generation and portfolio: Thermal power plants in 2018

#### Conventional

<table>
<thead>
<tr>
<th>Location</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karlsruhe</td>
<td>1,351</td>
</tr>
<tr>
<td>Düsseldorf</td>
<td>1,246</td>
</tr>
<tr>
<td>Lippendorf</td>
<td>875</td>
</tr>
<tr>
<td>Heilbronn</td>
<td>778</td>
</tr>
<tr>
<td>Altbach/Deizisau</td>
<td>589</td>
</tr>
<tr>
<td>Mannheim</td>
<td>546</td>
</tr>
<tr>
<td>Rostock</td>
<td>259</td>
</tr>
<tr>
<td>Walsum</td>
<td>250</td>
</tr>
<tr>
<td>Stuttgart</td>
<td>211</td>
</tr>
<tr>
<td>Walheim</td>
<td>136</td>
</tr>
</tbody>
</table>

#### Nuclear

<table>
<thead>
<tr>
<th>Location</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippsburg</td>
<td>1,402</td>
</tr>
<tr>
<td>Neckarwestheim</td>
<td>1,096</td>
</tr>
<tr>
<td>Fessenheim, Cattenom (France)</td>
<td></td>
</tr>
</tbody>
</table>

#### Grid reserve power plants

<table>
<thead>
<tr>
<th>Location</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbach</td>
<td>426</td>
</tr>
<tr>
<td>Heilbronn</td>
<td>250</td>
</tr>
<tr>
<td>Walheim</td>
<td>244</td>
</tr>
<tr>
<td>Karlsruhe</td>
<td>353</td>
</tr>
<tr>
<td>Altbach</td>
<td>433</td>
</tr>
</tbody>
</table>

1. Major power plants
2. Continued temporary operation of 9 power plant units due to system relevance: HLB 5/6, MAR DT III, MAR GT II, MAR GT III, WAL1/2, RDK4s and ALT HKW1
4.9.3 Generation and portfolio:
New-built gas turbine power plant for grid stability purposes in South Germany

Additional capacity for grid stability in South Germany necessary

- In 2017 the federal regulation agency approved additional power generation capacity of 1.2 GW in South Germany to maintain grid stability in the context of the so-called Energiewende.
- Call for tenders of the South German grid operators (TSOs) started in July 2018. EnBW took part by proposing a 300 MW gas turbine power plant at the existing EnBW site Marbach a.N.
- Contract awarded to EnBW in August 2019

Timeline and next steps

- Permitting process ongoing
- Construction works on site starting beginning of 2020
- Commissioning around mid 2022
- Commercial operation in October 2022

Artistic impression of the gas turbine power plant at the site Marbach a.N.
## Generation and portfolio: Hydropower plants in 2018

### Run-of-river in MW

<table>
<thead>
<tr>
<th>Power Plants</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhine power plants</td>
<td>560</td>
</tr>
<tr>
<td>Neckar, Donau, Murg, Nagold, Enz, Glatt, Jagst, Kocher, Argen</td>
<td>159</td>
</tr>
<tr>
<td>Iller power plants</td>
<td>51</td>
</tr>
<tr>
<td>EnAlpin</td>
<td>271</td>
</tr>
</tbody>
</table>

### Pumped storage in MW

<table>
<thead>
<tr>
<th>Power Plants</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schluchsee power plants</td>
<td>870</td>
</tr>
<tr>
<td>Vorarlberger Illwerke</td>
<td>1,049</td>
</tr>
<tr>
<td>Glems</td>
<td>90</td>
</tr>
<tr>
<td>Rudolf-Fettweis-Werk Forbach</td>
<td>43</td>
</tr>
</tbody>
</table>
4.10.1 Offshore wind: Portfolio and project pipeline

- Installed capacity end of 2019: **945 MW**
- Secured pipeline: **900 MW**

- **EnBW Hohe See**: 497 MW¹
- **EnBW Albatros**: 112 MW¹
- **EnBW Baltic 1**: 48.3 MW
- **EnBW Baltic 2**: 288 MW
- **EnBW He Dreiht**: ~ 900 MW

¹ Planned commercial operation date (COD) - end of 2019
## 4.10.2 Offshore wind: Windfarms in operation

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td>Offshore Wind</td>
<td>Offshore Wind</td>
</tr>
<tr>
<td><strong>Type of turbine</strong></td>
<td>21 x Siemens SWT 2.3-93</td>
<td>80 x Siemens SWT 3.6-120</td>
</tr>
<tr>
<td><strong>Total capacity</strong></td>
<td>48.3 MW</td>
<td>288 MW</td>
</tr>
<tr>
<td><strong>Shareholders</strong></td>
<td>~50.1% EnBW, ~49.9% 19 municipal utilities</td>
<td>~50.1% EnBW, ~49.9% PGGM &amp; ÄrtzeVersorgung Westfalen-Lippe</td>
</tr>
<tr>
<td><strong>Commissioned</strong></td>
<td>April 2011</td>
<td>September 2015</td>
</tr>
<tr>
<td><strong>Feed-in tariff</strong></td>
<td>EEG 2009</td>
<td>EEG 2012</td>
</tr>
</tbody>
</table>

**EnBW Baltic 1**

**EnBW Baltic 2**

EEG: Erneuerbare Energien-Gesetz (renewable energy act)
### Offshore wind: Offshore windfarms under construction

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany</th>
<th>EnBW Hohe See</th>
<th>EnBW Albatros</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Offshore Wind</td>
<td>Offshore Wind</td>
<td>Offshore Wind</td>
</tr>
<tr>
<td>Type of turbine</td>
<td>71 x Siemens SWT 7.0-154</td>
<td>16 x Siemens SWT 7.0-154</td>
<td></td>
</tr>
<tr>
<td>Total capacity</td>
<td>497 MW</td>
<td>112 MW</td>
<td></td>
</tr>
<tr>
<td>Shareholders</td>
<td>~50.1% EnBW, ~49.9% Enbridge Inc./CPPIB</td>
<td>~50.1% EnBW, ~49.9% Enbridge Inc./CPPIB</td>
<td></td>
</tr>
<tr>
<td>Commissioning</td>
<td>2019</td>
<td>2019</td>
<td></td>
</tr>
<tr>
<td>Feed-in tariff</td>
<td>EEG 2014</td>
<td>EEG 2014</td>
<td></td>
</tr>
</tbody>
</table>

**EEG:** Erneuerbare Energien-Gesetz (renewable energy act)
4.10.4 Offshore wind: EnBW presence in Taiwan

**Offshore wind market Taiwan**
- Estimated market volume of 5.5 GW by 2025
- Long term goals of 11 GW by 2035 and 21 GW by 2050
- 3rd stage auction expected for 2020 after general elections

**EnBW Asia Pacific Ltd. established**
- Founded in 2018 and located in Taipei
- Building-up a service JV and enhancing EnBW’s local presence
- Improving relations with local stakeholders and supply chain and transferring knowhow

**Development of Formosa3-pipeline**
- Project development together with partners
- Three offshore wind projects of up to 2 GW capacity
- Several permits (e.g. EIA approval) obtained
4.10.5 Offshore wind: Project development activities in North America

**US West Coast**
- Joint venture Castle Wind LLC for first floating offshore wind project between local developer Trident Winds (20%) and EnBW North America (80%)
- First commercial-scale floating offshore wind project developed in USA
- California renewable energy generation target of 60% by 2030 and 100% by 2045

**US East Coast**
- Local subsidiary EnBW North America Inc. legally established and in operation with local staff since 2018
- Project company East Wind LLC established in order to achieve site control by participation in offshore wind lease auctions
- Official offshore wind development targets of states along US East Coast increased to over 20 GW by 2035
4.11.1 Onshore wind portfolio: Project pipeline 2019 in line with plans for growth up to 2020

Regional distribution of the 2019 portfolio and pipeline in Germany as of 31.8.2019

Onshore wind portfolio and pipeline in MW

- Secured pipeline Germany
  - 1,905 MW August 2019
  - 2,000 MW Forecast 2020

- Portfolio EnBW Group
  - 729 MW August 2019
  - 1,000 MW Forecast 2020

1 Negotiations for land contracts in Germany (low proportion make it to project development)
2 At least land contracts concluded (large proportion is completed) in Germany
3 Wind parks in operation with EnBW majority shareholding
4.11.2 Onshore wind portfolio in Germany: Portfolio and windfarms under construction

**Portfolio in Germany:**
Windfarms in operation as of 31.12.2018

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed total power</td>
<td>613 MW</td>
</tr>
<tr>
<td>Number of turbines</td>
<td>276</td>
</tr>
<tr>
<td>Number of locations</td>
<td>59</td>
</tr>
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</table>

**Under construction:**

<table>
<thead>
<tr>
<th>Prötzell I</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Germany</td>
</tr>
<tr>
<td>Technology</td>
<td>Onshore</td>
</tr>
<tr>
<td>Type of turbine</td>
<td>Enercon E115</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>9</td>
</tr>
<tr>
<td>Number of turbines</td>
<td>3</td>
</tr>
<tr>
<td>Operation date</td>
<td>May 2020</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2017</td>
</tr>
</tbody>
</table>

EEG: Erneuerbare Energien-Gesetz (renewable energy act)
### 4.11.3 Onshore wind in Germany: Installed wind farms (1/7)

<table>
<thead>
<tr>
<th>Country</th>
<th>Aalen-Waldhausen</th>
<th>Alt Zeschdorf</th>
<th>Benndorf</th>
<th>Berghülen</th>
<th>Boxberg-Angeltürn</th>
<th>Boxberg-Bobstadt</th>
<th>Boxberg-Oberschüpf</th>
<th>Braunbach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
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<td>Germany</td>
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<tr>
<td>Technology</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td>Type of turbine</td>
<td>Vestas V126</td>
<td>Vestas V90</td>
<td>NEG Micon NM1000</td>
<td>Enercon E82-E2</td>
<td>Enercon E-115</td>
<td>Enercon E-115</td>
<td>Enercon E-101</td>
<td>Enercon E-115</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>16.5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>12</td>
<td>12</td>
<td>3.1</td>
<td>15</td>
</tr>
<tr>
<td>Number of turbines</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
</tr>
</tbody>
</table>

**EEG**: Erneuerbare Energien-Gesetz (renewable energy act)
### 4.11.3 Onshore wind in Germany: Installed wind farms (2/7)

