Important note

Unless indicated otherwise, all data contained hereinafter refers to the EnBW Group and is calculated according to IFRS.

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This presentation contains future-oriented statements that are based on current assumptions, plans, estimates and forecasts of the management of EnBW. Such future-oriented statements are therefore only valid at the time at which they are published for the first time. Future-oriented statements are indicated by the context, but may also be identified by the use of the words “may”, “will”, “should”, “plans”, “intends”, “expects”, “believes”, “assumes”, “forecasts”, “potentially” or “continued” and similar expressions.

By nature, future-oriented statements are subject to risks and uncertainties that cannot be controlled or accurately predicted by EnBW. Actual events, future results, the financial position, development or performance of EnBW and the companies of the EnBW Group may therefore diverge considerably from the future-oriented statements made in this presentation. Therefore it cannot be guaranteed nor can any liability be assumed otherwise that these future-oriented statements will prove complete, correct or precise or that expected and forecast results will actually occur in the future.

No obligation to update the information

EnBW assumes no obligation of any kind to update the information contained in this presentation or to adjust or update future-oriented statements to future events or developments.
Agenda 1 – EnBW at a glance

1. **EnBW at a glance** ...........................................................................................................................................

2. Regulatory Environment and Markets .............................................................................................................

3. Customers and Competition ............................................................................................................................

4. Strategy ............................................................................................................................................................

5. Segments ..........................................................................................................................................................

6. The VNG Group ................................................................................................................................................

7. Key Financials ...................................................................................................................................................

8. Capital Markets ................................................................................................................................................

9. Service .............................................................................................................................................................
1.1 EnBW at a glance

One of the largest German utilities
- 5.5 million customers
- 13 GW generation portfolio
- Stable shareholder structure
- 20,000 employees
- Strong roots in Baden-Württemberg

Balanced risk-return profile
- Focus on renewables and grids
- ~65% EBITDA contribution from low-risk business
- Solid investment grade ratings
- Active in selected foreign markets

Key financial figures
- Revenue: €19 bn
- Adj. EBITDA: €1.9 bn
- Group net profit/loss: €-1.8 bn

Fully integrated utility in Germany

Electricity
- Generation
- Trading/procurement
- Transmission/distribution
- Sales

Gas
- Import contracts/infrastructure
- Storage
- Trading/portfolio management
- Transport/distribution
- Sales

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

Figures 2016
## 1.2 Key figures

### Key financials

<table>
<thead>
<tr>
<th>KPI</th>
<th>2016</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted EBITDA</td>
<td>€ bn</td>
<td>1.9</td>
</tr>
<tr>
<td>Internal financing capability</td>
<td>%</td>
<td>72.1</td>
</tr>
<tr>
<td>ROCE</td>
<td>%</td>
<td>7.8</td>
</tr>
</tbody>
</table>

### Key non-financials

<table>
<thead>
<tr>
<th>KPI</th>
<th>2016</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE share of generation capacity</td>
<td>%</td>
<td>23.1</td>
</tr>
<tr>
<td>SAIDI (electricity)</td>
<td>min/year</td>
<td>16</td>
</tr>
</tbody>
</table>
1. EnBW at a glance

2. Regulatory Environment and Markets
   - Political & regulatory environment
   - German electricity market
   - German gas market

3. Customers and Competition

4. Strategy

5. Segments

6. The VNG Group

7. Key Financials

8. Capital Markets

9. Service
2.1.1 Political & regulatory environment: Overview

**EU 2020-Goals**
-20 % GHG emissions
-20 % RE of final energy consumption
-20 % Energy savings

**EU 2030-Goals**
-40 % GHG emissions
-27 % RE of final energy consumption
-27 % Energy savings (probably increased to 30 %)

**German Climate & Energy Policy Goals**
-40 % GHG emissions until 2020
-20 % primary energy consumption until 2020

**Nuclear Phase-out**
- Goal: Shut-down of last NPP until end of 2022
- Responsibility for financing of phase-out split between operators and government
- State owned fund established in mid 2017
- Operators partly transferred nuclear provisions and corresponding liabilities to state