<table>
<thead>
<tr>
<th>Country</th>
<th>Breitenbach</th>
<th>Bremervörde</th>
<th>Brettenfeld</th>
<th>Buchholz</th>
<th>Buchholz II</th>
<th>Buchholz III</th>
<th>Bühlertann</th>
<th>Burgholz</th>
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</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
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<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td><strong>Type of turbine</strong></td>
<td>GE 2,75-120</td>
<td>Nordex S70</td>
<td>Nordex N131</td>
<td>Vestas V90</td>
<td>Enercon E82-E2</td>
<td>Vestas V126</td>
<td>Vestas V126</td>
<td>Vestas V126</td>
</tr>
<tr>
<td><strong>Total capacity in MW</strong></td>
<td>8.25</td>
<td>9</td>
<td>6.6</td>
<td>36</td>
<td>4</td>
<td>13.2</td>
<td>13.2</td>
<td>9.9</td>
</tr>
<tr>
<td><strong>Number of turbines</strong></td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>18</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Commissioning date</strong></td>
<td>2x Dec 2017 1x Jan 2018</td>
<td>Nov 2016</td>
<td>Sep 2017</td>
<td>Dec 2009</td>
<td>Dec 2012</td>
<td>Sep 2017</td>
<td>May 2017</td>
<td>Sep 2017</td>
</tr>
<tr>
<td><strong>Feed-in system</strong></td>
<td>EEG 2017(^1)</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
</tr>
</tbody>
</table>

\(^1\) Temporary regulations

EEG: Erneuerbare Energien-Gesetz (renewable energy act)
### 4.11.3 Onshore wind in Germany: Installed wind farms (3/7)

<table>
<thead>
<tr>
<th>Country</th>
<th>Christinendorf III</th>
<th>Dienstweiler</th>
<th>Dittelsdorf III</th>
<th>Dünsbach</th>
<th>Düsedau</th>
<th>Eisennach II</th>
<th>Elze</th>
<th>Eppenrod</th>
<th>Fichtenau</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Germany</td>
<td>Germany</td>
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<td>Germany</td>
<td>Germany</td>
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</tr>
<tr>
<td>Technology</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td>Type of turbine</td>
<td>Vestas V90</td>
<td>Nordex N117</td>
<td>Vestas V90</td>
<td>Vestas V126</td>
<td>NEG Micon NM72</td>
<td>Vestas V90</td>
<td>Enercon E53</td>
<td>NEG Micon NW52</td>
<td>Vestas V126</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>6</td>
<td>4.8</td>
<td>6</td>
<td>9.9</td>
<td>7.5</td>
<td>12</td>
<td>3.2</td>
<td>2.7</td>
<td>9.9</td>
</tr>
<tr>
<td>Number of turbines</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
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</tbody>
</table>

**EEG**: Erneuerbare Energien-Gesetz (renewable energy act)
### 4.11.3 Onshore wind in Germany: Installed wind farms (4/7)

<table>
<thead>
<tr>
<th>Country</th>
<th>Freckenfeld</th>
<th>Friedberg</th>
<th>Fürth</th>
<th>Görike</th>
<th>Grevenbroich</th>
<th>Harthäuser Wald</th>
<th>Hasel</th>
<th>Haupersweiler</th>
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</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
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<td>Germany</td>
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<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
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<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td><strong>Type of turbine</strong></td>
<td>Nordex N131</td>
<td>Vestas V90</td>
<td>Nordex N131</td>
<td>Vestas V90</td>
<td>Vestas V90 GS</td>
<td>Enercon E-115</td>
<td>Vestas V126</td>
<td>Nordex N117</td>
</tr>
<tr>
<td><strong>Total capacity in MW</strong></td>
<td>19.8</td>
<td>6</td>
<td>16.5</td>
<td>10</td>
<td>2</td>
<td>54</td>
<td>9.9</td>
<td>15</td>
</tr>
<tr>
<td><strong>Number of turbines</strong></td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>18</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td><strong>Feed-in system</strong></td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
</tr>
</tbody>
</table>

*EEG: Erneuerbare Energien-Gesetz (renewable energy act)*
### 4.11.3 Onshore wind in Germany: Installed wind farms

<table>
<thead>
<tr>
<th>Country</th>
<th>Homburg</th>
<th>Ilshofen-Ruppertshofen</th>
<th>Kemberg II</th>
<th>Königheim</th>
<th>Langenburg</th>
<th>Leddin II</th>
<th>Müncheberg</th>
<th>Neuruppin</th>
<th>Niederlinxweiler</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
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<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td><strong>Type of turbine</strong></td>
<td>Nordex N117</td>
<td>Enercon E-101</td>
<td>Enercon E-115</td>
<td>Vestas V90</td>
<td>Vestas V126</td>
<td>Vestas V90</td>
<td>Vestas V90</td>
<td>Vestas V90</td>
<td>Vestas V90</td>
</tr>
<tr>
<td><strong>Total capacity in MW</strong></td>
<td>9.6</td>
<td>6.1</td>
<td>12</td>
<td>6</td>
<td>40.05</td>
<td>2</td>
<td>8</td>
<td>16</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Number of turbines</strong></td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>12</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td><strong>Feed-in system</strong></td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
</tr>
</tbody>
</table>

**EEG**: Erneuerbare Energien-Gesetz (renewable energy act)
## 4.11.3 Onshore wind: Installed wind farms

### Installed wind farms (6/7)

<table>
<thead>
<tr>
<th>Country</th>
<th>Nonnweiler</th>
<th>Oldendorf</th>
<th>Ostercapellen</th>
<th>Puschwitz</th>
<th>Rosenberg Süd</th>
<th>Rositz</th>
<th>Rot am See</th>
<th>Schnittlingen</th>
<th>Schopfloch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td>Type of turbine</td>
<td>Nordex N117</td>
<td>Enercon E53</td>
<td>Nordex S70</td>
<td>Vestas V80</td>
<td>Nordex N131</td>
<td>Nordex S70</td>
<td>Vestas V126</td>
<td>DeWind D6</td>
<td>Enercon E82</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>4.8</td>
<td>12</td>
<td>18</td>
<td>20</td>
<td>6.6</td>
<td>13.5</td>
<td>9.9</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Number of turbines</td>
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<td>15</td>
<td>12</td>
<td>10</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
</tr>
</tbody>
</table>

*EEG: Erneuerbare Energien-Gesetz (renewable energy act)*
### 4.11.3 Onshore wind in Germany: Installed wind farms (7/7)

<table>
<thead>
<tr>
<th>Country</th>
<th>Schulenburg II</th>
<th>Schwienau II</th>
<th>Söllenthin</th>
<th>Webenheim</th>
<th>Westerheim I</th>
<th>Willich</th>
<th>Winterbach</th>
<th>Zernitz</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
<td>Germany</td>
</tr>
<tr>
<td>Technology</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
<td>Onshore</td>
</tr>
<tr>
<td>Type of turbine</td>
<td>Vestas V90</td>
<td>Vestas V80</td>
<td>Vestas V90</td>
<td>Repower MM92</td>
<td>NEG Micon NM600</td>
<td>Vestas V80</td>
<td>Nordex N131</td>
<td>Enercon E66</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>6</td>
<td>10</td>
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<td>6.15</td>
<td>0.6</td>
<td>4</td>
<td>9.9</td>
<td>14.4</td>
</tr>
<tr>
<td>Number of turbines</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
<td>EEG 2014 and older</td>
</tr>
</tbody>
</table>

EEG: Erneuerbare Energien-Gesetz (renewable energy act)
4.12 Activities in France: Valeco SAS

The Valeco wind and solar asset portfolio 2019

- Develops, owns and operates
  - onshore wind
  - solar
  - small hydro projects
- Main focus on the French Market
- 133 employees
- Generation portfolio as of 30.9.2019:
  - 344 MW wind (100 MW fully consolidated)
  - 61 MW solar (30 MW fully consolidated)
- Valeco develops and enhances a wind onshore and solar PV pipeline of approx. 1.7 GW with promising market potential (esp. Hauts-de-France, Bourgogne-Franche-Comté, Nouvelle-Aquitaine)

Audincthun wind farm commissioned in summer 2019
6 Enercon E-92/2.35 MW turbines – installed capacity 14.1 MW
4.13 Activities in Sweden\(^1\): EnBW Sverige AB

- EnBW acquired independent service provider Connected Wind Service (CWS) with three subsidiaries CWS Denmark, CWS Sweden and CWS Germany in 2016. CWS Sweden is one of the market leaders for wind maintenance work in Sweden, operating from Falkenberg.

- In 2018 EnBW Sverige AB was established by acquisition of a project development permit for a wind farm in south Sweden (three turbines, currently in construction phase).

- The company is being built up in Falkenberg to develop a constantly growing wind portfolio.

- Since the end of 2018, EnBW Sverige AB has operated a 105 MW wind portfolio in Sweden through two subsidiaries after acquiring Power Wind Partners AB (previously owned by investment firms FAM AB and Proventus and insurer Folksam) and Gnösjo Energi AB (from Folksam). The portfolio comprises plus two grid companies.

\(^1\) Figures as of 31 December 2018
4.14.1 Photovoltaics portfolio in Germany: Project pipeline 2019 in line with plans for growth up to 2020

Besides projects within the EEG system, EnBW focuses on developing projects on a larger scale without feed-in tariff.

Regional distribution of the 2019 portfolio and pipeline in Germany
as of 31.8.2019

Portfolio and pipeline in MWp

- August 2019
  - 99
  - 678
- Forecast 2020
  - 350
  - 500

1 Negotiations for land contracts (low proportion make it to project development)
2 At least land contracts concluded (large proportion are completed)
3 Solar parks in operation with EnBW majority shareholding
### Photovoltaics portfolio in Germany:
- **Portfolio and projects under construction**

#### In operation:
**as of 31.12.2018**

<table>
<thead>
<tr>
<th>Installed total power</th>
<th>73 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of solar parks</td>
<td>&gt;50</td>
</tr>
</tbody>
</table>

#### Installed in 2019:

<table>
<thead>
<tr>
<th>Country</th>
<th>Leibertingen 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Germany</td>
</tr>
<tr>
<td>Technology</td>
<td>Solar</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>5</td>
</tr>
<tr>
<td>Operation date</td>
<td>Aug 2019</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2017</td>
</tr>
</tbody>
</table>

#### Under construction:

<table>
<thead>
<tr>
<th>Birkenfeld</th>
<th>Inzigkofen</th>
<th>Lindendorf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Germany</td>
<td>Germany</td>
</tr>
<tr>
<td>Technology</td>
<td>Solar</td>
<td>Solar</td>
</tr>
<tr>
<td>Total capacity in MW</td>
<td>5.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Feed-in system</td>
<td>EEG 2017</td>
<td>EEG 2017</td>
</tr>
</tbody>
</table>

EEG: Erneuerbare Energien-Gesetz (renewable energy act)
4.15 EnBW’s trading activities: Central access to wholesale markets to manage price and volume risks

EnBW’s trading activities:

- Market access to wholesale commodity markets for customers and EnBW group: *power, gas, emissions, coal, fuels*
- Direct marketing of renewables 2019: 3,500 MW+
- Annual trading volumes, 2018:
  - 850 TWh power
  - 1,740 TWh natural gas
  - 170 mn t coal
  - 600 mn t EUAs
  - 34 mn bbl oil
- 200+ employees
- 2,000,000+ trades per year

- Buying and selling power and gas on wholesale markets from intraday to 10 years+
- Trading “Energiewende” products:
  - PPAs
  - International expansion of portfolio
  - Guarantees of origin
  - Direct marketing of renewables
- Origination activities for power and gas including LNG
  - Substitution of conventional generation assets by contracts
  - Expansion of LNG trading activities
- Commercial optimisation of flexible gas and power portfolios including storage and supply contracts, also for third parties
- Procurement and risk management for EnBW sales companies and support for their electricity and gas customers
- OTC access for power to NL, FR, CH, AT, CZ, IT, HU
- OTC access for gas TTF, Gaspool (H/L), NCG (H/L), AT VTP, IT, FR
- Active on major power and commodity exchanges including EEX (Leipzig), ICE (London) PEGAS (Paris) and EPEX Spot (Paris), as well as on OTC markets where we trade with 150+ counterparties

PPAs: Power purchase agreements
TTF: Title transfer facility
NCG: NetConnect Germany
PEGAS: Pan-European Gas Cooperation

LNG: Liquid natural gas
(H/L): High calorific gas, low calorific gas
ICE: Intercontinental Exchange
EPEX: European Power Exchange

OTC: Over-the-counter
AT VTP: Austria Virtual Trading Point
EEX: European Energy Exchange

NL: Netherlands
CH: Switzerland
CZ: Czech Republic
HU: Hungary
FR: France
AT: Austria
IT: Italy
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5.1 EnBW’s Main Shareholdings

- Stadtwerke Düsseldorf Group, Düsseldorf, Germany
- Pražská energetika a.s., Prague, Czech Republic
- VNG AG, Leipzig, Germany
- Energiedienst Holding AG, Laufenburg, Switzerland
- Borusan EnBW Enerji yatırımları ve Üretim A.S., Istanbul, Turkey

1 Directly and indirectly held shares.
2 Not fully consolidated, accounted for using the equity method.

5.2.1 Energiedienst Holding AG

Established
1908

Employees
994

Location
Laufenburg, Switzerland

Profile

- Energiedienst generates green electricity from hydropower and sells electricity and gas. The group’s own grid companies supply customers with electricity.

- In addition, Energiedienst is growing in new business areas for tomorrow’s world of decentralised, renewable and digital energy. The group drives the Energiewende for customers by providing smart interconnected products and services, including solar panels, heat pumps, electricity storage systems and electric mobility together with car sharing.

Alexander Lennemann

- Alexander.Lennemann@energiedienst.de
- +49 7623 92 2660
- www.energiedienst.de
5.2.2 Energiedienst Holding AG at a glance

**Spanning the Swiss & German markets**
- 651 MW installed capacity in renewables (primarily run-of-river power plants)
- Approximately 8,100 km low-voltage grid
- Around 270,000 electricity and gas customers
- 986 employees

**Sound investment with potential**
- Stable cash flows in traditional businesses
- Clear strategic focus on developing new businesses

**Additional figures**
- Net revenue: €896 m
- Adjusted EBIT: €28.4 m
- Net profit: €13.2 m
- Free cash flow: -€4.7 m
- Equity ratio: 51.6%

**Three business segments**
- **Germany BU**
  - Energy industry/generation
  - Distribution
  - Sales
- **New Business Areas BU**
  - Photovoltaic
  - Heat and energy solutions
  - Electric mobility
- **Switzerland BU**
  - Energy industry/generation
  - Distribution
  - Sales

---

1 As of 31 December 2018
5.2.3 Energiedienst Holding AG: Current key topics and projects

New top-level organisation
- Clear cross-national assignment of business areas to integrate new business ideas

E-mobility
- Expansion of charging station infrastructure and e-car sharing in southern Baden and in Switzerland

Photovoltaics
- Sale of solar equipment and additional products in Switzerland and Germany

Concessions
- Applications are underway for multiple electricity concessions

The Energiedienst Group is also growing in heat and energy solutions

Power-to-gas
- Flagship project at Wyhlen hydropower plant to produce hydrogen as fuel

Culture project
- Support Group integration and achieve transformation capability

Digital roadmap
- Digitization as a key component in strategy implementation
5.3.1 Pražská energetika, a. s.

Established
1897

Employees
1,478

Profile

- Electricity distribution in Prague
- Electricity and gas supplies to all customer segments in the Czech Republic; focus on B2C segment in Prague
- Renewable generation

Location
Prague, CZ

Mgr. Petr Holubec

- +420 602 265 790
- www.pre.cz/en
5.3.2 Pražská energetika, a. s. at a glance

Number 3 utility in the Czech Rep.
- 6,327 GWh electricity distributed
- Stable shareholder structure
- 1,478 employees
- Strong roots in Prague

Balanced risk-return profile
Focus on
- Distribution (~60% EBITDA) and
- Electricity and gas supply (~30% EBITDA)

Key figures
- Revenues: CZK 20,459 m
- Adj. EBITDA: CZK 4,873 m
- Group net profit: CZK 2,868 m

Electricity Generation Procurement Distribution Sales

Three business segments
- Sales
- Grids
- Renewable Energies and Energy Services

1 As of 31 December 2018
5.3.3 Pražská energetika, a. s.:  
Segment overview

**Sales**

- **Adjusted EBITDA 2018:** CZK 1,329 m  
- **Employees:** 647  
- **Activities/products:** Sale of electricity and gas; focus on customer retention in Prague (PRE brand) and growth outside of Prague (Yello brand)

**Grids**

- **Adjusted EBITDA 2018:** CZK 3,116 m  
- **Employees:** 575  
- **Activities/products:** Distribution of electricity; provision of grid-related services; guaranteeing security of supply and system stability

**Renewable Energies / Energy Services**

- **Adjusted EBITDA 2018:** CZK 428 m  
- **Employees:** 256  
- **Activities/products:** Energy-related services; project development and management; construction and operation of renewable energy power plants (photovoltaics); energy efficiency consultancy; e-mobility services; operation of local distribution networks
5.3.4 Pražská energetika, a. s.: Current key topics and projects

**E-Mobility**
- Expansion of public charging network
- B2B and B2C private charging solutions
- Provision of integrated e-mobility solutions (for OEMs, B2B, B2C), i.e. chargers, commodity, billing, cars (with partner)

**Fibre**
- Synergetic development of electricity and fibre grid
- Backbone for smart grid applications
- Provision of fibre infrastructure for telco retail partners (FTTH)

**Smart city**
- Digitisation of network operation; upgrade to smart distribution stations
- Installation of multifunctional smart lamps (SMIGHT)
- E-car sharing pilot in Prague
- Multi-commodity measuring in buildings

**Energy services**
- Installation of roof-top solar systems incl. storage
- Installation of heating, ventilation and air conditioning systems
- Servicing of local distribution networks
5.4.1 Stadtwerke Düsseldorf Group

**Established**
20 September 1866

**Employees**
3,327

**Location**
Düsseldorf, Germany

**Profile**
- City energy utility: electricity, gas, water and district heating
- Demand-driven development of interconnected urban infrastructure in the fields of energy, mobility and buildings

**Carsten Capari**
Business Accounting and Finances
- info@swd-ag.de
- www.swd-ag.de
### 5.4.2 Stadtwerke Düsseldorf Group at a glance

**Key figures**
- Revenue: €1,768 m
- EBITDA: €209 m
- Net profit: €91 m
- Equity: €758 m
- Equity ratio: 38%
- Total assets: €2,015 m

#### Five business segments

<table>
<thead>
<tr>
<th>Business Segment</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Generation, Procurement, Trading, Distribution, Sales</td>
</tr>
<tr>
<td>Gas</td>
<td>Procurement, Trading, Distribution, Sales</td>
</tr>
<tr>
<td>District heating</td>
<td>Generation, Distribution, Sales</td>
</tr>
<tr>
<td>Water</td>
<td>Generation, Distribution, Sales</td>
</tr>
<tr>
<td>Waste</td>
<td>Thermal waste treatment, Non-thermal waste treatment</td>
</tr>
</tbody>
</table>

1 As of 31 December 2018
5.4.3 Stadtwerke Düsseldorf Group: Segment overview

<table>
<thead>
<tr>
<th>Electricity</th>
<th>Gas</th>
<th>District heating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue:</strong> €1,106 m</td>
<td><strong>Revenue:</strong> €289 m</td>
<td><strong>Revenue:</strong> €82 m</td>
</tr>
<tr>
<td><strong>Business area:</strong> Generation, Trading, Grids, Sales</td>
<td><strong>Business area:</strong> Generation, Grids, Sales</td>
<td><strong>Business area:</strong> Generation, Grids, Sales</td>
</tr>
<tr>
<td><strong>Production:</strong> 14,871 m kWh</td>
<td><strong>Production:</strong> 9,211 m kWh</td>
<td><strong>Production:</strong> 1,186 m kWh</td>
</tr>
<tr>
<td><strong>Installed capacity:</strong> conventional: 1,246 MWel, renewable: 59 MWel</td>
<td></td>
<td><strong>Installed capacity:</strong> conventional: 2,416 MWth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water</th>
<th>Waste</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue:</strong> €93 m</td>
<td><strong>Revenue:</strong> €184 m</td>
<td><strong>Revenue:</strong> €14 m</td>
</tr>
<tr>
<td><strong>Business area:</strong> Generation, Grids, Sales</td>
<td><strong>Business area:</strong> Thermal waste treatment</td>
<td><strong>Business area:</strong> Services</td>
</tr>
<tr>
<td><strong>Production:</strong> 52 m³</td>
<td><strong>Production:</strong> 425 kt</td>
<td></td>
</tr>
</tbody>
</table>
5.4.4 Stadtwerke Düsseldorf Group:
Current key topics and projects