**Renewables**
- Goal: 2025: 40–45 % RE
- Goal: 2035: 55–60 % RE in electricity production
- Reform of remuneration system towards tenders
- First auction for wind offshore in April 2017, EnBW bit successful
- Debate on tariff system and costs of power ongoing. Changes to charges expected

**Electricity market reform**
- Goal: Maintain market functioning with high shares of RE
- Goal: Keep on high level of security of supply: System of various capacity reserves (grid-/ capacity-/ lignitereserve) implemented

**Grid expansion**
- Goal: Remove bottleneck of energy transition (i.e. slowing grid expansion)
- Under ground cabling is given priority over overhead powerlines
- System of grid charges to be amended in next legislative period
2.1.2 Political & regulatory environment: Fundamental changes

**Generation and Trading**
- Sustained trend towards renewable energies:
  - > 120 GW by 2020
  - > 160 GW by 2030
- Time of profitable operation of conventional power plants in steady decline
- Gas power plants with low operating time because of low CSS until 2020
- Political discussion of coal exit
- Increasing volatility of prices and volumes

**Power and Gas Grids**
- Volatile electricity generation detrimental to grid stability
- Investments of around € 70 bn in expanding the grid through to 2030
- Conventional power stations increasingly in back-up role
- Accelerating expansion of smart grids

**Customers**
- Downturn demand for electricity and gas due to energy efficiency and rising demand by electric vehicles and residential heating sector in the future
- Renewables for the most part in the hands of non-PSCs
- Consumers playing an increasingly active role with PV and Battery Systems
- Number of energy co-operatives has increased sixfold since 2008 from ~150 to 970

**Technological developments**: more diversity, modularity and granularity in the energy system

**New market participants**: more competition and fragmentation of the value chain

**Regulatory framework conditions**: undergoing constant change, rising complexity

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

Gross electricity generation according to energy source 2016 in Germany

- **Natural gas**: 12%
- **Renewable energies**: 29%
- **Nuclear power**: 13%
- **Coal**: 17%
- **Lignite**: 23%
- **Biomass**: 24%
- **Wind**: 41%
- **Photovoltaics**: 21%
- **Hydropower**: 10%
- **Other**: 6%

*Source: AGEB as of February 2017*

*Verantwortlich: Gantz / von Wietersheim*

*Status: aktuell*

*EnBW Investor Factbook September 2017*
2.2.2 German electricity market: Electricity consumption

Electricity consumption in Germany
in TWh

Data as of December 2016; Source: AGEB

Net electricity consumption stable in the past few years; reduction due to efficiency is compensated by changes in consumption habits and economic growth
2.2.3 German electricity market: Wholesale forward price

Forward price for electricity baseload in Germany

in €/MWh

Bereich: F-KEA
Verantwortlich: Jost Böttner
Status: neu

EnBW Investor Factbook September 2017
2.2.4 German electricity market: CDS at low levels and negative prices for CSS

**Clean-Dark-Spread Base**

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

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
</tbody>
</table>

**Clean-Spark-Spread Peak**

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

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
</tbody>
</table>

Clean-spark-spread represents the net revenue a generator makes from selling power, having bought gas and the required number of carbon allowances. Clean-dark-spread refers to an analogous indicator for coal-fired generation of electricity.
2.3 EnBW’s market presence

Business radius and significant locations outside Baden-Wuerttemberg

- **Baltic Sea**: 50.32% EnBW Baltic 1 GmbH & Co. KG
- **Baltic Sea**: 50.09% EnBW Baltic 2 S.C.S.
- **Leipzig**: 74.21% VNG-Verbundnetz Gas Aktiengesellschaft
- **Düsseldorf**: 54.95% Stadtwerke Düsseldorf AG
- **Cologne**: 100.00% Yello Strom GmbH

1 The registered office of the company is Stuttgart.
2 The registered office of the company is in Luxembourg.
3 The registered office of the company is Leipzig.
4 Directly and indirectly held shares.
2.4.1 German gas market: EnBW’s market presence