Business development

- Systematic optimisation of our sustainable generation infrastructure
- Focus among other things on creating a smart district heating system for the City of Düsseldorf for enhanced efficiency and customer friendliness
  - The heart of this district heating system is the Fortuna plant
  - Electricity and heat are produced using climate-friendly cogeneration technology and natural gas as a low-carbon energy source
  - Düsseldorf Airport will be connected to the district heating system by the end of 2019

Optimisation of conventional business

- A successful product, the “eddy” e-scooter hit Düsseldorf’s streets in 2017
  - Emission-neutral transport reducing congestion and powered by green electricity for lower environmental impact
  - Eddy is a prime example of modern sector coupling [electricity, heating/climate action and mobility]
  - Number of scooters increased due to strong demand
  - ADAC automobile club test: Top marks for scooter sharing

New business areas

- Creation of new possibilities for
  - Optimisation of conventional business
  - New business areas
5.5.1 VNG AG

Profile

- VNG is a group of over 20 companies active in the European energy industry with a broad, future-oriented portfolio of products and services in gas and infrastructure, and more than 60 years of experience in the energy market. Headquartered in Leipzig, the Group concentrates on three links in the gas value chain: Trading & Sales, Transport, and Storage.

- Building on these core competences in the gas business, the Group’s “VNG 2030+” strategy places a growing focus on new business fields. These include biogas, digital infrastructure, and district solutions.

Established
1958

Employees
1,101

VNG Group Locations

<table>
<thead>
<tr>
<th>Country</th>
<th>Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
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</tr>
<tr>
<td>Italy</td>
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</tr>
<tr>
<td>Austria</td>
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</tr>
<tr>
<td>Poland</td>
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<tr>
<td>Slovak Republic</td>
<td>1</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1</td>
</tr>
</tbody>
</table>

VNG AG

- info@vng.de
- +49 341 443-0
- www.vng.de/en
5.5.2 VNG AG at a glance¹

Trading & Sales business area

- Wholesale and Retail divisions in Germany and Europe
- 500 bn kWh gas send-out
- Power and gas consumers (B2C)
  - Germany: 182,500  |  Austria: 58,000  |  Poland: 37,000
- Eight sales offices in Germany (Berlin, Dusseldorf, Erfurt, Frankfurt/Main, Hamburg, Leipzig, Munich, Stuttgart)

Transport business area

- As an independent transmission operator, ONTRAS is responsible for Germany’s second-longest gas transmission system
- 7,000 km high-pressure gas pipeline system
- 450 network interconnection points
- 130 downstream network operators

Storage business area

- Third-largest storage facility operator in Germany
- Four underground storage facilities (Bad Lauchstädt, Bernburg, Etzel, Jemgum)
- 2.2 bn m³ storage capacity

New businesses

- Green Gases: Significant position in owning and operation of biogas plants, development of a position in hydrogen
- Digital Infrastructure: Independent provider of mission-critical infrastructure in fibre, data centres and infrastructure-based applications
- District Solutions: Building and operation of integrated municipal/industrial energy solutions

Revenue: €11.2 bn
Investment result: €296 m

Adjusted EBIT: €159 m
EBIT: €196 m

Group net profit: €142 m

¹ As of 31 December 2018
Core business

**Trading & Sales**
- Optimisation of market position in terms of procurement and sales
- Focus on the development of midstream excellence and moderate growth in retail business
- Digitization of processes and market access

**Storage**
- Focus on ensuring and extending cost and innovation leadership
- Integration of and scaling up of service business for third parties
- Development of use cases for underground storage of hydrogen
- Remaining an integral part of future energy supply as storage facilities for volatile renewable energies

**Transport**
- Increasing implementation of new business segments and continuous optimisation in the regulatory framework (e.g. efficiency improvements)
- Development of comprehensive expertise in the field of green energy infrastructure
- Focused on future options for sustainable, green use of the gas infrastructure with renewable natural gas
5.5.3 VNG AG:
Current key topics and projects (2/2)

New business

- **Green gases**
  - Following a road map for green gases with the aim of increasing the share of biogas and hydrogen in the energy mix
  - Focus on acquisition, integration and optimisation of biogas plants as well as the development of concepts post EEG subsidy scheme
  - Positioning of VNG in hydrogen

- **District solutions**
  - Developing integrated local solutions with advanced network infrastructure in an approach which is independent of individual manufacturers
  - Optimisation along the value chain

- **Digital infrastructure**
  - Becoming a leading independent provider of fibre optic infrastructure and of critical infrastructure-based data services in Germany

- **Innovations and startup-activities**
  - Implementation of group-wide innovation process and development of new business areas
  - Private venture capital fund created to invest in new startups with a strategic fit to VNG
  - Strategic partnership with accelerators (SpinLab) to access innovative solutions and support internal entrepreneurial development
Borusan EnBW Enerji continues its activities with a vision of being a leading energy generation company in wind energy segment. From investments to operations, in all of its activities, efficiency and respect to society and nature are of utmost importance. In electricity sales and trading, Borusan EnBW Enerji plays a prominent role in Turkish electricity sector.
5.6.2 Activities in Turkey\(^1\): Borusan EnBW Energy portfolio projects

- **Balabanli**: 36 MW, 61.4 MW
- **Buket**: 10.5 MW
- **Kiyiköy**: 72 MW, 28 MW
- **Kaktüs**: 49.5 MW
- **Harmanlık**: 52.8 MW
- **Bandırma**: 89.7 MW
- **Feslegen**: 40 MW
- **Saros**: 146 MW
- **Koru**: 52.8 MW
- **Büket**: 10.5 MW
- **Kaktüs**: 49.5 MW
- **Harmanlık**: 52.8 MW
- **Bandırma**: 89.7 MW
- **Feslegen**: 40 MW
- **Saros**: 146 MW
- **Koru**: 52.8 MW
- **Düzce**: 30 MW
- **Hatimi**: 6.6 MW
- **Fuatres**: 33 MW
- **Pamuklu**: 2.2 MW
- **Dayıcık**: 6.6 MW
- **Pelit**: 80 MW
- **Sandal**: 50 MW
- **Yedigöl Aksu**: 50.3 MW
- **Kartaldagi**: 65.6 MW
- **Makif**: 49.5 MW
- **Sarmasik**: 49.5 MW
- **Mut**: 52.8 MW
- **Böğürtlen**: 30 MW
- **Makif**: 49.5 MW
- **Sarmasik**: 49.5 MW
- **Mut**: 52.8 MW
- **Böğürtlen**: 30 MW

\(^1\) Figures not consolidated
Agenda 6 – Key Financials and Non-financials

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## 6.1 Five-year summary (1/2)

### EnBW Group

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<tr>
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<tbody>
<tr>
<td><strong>Earnings</strong></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>External revenue</td>
<td>€ m</td>
<td>20,618</td>
<td>21,974</td>
<td>19,368</td>
<td>21,167</td>
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<td>EBITDA</td>
<td>€ m</td>
<td>2,090</td>
<td>3,752</td>
<td>731</td>
<td>1,918</td>
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<td>Group net profit/loss</td>
<td>€ m</td>
<td>334</td>
<td>2,054</td>
<td>-1,797</td>
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<tr>
<td><strong>Balance sheet</strong></td>
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<tr>
<td>Equity</td>
<td>€ m</td>
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<td>5,863</td>
<td>3,216</td>
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<td>Net financial debt</td>
<td>€ m</td>
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<td>3,329</td>
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<td><strong>Cash flow</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Cash flow from operating activities</td>
<td>€ m</td>
<td>827.6</td>
<td>-1,696.1</td>
<td>473.6</td>
<td>1,918.3</td>
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<tr>
<td>Free cash flow</td>
<td>€ m</td>
<td>-374.9</td>
<td>-2,789.0</td>
<td>-494.7</td>
<td>651.6</td>
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<td><strong>Profitability</strong></td>
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<tr>
<td>ROCE</td>
<td>%</td>
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<td>Value added</td>
<td>€ m</td>
<td>32</td>
<td>152</td>
<td>124</td>
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<td><strong>Capital markets</strong></td>
<td></td>
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<tr>
<td>Dividend per share</td>
<td>€</td>
<td>0.65</td>
<td>0.50</td>
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<td><strong>Energy sales</strong></td>
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<tr>
<td>Electricity</td>
<td>bn kWh</td>
<td>137</td>
<td>122</td>
<td>115</td>
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<td>Gas</td>
<td>bn kWh</td>
<td>328</td>
<td>250</td>
<td>139</td>
<td>135</td>
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</tbody>
</table>

1 The figures for 2017 have been restated.
2 No figures for the comparative period 2014 are available for the new performance indicators.
## 6.1 Five-year summary (2/2)

### EnBW Group¹

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>Electricity</strong></td>
<td></td>
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<tr>
<td>bn kWh</td>
<td>37</td>
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<tr>
<td><strong>Gas</strong></td>
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<tr>
<td>bn kWh</td>
<td>57</td>
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<td>56</td>
<td>82</td>
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<tr>
<td><strong>External revenue</strong></td>
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<tr>
<td>€ m</td>
<td>7,061</td>
<td>7,354</td>
<td>7,771</td>
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<td><strong>Adjusted EBITDA</strong></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>€ m</td>
<td>271</td>
<td>330</td>
<td>250</td>
<td>255</td>
<td>231</td>
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<tr>
<td><strong>Grids segment</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>External revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>€ m</td>
<td>3,215</td>
<td>7,472</td>
<td>6,644</td>
<td>6,351</td>
<td>6,231</td>
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<tr>
<td><strong>Adjusted EBITDA</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>€ m</td>
<td>1,177</td>
<td>1,046</td>
<td>1,004</td>
<td>747</td>
<td>886</td>
</tr>
<tr>
<td><strong>Renewable Energies segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electricity sales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bn kWh</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>External revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>€ m</td>
<td>478</td>
<td>508</td>
<td>511</td>
<td>447</td>
<td>407</td>
</tr>
<tr>
<td><strong>Adjusted EBITDA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>€ m</td>
<td>298</td>
<td>332</td>
<td>295</td>
<td>287</td>
<td>191</td>
</tr>
<tr>
<td><strong>Generation &amp; Trading segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electricity sales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bn kWh</td>
<td>97</td>
<td>80</td>
<td>68</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td><strong>Gas sales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bn kWh</td>
<td>272</td>
<td>193</td>
<td>85</td>
<td>53</td>
<td>45</td>
</tr>
<tr>
<td><strong>External revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>€ m</td>
<td>9,856</td>
<td>6,631</td>
<td>4,434</td>
<td>5,300</td>
<td>5,290</td>
</tr>
<tr>
<td><strong>Adjusted EBITDA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>€ m</td>
<td>429</td>
<td>377</td>
<td>337</td>
<td>777</td>
<td>900</td>
</tr>
</tbody>
</table>

¹ The figures for 2017 have been restated.
### Financial and strategic performance indicators

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow from operating activities € m</td>
<td>827.6</td>
<td>-1,696.1</td>
<td>-</td>
</tr>
<tr>
<td>Free cash flow € m</td>
<td>-374.9</td>
<td>-2,789.0</td>
<td>-86.6</td>
</tr>
<tr>
<td>Equity ratio %</td>
<td>15.8</td>
<td>15.1</td>
<td>2.4</td>
</tr>
<tr>
<td>Net debt € m</td>
<td>9,586.6</td>
<td>8,413.3</td>
<td>13.9</td>
</tr>
<tr>
<td>Internal financing capability %</td>
<td>93.2</td>
<td>111.9</td>
<td>-16.7</td>
</tr>
<tr>
<td>Value added € m</td>
<td>32.1</td>
<td>151.2</td>
<td>-78.8</td>
</tr>
<tr>
<td>ROCE %</td>
<td>6.5</td>
<td>7.3</td>
<td>-</td>
</tr>
<tr>
<td>Group net profit/loss € m</td>
<td>334.2</td>
<td>2,054.1</td>
<td>-83.7</td>
</tr>
<tr>
<td>Earnings per share from Group net profit €</td>
<td>1.23</td>
<td>7.58</td>
<td>-83.7</td>
</tr>
</tbody>
</table>

1 In relation to the profit/loss attributable to the shareholders of EnBW AG.
2 The figures 2017 have been restated.
## 6.2.2 Fiscal year 2018: Non-financial key performance figures

### Customers and society goal dimension

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reputation Index</td>
<td>51.3</td>
<td>52.1</td>
<td>-1.5</td>
</tr>
<tr>
<td>EnBW/Yello Customer Satisfaction Index</td>
<td>120/152</td>
<td>143/161</td>
<td>-16.1/-5.6</td>
</tr>
<tr>
<td>SAIDI (electricity) in min./year</td>
<td>17</td>
<td>19</td>
<td>-10.5</td>
</tr>
</tbody>
</table>

### Employees goal dimension

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Commitment Index (ECI)²</td>
<td>62</td>
<td>60</td>
<td>3.3</td>
</tr>
<tr>
<td>LTIF³</td>
<td>2.3</td>
<td>3.0</td>
<td>-23.3</td>
</tr>
</tbody>
</table>

### Environment goal dimension

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed output of renewable energies (RE) in GW and the share of the generation capacity accounted for by RE in %¹</td>
<td>3.7/27.9</td>
<td>3.4/25.8</td>
<td>8.8/8.1</td>
</tr>
<tr>
<td>CO₂ intensity in g/kWh</td>
<td>553</td>
<td>556</td>
<td>-0.5</td>
</tr>
</tbody>
</table>

### Employees of the EnBW Group⁴

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>21,775</td>
<td>21,352</td>
<td>2.0</td>
</tr>
<tr>
<td>Full-time equivalents⁵</td>
<td>20,379</td>
<td>19,939</td>
<td>2.2</td>
</tr>
</tbody>
</table>

---

¹ The figures for 2017 have been restated.
² Variations in the group of consolidated companies (consideration of companies controlled by the Group [without ITOs]).
³ Variations in the group of consolidated companies (consideration of all employees at those companies controlled by the Group, except external agency workers and contractors).
⁴ Number of employees excluding apprentices/trainees and inactive employees.
⁵ Converted into full-time equivalents.
### 6.2.3 Fiscal year 2018: ROCE and value added

#### Group level

- Decrease in value added to €32 m (2017: €151 m)
- ROCE at 6.5% compared to 7.3% in the prior year
- Increase in average capital employed

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted EBIT incl. the adjusted investment result</td>
<td>€ m</td>
<td>220.3</td>
<td>262.8</td>
<td>768.4</td>
<td>686.8</td>
<td>123.7</td>
<td>164.9</td>
<td>-24.2</td>
<td>-27.0</td>
<td>-46.6</td>
</tr>
<tr>
<td>Average capital employed</td>
<td>€ m</td>
<td>1,037.0</td>
<td>836.8</td>
<td>7,019.8</td>
<td>5,919.2</td>
<td>3,667.4</td>
<td>3,276.9</td>
<td>2,139.1</td>
<td>2,242.4</td>
<td>2,190.0</td>
</tr>
<tr>
<td>ROCE</td>
<td>%</td>
<td>21.2</td>
<td>31.4</td>
<td>10.9</td>
<td>11.6</td>
<td>3.4</td>
<td>5.0</td>
<td>-1.1</td>
<td>-1.2</td>
<td>-</td>
</tr>
<tr>
<td>WACC</td>
<td>%</td>
<td>7.7</td>
<td>7.7</td>
<td>5.3</td>
<td>5.4</td>
<td>6.1</td>
<td>6.1</td>
<td>8.0</td>
<td>8.0</td>
<td>-</td>
</tr>
<tr>
<td>Value added</td>
<td>€ m</td>
<td>140.0</td>
<td>198.3</td>
<td>393.1</td>
<td>367.0</td>
<td>-99.0</td>
<td>-36.0</td>
<td>-194.7</td>
<td>-206.3</td>
<td>-</td>
</tr>
</tbody>
</table>

1 The figures for the previous year have been restated.
2 Investment result of €59.4 million, adjusted for taxes (investment result/0.706 - investment result; with 0.706 = 1 - tax rate 29.4%). Does not include impairment losses and reversals to impairment losses on investments, the result from the sale of equity investments, the share of the result from entities accounted for using the equity method not relevant to the ongoing management of the company and the result from equity investments held as financial assets.
### 6.2.4 Fiscal year 2018: Segment reporting (1/2)

#### Segment reporting

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>External revenue</td>
<td>7,061.4</td>
<td>7,354.3</td>
<td>3,215.4</td>
<td>7,471.8</td>
<td>477.5</td>
<td>507.5</td>
<td>9,856.2</td>
<td>6,631.1</td>
<td>7.0</td>
<td>9.3</td>
<td>20,617.5</td>
<td>21,974.0</td>
</tr>
<tr>
<td>Internal revenue</td>
<td>677.1</td>
<td>921.1</td>
<td>2,353.1</td>
<td>2,558.6</td>
<td>331.1</td>
<td>281.3</td>
<td>2,647.7</td>
<td>2,739.2</td>
<td>-6,011.0</td>
<td>-6,500.2</td>
<td>-6,004.0</td>
<td>-6,490.9</td>
</tr>
<tr>
<td>Total revenue</td>
<td>7,738.5</td>
<td>8,275.4</td>
<td>5,568.5</td>
<td>10,030.4</td>
<td>810.6</td>
<td>788.8</td>
<td>12,503.9</td>
<td>9,370.3</td>
<td>0.0</td>
<td>0.0</td>
<td>20,617.5</td>
<td>21,974.0</td>
</tr>
</tbody>
</table>

#### Earnings indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted EBITDA</td>
<td>270.6</td>
<td>330.0</td>
<td>1,176.9</td>
<td>1,045.9</td>
<td>297.7</td>
<td>331.7</td>
<td>428.6</td>
<td>377.1</td>
<td>-16.3</td>
<td>28.3</td>
<td>2,157.5</td>
<td>2,113.0</td>
</tr>
<tr>
<td>EBITDA</td>
<td>232.6</td>
<td>317.8</td>
<td>1,120.0</td>
<td>1,025.3</td>
<td>285.1</td>
<td>622.5</td>
<td>407.9</td>
<td>1,703.1</td>
<td>44.0</td>
<td>83.7</td>
<td>2,089.6</td>
<td>3,752.4</td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>-68.4</td>
<td>-68.2</td>
<td>-457.5</td>
<td>-435.4</td>
<td>-173.7</td>
<td>-160.4</td>
<td>-471.1</td>
<td>-422.8</td>
<td>-29.3</td>
<td>-27.4</td>
<td>-1,200.0</td>
<td>-1,114.2</td>
</tr>
<tr>
<td>Impairment losses</td>
<td>-2.5</td>
<td>-8.6</td>
<td>0.0</td>
<td>-0.8</td>
<td>-0.8</td>
<td>-13.5</td>
<td>-9.4</td>
<td>-111.3</td>
<td>-1.1</td>
<td>0.0</td>
<td>-13.8</td>
<td>-134.2</td>
</tr>
<tr>
<td>Net profit/loss from entities accounted for using the equity method</td>
<td>1.1</td>
<td>3.7</td>
<td>22.2</td>
<td>29.8</td>
<td>-48.3</td>
<td>-4.4</td>
<td>0.9</td>
<td>-0.2</td>
<td>0.0</td>
<td>14.4</td>
<td>-24.1</td>
<td>43.3</td>
</tr>
<tr>
<td>Significant non-cash items</td>
<td>-11.0</td>
<td>31.2</td>
<td>51.1</td>
<td>27.2</td>
<td>4.8</td>
<td>2.8</td>
<td>30.0</td>
<td>0.6</td>
<td>-7.9</td>
<td>-14.1</td>
<td>67.0</td>
<td>47.7</td>
</tr>
</tbody>
</table>