EnBW’s activities in Germany¹

- **GasVersorgung Sueddeutschland GmbH** supplies natural gas to utilities, regional gas suppliers, industrial customers and power plants.
- **Stadtwerke Duesseldorf AG** in which EnBW has a 54.95% stake, has a large share of the gas market (B2C and B2B) in that region.
- **Yello Strom GmbH** offers nationwide gas distribution to retail customers.
- **Terranets bw GmbH** (gas transportation) & **Netze BW GmbH** (gas distribution) guarantee security of gas supply in Baden-Wuerttemberg by their gas networks.
- **Verbundnetz Gas AG** offers EnBW with the majority stake of 74.2% a one-step chance to establish a viable footprint in the German gas market.

EnBW runs gas operations in Baden-Wuerttemberg and Eastern Germany, but serves also customers throughout Germany.

¹ Further shareholdings: Erdgas Suedwest GmbH, EnBW Ostwuerttemberg DonauRies AG and ZEAG Energie AG.
2.4.2 German gas market: Forward market price development

EGIX\textsuperscript{1}: 1 January 2008 – 30 May 2017

\textsuperscript{1} European Gas Index (EGIX) Germany, index calculations for front month products for the NCG and GASPOOL market areas (only monthly averages were available up to 2014)

Source: EEX
2.4.3 German gas market: Gas distribution system development

Source: BDEW gas statistics for each year up to 2009; amended system used from 2010: Data from the gas grid operators according to GasNEV; without house connection pipes as of May 2017

1 temporary
Agenda 3 – Customers and Competition

1. EnBW at a glance .................................................................
2. Regulatory Environment and Markets ..........................................................
3. Customers and Competition .................................................................
4. Strategy ........................................................................
5. Segments ........................................................................
6. The VNG Group ..................................................................
7. Key Financials ..................................................................
8. Capital Markets ..................................................................
9. Service ........................................................................
3.1 Four categories of competitors: global, national, local and new players

<table>
<thead>
<tr>
<th>Players</th>
<th>Companies</th>
<th>Characteristics</th>
<th>Position of EnBW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>e-on, ENGIE, Enel, RWE, EDF, innogy</td>
<td>Broad international growth strategy, focus on market consolidation</td>
<td>EnBW is positioned as an integrated energy company focusing on Germany and selected foreign markets</td>
</tr>
<tr>
<td>National</td>
<td>EVN, Verbund, ALPIQ</td>
<td>Strong national position and selected foreign activities, focus on market development</td>
<td>Three main growth areas are Renewable Energies, Grids and Customer Solutions</td>
</tr>
<tr>
<td>Local</td>
<td>MVV-Energie, EWE, Stadttwerke Stuttgart</td>
<td>Focus on regional markets &amp; selected growth segments (esp. decentralized and renewable generation)</td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>WPD, T&amp;I, sonnen, NEXT Kraftwerke, Capital Stage</td>
<td>Entry of new participants into the market increases competition and fragments the value chain</td>
<td></td>
</tr>
</tbody>
</table>

Key challenge: optimal positioning given the regulatory/competitive market environment
3.2 The “Energiewende” increases competition

Retail and business customers – trends

› Growing price sensitivity and new competitors lead to fiercer competition
› Commodity business (electricity and gas) is still significant
› Local energy production by customers on the rise
› Increasing energy efficiency (supported by political measures)
› Local energy solutions offered by utilities, together with new competitors
› EnBW as a partner for the industry, housing industry and municipalities
› 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)

Strong competition:
Cumulative churn rate of retail customers

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>11%</td>
<td>1%</td>
</tr>
<tr>
<td>2008</td>
<td>19%</td>
<td>7%</td>
</tr>
<tr>
<td>2009</td>
<td>21%</td>
<td>11%</td>
</tr>
<tr>
<td>2010</td>
<td>22%</td>
<td>12%</td>
</tr>
<tr>
<td>2011</td>
<td>26%</td>
<td>14%</td>
</tr>
<tr>
<td>2012</td>
<td>30%</td>
<td>18%</td>
</tr>
<tr>
<td>2013</td>
<td>34%</td>
<td>26%</td>
</tr>
<tr>
<td>2014</td>
<td>36%</td>
<td>28%</td>
</tr>
<tr>
<td>2015</td>
<td>40%</td>
<td>31%</td>
</tr>
<tr>
<td>2016</td>
<td>42%</td>
<td>32%</td>
</tr>
</tbody>
</table>