---

1. The figures for 2017 have been restated
### 6.2.4 Fiscal year 2018: Segment reporting (2/2)

#### Segment reporting\(^1\)
in € m

<table>
<thead>
<tr>
<th>Assets and liabilities</th>
<th>Sales</th>
<th>Grids</th>
<th>Renewable Energies</th>
<th>Generation &amp; Trading</th>
<th>Other / Consolidation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital employed</td>
<td>1,009.4</td>
<td>1,004.6</td>
<td>7,213.9</td>
<td>6,534.8</td>
<td>3,843.2</td>
<td>3,501.9</td>
</tr>
<tr>
<td>Of which carrying amount of entities accounted for using the equity method</td>
<td>(188.2)</td>
<td>(198.8)</td>
<td>(402.1)</td>
<td>(386.0)</td>
<td>(863.4)</td>
<td>(670.2)</td>
</tr>
<tr>
<td>Capital expenditure on intangible assets and property, plant and equipment</td>
<td>91.5</td>
<td>83.3</td>
<td>959.3</td>
<td>784.0</td>
<td>138.9</td>
<td>417.3</td>
</tr>
</tbody>
</table>

\(^1\) The figures for the previous year have been restated
6.2.5 Fiscal year 2018: Internal financing capability

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained cash flow (RCF)</td>
<td>€ m</td>
<td>999.1</td>
<td>3,050.3</td>
</tr>
<tr>
<td>Adjusted retained cash flow¹</td>
<td>€ m</td>
<td>1,199.1</td>
<td>1,529.5</td>
</tr>
<tr>
<td>Net (cash) investment</td>
<td>€ m</td>
<td>1,287.1</td>
<td>1,367.1</td>
</tr>
<tr>
<td>Internal financing capability</td>
<td>%</td>
<td>93.2</td>
<td>111.9</td>
</tr>
</tbody>
</table>

› RCF: Cash-relevant earnings after settlement of stakeholder needs (interest payments, taxes, dividends)

› Adjusted retained cash flow¹: Adjusted for the following effects of the nuclear fuel tax refund
  › Will be used for debt repayment of around €836 m in 2018
  › Will be used for additional investment of €685 m from 2018 to 2020

› Internal financing capability:
  › Key performance indicator for the Group’s ability to finance its capital expenditures (net cash investment) internally without the need to raise additional capital
  › In 2018 the value for internal financing capability was slightly below the target value of ≥100%.

¹ Adjusted for the effects from the reimbursement of the nuclear fuel rod tax by €200.0 million (previous year: €-1,520.8 million).
6.3.1 Half-year 2019: Financial and strategic performance indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1.1. – 30.6.2019</th>
<th>1.1. – 30.6.2018</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>External revenue(^1)</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Adjusted EBITDA</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Share of adjusted EBITDA accounted for by Sales</td>
<td>€ m / %</td>
<td>€ m / %</td>
<td></td>
</tr>
<tr>
<td>Share of adjusted EBITDA accounted for by Grids</td>
<td>€ m / %</td>
<td>€ m / %</td>
<td></td>
</tr>
<tr>
<td>Share of adjusted EBITDA accounted for by Renewable Energies</td>
<td>€ m / %</td>
<td>€ m / %</td>
<td></td>
</tr>
<tr>
<td>Share of adjusted EBITDA accounted for by Generation and Trading(^1)</td>
<td>€ m / %</td>
<td>€ m / %</td>
<td></td>
</tr>
<tr>
<td>Share of adjusted EBITDA accounted for by Other/Consolidation</td>
<td>€ m / %</td>
<td>€ m / %</td>
<td></td>
</tr>
<tr>
<td>EBITDA</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Adjusted EBIT</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>EBIT</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Adjusted Group net profit(^2)</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Group net profit(^2)</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Earnings per share from Group net profit/loss(^2)</td>
<td>€</td>
<td>€</td>
<td></td>
</tr>
<tr>
<td>Retained cash flow</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
<tr>
<td>Total investments</td>
<td>€ m</td>
<td>€ m</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) The figures for the previous year have been restated.

\(^2\) In relation to the profit/loss attributable to the shareholders of EnBW AG.
6.3.2 Half-year 2019: Non-financial performance indicators

<table>
<thead>
<tr>
<th>Customers goal dimension</th>
<th>1.1. – 30.6.2019</th>
<th>1.1. – 30.6.2018</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Satisfaction Index for EnBW/Yello(^2)</td>
<td>116/161</td>
<td>130/150</td>
<td>-10.8/7.3</td>
</tr>
<tr>
<td>SAIDI (electricity) in min/year</td>
<td>8</td>
<td>8</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees goal dimension</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LTIF(^3)</td>
<td>2.1</td>
<td>2.5</td>
<td>-16.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees of the EnBW group(^4,5)</th>
<th>30.6.2019</th>
<th>30.6.2018</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>22,488</td>
<td>21,397</td>
<td>5.1</td>
</tr>
<tr>
<td>Full-time equivalents</td>
<td>21,086</td>
<td>19,999</td>
<td>5.4</td>
</tr>
</tbody>
</table>

LTIF: Lost Time Injury Frequency
SAIDI: System Average Interruption Duration Index

---

1 In relation to the profit/loss attributable to the shareholders of EnBW AG.
2 The figures for the key performance indicators Reputation Index, Employee Commitment Index (ECI), installed output of renewable energies (RE) in GW and the share of the generation capacity accounted for by RE in % and CO\(_2\) intensity are solely collected at the end of the year.
3 Variations in the group of consolidated companies (consideration of all employees at those companies controlled by the Group, except external agency workers and contractors).
4 Number of employees excluding apprentices/trainees and inactive employees.
5 The number of employees for the ITOs (ONTRAS Gastransport GmbH, terranets bw GmbH and TransnetBW GmbH) is only updated at the end of the year; for intervals of less than a year, the number of employees from 31/12/2018 is carried forward.
# 6.4.1 Financial and non-financial KPIs and targets: Finance and strategy goal dimensions

<table>
<thead>
<tr>
<th>Goal</th>
<th>KPI</th>
<th>2018</th>
<th>Target 2020</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure profitability</td>
<td>Adjusted EBITDA in € bn</td>
<td>2.2</td>
<td>2.3–2.5</td>
<td>The operating result is to return to the average level achieved before the Energiewende. The total regulated business (Grids and Renewable Energies segments) together contributes around 70% to this result.</td>
</tr>
<tr>
<td>High level of financial discipline</td>
<td>Internal financing capability in %</td>
<td>93.2</td>
<td>&gt;100</td>
<td>The level of net financial debt is controlled by limiting net investment to the level of adjusted retained cash flow. The Group can thus finance its own repositioning internally.</td>
</tr>
<tr>
<td>Increasing Group value</td>
<td>ROCE in %</td>
<td>6.5</td>
<td>8.5 - 11</td>
<td>Return on capital employed (ROCE) is higher than the cost of capital. EnBW is creating value for its stakeholders.</td>
</tr>
<tr>
<td><strong>Strategy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of result accounted for by &quot;Customer proximity&quot; / Sales</td>
<td>Share of overall adjusted EBITDA in € billion / in %</td>
<td>0.3/12.5</td>
<td>0.4/15.0</td>
<td>The operating result for the Sales segment doubles from €0.2 billion (reference year: 2012) to €0.4 billion in 2020 and represents around 15% of the Group operating result. Innovations make this possible.</td>
</tr>
<tr>
<td>Share of result accounted for by Grids</td>
<td>Share of overall adjusted EBITDA in € billion / in %</td>
<td>1.2/54.5</td>
<td>1.0/40.0</td>
<td>The operating result for the Grids segment increases by 25% from € 0.8 billion (reference year: 2012) to €1.0 billion in 2020 and represents around 40% of the Group operating result. The share accounted for by stable regulated business is expanding.</td>
</tr>
<tr>
<td>Share of result accounted for by Renewable Energies</td>
<td>Share of overall adjusted EBITDA in € billion / in %</td>
<td>0.3/13.8</td>
<td>0.7/30.0</td>
<td>The operating result for the Renewable Energies segment increases by 250% from € 0.2 billion (reference year: 2012) to €0.7 billion in 2020 and represents around 30% of the Group operating result. EnBW is becoming more sustainable.</td>
</tr>
<tr>
<td>Share of result accounted for by Generation and Trading</td>
<td>Share of overall adjusted EBITDA in € billion / in %</td>
<td>0.4/19.9</td>
<td>0.3/15.0</td>
<td>The operating result for the Generation and Trading segment falls by 80% from € 1.2 billion (reference year: 2012) to €0.3 billion in 2020 due to changed framework conditions and only represents around 15% of the Group operating result.</td>
</tr>
</tbody>
</table>

1 Other / Consolidation accounts for € -0.02 billion / -0.7% of the overall adjusted EBITDA.
### 6.4.2 Financial and non-financial KPIs and targets: Other goal dimensions

<table>
<thead>
<tr>
<th>Goal</th>
<th>KPI</th>
<th>2018</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customers &amp; society</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reputation</td>
<td>Reputation Index</td>
<td>51.3</td>
<td>55.4 In parallel with repositioning its business model, EnBW aims to</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>continuously improve its reputation.</td>
</tr>
<tr>
<td>Customer proximity</td>
<td>EnBW / Yello Customer Satisfaction Index</td>
<td>120/152</td>
<td>&gt; 136 / &gt; 159 EnBW and Yello customers are satisfied customers with a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>high level of customer loyalty. EnBW and Yello are organisations strongly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>oriented towards customers and meet the needs and wishes of their</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>customers through tailored solutions and products.</td>
</tr>
<tr>
<td>Supply reliability</td>
<td>SAIDI (electricity) in min./year</td>
<td>17</td>
<td>&lt; 25 Maintaining the quality of supply to its customers is of central</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>importance to EnBW in the further development of the grids of its grid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>subsidiaries. The high degree of supply reliability in the grid area</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>operated by EnBW is based on comprehensive investment in grids and plants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and our abundant system expertise.</td>
</tr>
<tr>
<td><strong>Employees</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee commitment</td>
<td>Employee Commitment Index [ECI]¹</td>
<td>62</td>
<td>65 The commitment of our employees to EnBW is very strong and there is</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>faith in the future viability of the company.</td>
</tr>
<tr>
<td>Occupational safety</td>
<td>LTIF²</td>
<td>2.3</td>
<td>previous year The number of accidents at work and the resulting days of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>absence remains stable or is falling.</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expand renewable energies [RE]</td>
<td>Installed output of RE in GW and the share of the generation capacity accounted for by RE in %</td>
<td>3.7/27.9</td>
<td>5.0 / &gt; 40 The share of the generation capacity accounted for by renewable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>energies has doubled compared with 2012. Onshore and offshore wind power</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and hydropower are at the forefront of this development.</td>
</tr>
<tr>
<td>Climate protection</td>
<td>CO₂ intensity in g/kWh</td>
<td>553</td>
<td>-15 % to -20 % EnBW actively contributes to climate protection by</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>successively reducing the CO₂ intensity of its own generation of electricity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(excluding nuclear power) by 15% to 20% by 2020 compared to 606 g/kWh in</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the reference year 2015.</td>
</tr>
</tbody>
</table>

¹ Variations in the group of consolidated companies (consideration of companies controlled by the Group [without ITOs]).
² Variations in the group of consolidated companies (consideration of all employees at those companies controlled by the Group, except external agency workers and contractors.)

SAIDI: System Average Interruption Duration Index
LTIF: Lost Time Injury Frequency
1. EnBW at a glance ................................................................. page 3 »»
   - Key financials
   - Key non-financials

2. Environment ................................................................. page 6 »»
   - Political environment
   - Regulatory environment
   - Markets

3. Strategy ................................................................. page 34 »»
   - EnBW 2020 Strategy
   - EnBW 2025 Strategy
   - Further strategic aspects:
     Broadband, Contracting, Digitization, Research and Development,
     Innovation, Corporate Sustainability,
     Decarbonisation, Corporate Governance,
     Compliance, Data Protection

4. Business Segments ........................................................... page 66 »»
   - Sales
   - Grids
   - Renewable Energies
   - Generation and Trading

5. EnBW’s Main Shareholdings ........................................ page 111 »»
   - Energiedienst Holding AG
   - Pražská energetika, a. s.
   - Stadtwerke Düsseldorf Group
   - VNG AG
   - Borusan EnBW Enerji yatırımları ve Üretim A.S

6. Key Financials and Non-financials ............................... page 130 »»
   - Five-year summary
   - Fiscal year 2018
   - Half year 2019
   - Finance strategic and other goal dimensions

7. Capital Markets .............................................................. page 143 »»
   - Financial Asset Management
   - Bonds
   - Maturity profile
   - Credit Ratings
   - Shareholder structure
   - Share
   - Key financial indicators

8. Service ................................................................. page 155 »»
   - Financial calendar
   - Contact details
   - Important links
7.1 Financial objectives and financing strategy

EnBW’s financial objectives

- Optimisation of financing
- Guaranteeing sufficient level of liquidity
- Limiting interest rate risks
- Maintaining a strong credit standing

EnBW’s financing strategy

- Multi-pillar strategy offering maximum flexibility in financing
- Diversified market approach
- Well-balanced spread maturity profile with preference for long-term financing for the purpose of risk mitigation
- Hybrid capital to support senior debt holders
- Investments limited to RCF and thus managing net financial debt
- Sophisticated Asset Liability Management to cover future pension and nuclear provisions and limit burden on OCF

RCF: Retained cash flow  
OCF: Operating cash flow
7.2.1 Financial Asset Management: Covering the Group’s pension and nuclear provisions

To meet EnBW’s pension and nuclear obligations:
› Active management of long-term financial assets
› Diversification within the permitted nine asset classes
› Effects on the balance sheet as well as income statement are taken into account

To reach investment targets:
› Risk-optimised investments with a performance in line with market trends
› Ensuring the functionality of EnBW’s Asset Liability Management Model at the same time

Strategic asset allocation

- Liquid assets (e.g. equities, government bonds)
- Illiquid assets (e.g. property)

70%
30%
7.2.2 Asset Management: Asset Liability Management Model
EnBW nuclear and pension provisions still covered

EnBW’s cash flow-based model
in € m

- Provisions
- Financial assets

100% Coverage projected 2031

Max. €300 m\(^1\)
p.a. impact on OCF

No impact on OCF

OCF contribution
Asset contribution

\(^1\) Adjusted for inflation

OCF: Operating cash flow
7.3 EnBW has a flexible access to various financing sources

- Debt Issuance Programme:
  - Including €0.5 bn green financing
  - Thereof €2.7 bn utilised\(^1,2\)

- Hybrid bonds\(^2,3\):
  - Including €1.0 bn green financing
  - Thereof €0.6 bn utilised\(^1\)

- Syndicated credit line:
  - Undrawn\(^1\)
  - Maturity date: 2021

- Bilateral free credit lines\(^1,2\):

\(^1\) As of 30 June 2019
\(^2\) Rounded figures
\(^3\) As of 5 August 2019

Project financing and low-interest loans from the EIB
7.4.1 Fixed income: EnBW’s senior bonds

Issuer: EnBW International Finance B.V.

<table>
<thead>
<tr>
<th>Bond Type</th>
<th>CCY</th>
<th>Denomination</th>
<th>Volume (mn)</th>
<th>Term (years)</th>
<th>Issue date</th>
<th>Maturity</th>
<th>Coupon (%)</th>
<th>Interest date</th>
<th>Security No. (WKN)</th>
<th>ISIN No.</th>
<th>Stock Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior</td>
<td>CHF</td>
<td>5,000</td>
<td>100</td>
<td>10</td>
<td>12.7.2013</td>
<td>12.7.2023</td>
<td>2.250</td>
<td>1.7.</td>
<td>A1HM5N</td>
<td>CH0217677654</td>
<td>S</td>
</tr>
<tr>
<td>Senior</td>
<td>€</td>
<td>1,000</td>
<td>500</td>
<td>12</td>
<td>4.6.2014</td>
<td>4.6.2026</td>
<td>2.500</td>
<td>4.6.</td>
<td>A1ZJ9E</td>
<td>XS1074208270</td>
<td>L</td>
</tr>
<tr>
<td>Green</td>
<td>€</td>
<td>1,000</td>
<td>500</td>
<td>15</td>
<td>31.10.2018</td>
<td>31.10.2033</td>
<td>1.875</td>
<td>31.10.</td>
<td>A2RTNC</td>
<td>XS1901055472</td>
<td>L</td>
</tr>
<tr>
<td>Senior</td>
<td>€</td>
<td>100,000</td>
<td>100</td>
<td>30</td>
<td>13.6.2014</td>
<td>13.6.2034</td>
<td>2.875</td>
<td>13.6.</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>€</td>
<td>1,000</td>
<td>600</td>
<td>30</td>
<td>7.7.2009</td>
<td>7.7.2039</td>
<td>6.125</td>
<td>7.7.</td>
<td>A1AJTV</td>
<td>XS0438844093</td>
<td>L</td>
</tr>
<tr>
<td>Senior</td>
<td>€</td>
<td>100,000</td>
<td>100</td>
<td>25</td>
<td>16.6.2014</td>
<td>16.6.2039</td>
<td>3.080</td>
<td>16.6.</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>€</td>
<td>100,000</td>
<td>75</td>
<td>22</td>
<td>15.1.2019</td>
<td>21.1.2041</td>
<td>2.080</td>
<td>21.1.</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>€</td>
<td>100,000</td>
<td>50</td>
<td>30</td>
<td>1.8.2014</td>
<td>1.8.2044</td>
<td>2.900</td>
<td>1.8.</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

as of 30 June 2019

L: Luxembourg, S: Switzerland, CCY: Currency
### 7.4.2 Fixed income: EnBW’s hybrid bonds

**Issuer: EnBW Energie Baden-Württemberg AG**

<table>
<thead>
<tr>
<th>Bond Type</th>
<th>CCY</th>
<th>Denomination</th>
<th>Volume (mn)</th>
<th>Term (years)</th>
<th>Issue date</th>
<th>Maturity</th>
<th>Coupon (%)</th>
<th>Interest date</th>
<th>Security No. (WKN)</th>
<th>ISIN No.</th>
<th>Stock Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid</td>
<td>€</td>
<td>1,000</td>
<td>1,000²</td>
<td>62</td>
<td>18.3.2014</td>
<td>2.4.2076</td>
<td>3.625</td>
<td>2.4.</td>
<td>A11P78</td>
<td>XS1044811591</td>
<td>F, L</td>
</tr>
<tr>
<td>Hybrid</td>
<td>USD¹</td>
<td>2,000</td>
<td>300²</td>
<td>60.5</td>
<td>5.10.2016</td>
<td>5.4.2077</td>
<td>5.125</td>
<td>5.4.</td>
<td>A2BN7K</td>
<td>XS1498442521</td>
<td>L</td>
</tr>
<tr>
<td>Hybrid</td>
<td>€</td>
<td>1,000</td>
<td>725²</td>
<td>60.5</td>
<td>5.10.2016</td>
<td>5.4.2077</td>
<td>3.375</td>
<td>5.4.</td>
<td>A2BPFD</td>
<td>XS1405770907</td>
<td>L</td>
</tr>
<tr>
<td>Green Hybrid</td>
<td>€</td>
<td>100,000</td>
<td>500</td>
<td>60</td>
<td>5.8.2019</td>
<td>5.8.2079</td>
<td>1.625</td>
<td>5.8.</td>
<td>A2YPEQ</td>
<td>XS2035564629</td>
<td>L</td>
</tr>
<tr>
<td>Green Hybrid</td>
<td>€</td>
<td>100,000</td>
<td>500</td>
<td>60.25</td>
<td>5.8.2019</td>
<td>5.11.2079</td>
<td>1.125</td>
<td>5.11.</td>
<td>A2YPEP</td>
<td>XS2035564975</td>
<td>L</td>
</tr>
</tbody>
</table>

---

1. Regulation S: These Notes are not offered or sold within the United States or to, or for the account or benefit of, U.S. persons
2. Hybrid bond coupon initially

as of 30 June 2019

L: Luxembourg, F: Frankfurt, CCY: Currency
7.4.3 Fixed Income: Maturities of EnBW’s bonds

in € m

1,000\(^1\) 993\(^2\)

- First call dates of hybrid bonds
- First call dates of green hybrid bonds
- Senior bonds
- Green bond
- Hybrid bonds
- Green hybrid bonds

- 2021
- 2022
- 2023
- 2024
- 2025
- 2026
- 2027
- 2028
- 2029
- 2030
- 2031
- 2032
- 2033
- 2034
- 2035
- 2036
- 2037
- 2038
- 2039
- 2040
- 2041
- 2042
- 2043
- 2044
- 2045
- 2046
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- 2049
- 2050
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- 2052
- 2053
- 2054
- 2055
- 2056
- 2057
- 2058
- 2059
- 2060
- 2061
- 2062
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- 2064
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- 2069
- 2070
- 2071
- 2072
- 2073
- 2074
- 2075
- 2076
- 2077
- 2078
- 2079

1. First call date: hybrid maturing in 2076
2. First call date: hybrid maturing in 2077; includes USD 300 million (swap in €), coupon before swap 5.125%
3. CHF 100 million, converted as of the reporting date of 5.8.2019
4. First call date: hybrid maturing in 2079
5. First call date: hybrid maturing in 2079
6. JPY 20 billion (swap in €), coupon before swap 5.460%
7. Includes USD 300 million, converted as of 5.10.2016
7.4.5 Fixed income: Credit Ratings

Rating: Sound financial policy has allowed EnBW to maintain A category ratings

- Leadership position as vertically integrated utility within Baden-Wuerttemberg
- Around 50% of EBITDA from low-risk regulated distribution and transmission activities and growing share of renewables under contracts, as EnBW continues to invest in line with its strategy
- Historically balanced financial policy and demonstrated commitment to maintaining a robust credit quality
- Evolving operating environment in Germany for conventional generation and challenging environment in retail markets
- Certain execution risks relating to large investment programme
- Anticipated erosion of financial flexibility following acquisitions of VALECO a and Plusnet in 2019
- Strong shareholder support

- Increasing share of operating income from low-risk regulated activities and long-term contracted renewables
- Well-diversified sources of cash flow
- Geographical diversification in the renewables segment in Taiwan, the U.S., and France
- Difficult operating environment in Germany for conventional power generation
- Still significant exposure to volatile and commodity-driven wholesale power prices
- Debt increase following the integration of new acquisitions, in line with the company’s strategy
- Prudent financial policy
- Moderate likelihood of government support

- Continued evolution towards a more regulated and contracted business profile
- High earnings visibility in grids and renewables partly offset by residual nuclear decommissioning risk; payment of €4.8 bn for transferring responsibility for nuclear waste storage has substantially reduced these risk
- Average forecast credit metrics are generally stronger than peers, with some exceptions with respect to funds from operations (FFO) fixed charge cover
- If the share of regulated EBITDA exceeds 50% on a sustained basis, Fitch may apply a one-notch uplift to the senior unsecured rating

Moody’s Investors Service: A3 / negative 14 June 2019
Standard & Poor’s Ratings Services: A- / stable 26 July 2019
Fitch Ratings: A- / stable 28 September 2018
### Shareholder structure

<table>
<thead>
<tr>
<th>Shareholder</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEW Energie-Beteiligungs GmbH</td>
<td>46.75%</td>
</tr>
<tr>
<td>NECKARPRI-Beteiligungsgesellschaft mbH</td>
<td>46.75%</td>
</tr>
<tr>
<td>Badische Energieaktionärs-Vereinigung</td>
<td>2.45%</td>
</tr>
<tr>
<td>Gemeindeelektrizitätsverband Schwarzwald-Donau</td>
<td>0.97%</td>
</tr>
<tr>
<td>Neckar-Elektrizitätsverband</td>
<td>0.63%</td>
</tr>
<tr>
<td>EnBW Energie Baden-Württemberg AG</td>
<td>2.08%</td>
</tr>
<tr>
<td>Other shareholders</td>
<td>0.39%</td>
</tr>
</tbody>
</table>

1 May not add up to 100% due to rounding; Figures as of 31 December 2018

2 100% subsidiary of NECKARPRI GmbH, which is a 100% subsidiary of the State of Baden-Württemberg

### Stock exchange information

| ISIN/security identification no.                              | DE0005220008/ 522000 |
| Stock exchange abbreviation                                  | Bloomberg EBK GY/reutersEBK/EBKG.DE |
| Transparency level                                            | General Standard |
| Indices                                                       | General All Share, DAX sector All Utilities, CDAX |
| Number of shares                                              | 276,604,704 |
| Class of share                                                | Ordinary no-par value bearer shares |
| Stock markets                                                 | Regulated market: Frankfurt and Stuttgart, Over-the-counter trading: Berlin and Munich |
### 7.6.2 Equity capital market: EnBW share in figures

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual high</strong></td>
<td>€ 34.00</td>
<td>€ 29.63</td>
<td>€ 24.25</td>
<td>€ 27.00</td>
<td>€ 28.39</td>
</tr>
<tr>
<td><strong>Annual low</strong></td>
<td>€ 25.40</td>
<td>€ 20.00</td>
<td>€ 18.29</td>
<td>€ 20.21</td>
<td>€ 24.50</td>
</tr>
<tr>
<td><strong>Closing price</strong></td>
<td>€ 29.20</td>
<td>€ 28.78</td>
<td>€ 19.69</td>
<td>€ 20.62</td>
<td>€ 25.60</td>
</tr>
<tr>
<td><strong>Number of shares outstanding</strong>&lt;sup&gt;2&lt;/sup&gt; as of 31 December</td>
<td>Thousand shares</td>
<td>€ 270,855</td>
<td>€ 270,855</td>
<td>€ 270,855</td>
<td>€ 270,855</td>
</tr>
<tr>
<td><strong>Market capitalisation as of 31 December</strong></td>
<td>€ bn</td>
<td>8.1</td>
<td>7.8</td>
<td>5.3</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Stock exchange trade</strong>&lt;sup&gt;1&lt;/sup&gt; (total)</td>
<td>Number of shares</td>
<td>86,190</td>
<td>157,021</td>
<td>80,173</td>
<td>125,440</td>
</tr>
<tr>
<td><strong>Stock exchange trade</strong>&lt;sup&gt;1&lt;/sup&gt; (daily average)</td>
<td>Number of shares</td>
<td>435</td>
<td>604</td>
<td>391</td>
<td>568</td>
</tr>
<tr>
<td><strong>Distribution</strong>&lt;sup&gt;3&lt;/sup&gt;</td>
<td>€ m</td>
<td>176</td>
<td>135.4</td>
<td>0.00</td>
<td>149.0</td>
</tr>
<tr>
<td><strong>Dividend per share</strong></td>
<td>€</td>
<td>0.65</td>
<td>0.50</td>
<td>0.00</td>
<td>0.55</td>
</tr>
</tbody>
</table>

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<sup>1</sup> Share price based on closing price trading the EnBW share in XETRA

<sup>2</sup> Total number of shares 276.605 million shares

<sup>3</sup> Distribution in terms of eligible shares as of year-end.
7.7 Key financial indicators

- **Securing Profitability**
  - **Portfolio Transformation**
    - Grids and Renewables with ~70% adj. EBITDA contribution by 2020
  - **Adj. EBITDA Target 2020 €2.3-2.5 bn**
  - **Adj. EBITDA Target 2025 €3.0-3.3 bn**

- **High Level of Financial Discipline**
  - **Internal Financing Capability**
    - Retained Cash Flow minus Net Investments >0
  - **Coverage of pension and nuclear provisions**
    - Asset Liability Management Model
    - Cap on operating cash flow of €300 m p.a.

- **Increasing Group Value**
  - **ROCE > WACC**
    - 8.5-11.0
  - **Access to Capital Markets**
    - Solid investment grade ratings
  - **Sustainable Dividend Level**
    - Payout ratio of 40%-60% (medium-term target)
1. EnBW at a glance................................................................. page 3 >>
   - Key financials
   - Key non-financials

2. Environment................................................................................ page 6 >>
   - Political environment
   - Regulatory environment
   - Markets

3. Strategy ......................................................................................... page 34 >>
   - EnBW 2020 Strategy
   - EnBW 2025 Strategy
   - Further strategic aspects:
     Broadband, Contracting, Digitization, Research and Development,
     Innovation, Corporate Sustainability,
     Decarbonisation, Corporate Governance,
     Compliance, Data Protection

4. Business Segments .............................................................. page 66 >>
   - Sales
   - Grids
   - Renewable Energies
   - Generation and Trading

5. EnBW’s Main Shareholdings................................. page 111 >>
   - Energiedienst Holding AG
   - Pražská energetika, a. s.
   - Stadtwerke Düsseldorf Group
   - VNG AG
   - Borusan EnBW Enerji yatırımları ve Üretim A.S

6. Key Financials and Non-financials......................... page 130 >>
   - Five-year summary
   - Fiscal year 2018
   - Half year 2019
   - Finance strategic and other goal dimensions

7. Capital Markets ................................................................. page 143 >>
   - Financial Asset Management
   - Bonds
   - Maturity profile
   - Credit Ratings
   - Shareholder structure
   - Share
   - Key financial indicators

8. Service ............................................................................................ page 155 >>
   - Financial calendar
   - Contact details
   - Important links
### 8.1 Financial calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 November 2019</td>
<td>Quarterly Statement January to September 2019</td>
</tr>
<tr>
<td>26 March 2020</td>
<td>Integrated Annual Report January to December 2019</td>
</tr>
<tr>
<td>12 May 2020</td>
<td>Annual General Meeting</td>
</tr>
<tr>
<td>15 May 2020</td>
<td>Quarterly Statement January to March 2020</td>
</tr>
<tr>
<td>13 November 2020</td>
<td>Quarterly Statement January to September 2020</td>
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8.2 Contact details

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Service-focused Investor Relations

› Investor Relations strives to meet the information requirements of investors, analysts, rating agencies and banks in a timely manner.

› Active communication and ongoing dialogue with the target groups enable us to underscore EnBW’s potential for generating value added.

› As only a small proportion of our shares are in free float, our investor relations activities concentrate on fixed-income investors and credit analysts on the buy and sell side.

› EnBW is aware of the importance of investor relations. The interest of our investors is always of relevance when taking strategic decisions.
## 8.3 Important links

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<th>URL</th>
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</thead>
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</tr>
<tr>
<td>EnBW Investor Relations</td>
<td><a href="https://www.enbw.com/investors">www.enbw.com/investors</a></td>
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<tr>
<td>Financial Calendar</td>
<td><a href="https://www.enbw.com/company/investors/events/finance-calender/">https://www.enbw.com/company/investors/events/finance-calender/</a></td>
</tr>
<tr>
<td>Financing facilities</td>
<td><a href="https://www.enbw.com/company/investors/strategy/">https://www.enbw.com/company/investors/strategy/</a></td>
</tr>
<tr>
<td>EnBW current ratings</td>
<td><a href="https://www.enbw.com/company/investors/bonds/ratings.html">https://www.enbw.com/company/investors/bonds/ratings.html</a></td>
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</tbody>
</table>
8.4 Important note

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