1 Source: BDEW-Kundenfokus, BDEW-Energietrends
3.3 Development path for energy solutions

Data and Analysis
- Metering services
- Energy audits and management systems
- Status reports of energy system
- Procurement support for energy and efficiency
- Market integration by virtual power plant

Assets, Maintenance and Operation

Commercial & Industrial customers, Municipalities & Housing Industry:
- Supply and performance contracting
- Energy efficient refurbishing of buildings
- General contracting
- Management optimization of customers’ energy generation assets & infrastructure

Residential Customers:
- Integrated modular energy system for residential [PV, battery, heating, e-mobility, commodity]

E-Mobility
- New business field in a growing market
- Integrated solutions for different customer groups (public, commercial, industrial, residential)
- Assets, maintenance and operation of infrastructure
- Entry and billing systems
- Networking with other themes related to the energy system of the future such as PV/storage
3.4 Market potential for energy-related services

**Operations**

- Market for energy-related services very fragmented
- Market volume in Germany € 5.5 bn
- Growing challenges for municipal utilities through rising pressure on costs, fulfilling regulatory requirements and billing technology for the new energy concept
- Due to high proportion of fixed costs processing is strongly influenced by economy of scale
- Cost advantages for large providers
- Technology shift and economies of scale offer significant growth opportunities in this market, especially within the area of smart metering solutions

**Services and Competences**

- EnBW services cover the complete meter-to-cash value chain. Services can be chosen to suit the individual demand of utility companies
- Services either as Software-as-a-Service only or full scale Business Process Outsourcing
- EnBW with proven knowledge in liberalized utility markets and a clear positioning as a leading provider of smart metering services
- Second successful customer go-live of one of the largest network operators in Germany

Data as of 1 June 2017
# Agenda 4 – Strategy

1. EnBW at a glance

2. Regulatory Environment and Markets

3. Customers and Competition

4. **Strategy**
   - EnBW 2020 Strategy
   - EnBW 2025 Strategy
   - Further strategic aspects:
     - Innovation, Research and Development, Corporate Sustainability, Corporate Governance

5. Segments

6. The VNG Group

7. Key Financials

8. Capital Markets

9. Service
4.1 Strategy process: Corporate strategy follows a structured process at EnBW

Key elements of the strategy

- Vision
- Group strategy
- Portfolio strategy
- Business strategies (per business unit)
- Functional strategies (per functional unit)

Discussion points/topics

- Long-term objective of EnBW
- Strategic positioning and differentiation of company to competition
- Composition and strategic development of the business portfolio
- Specification and operationalization of strategic goals per business unit
- Specification and operationalization of strategic goals per functional unit
4.2.1 EnBW 2020 strategy: Corporate strategy

Energiewende. Safe. Hands on.

Where shall we play?

- End customer business in electricity and gas
- Energy-related services/ energy efficiency (for B2C & B2B segments, increasing for municipal utilities and local communities)
- Trading and origination
- Wind onshore, offshore and hydropower
- Conventional generation located mainly in Baden-Wuerttemberg
- Transport and distribution grid infrastructure managed from Baden-Wuerttemberg into neighbouring regions (also as service provider)
- Operational excellence
- Infrastructure in the energy industry
- Regulatory management
- Active opportunities for third parties to invest and participate
- From the region of Baden-Wuerttemberg into Germany, Austria, Switzerland and Turkey

How can we win?

- System competence of energy
- Innovative capability and innovation management
- Strong brand portfolio
- Stringent performance management
- Partnerships and fostering of dialogue
- Operational excellence
- Infrastructure in the energy industry
- Regulatory management
- Active opportunities for third parties to invest and participate

What should our structure be?

- Building up of an innovation campus
- Acquisition of/ JV with energy-related companies
- Simple and functional management with simple structures, flat hierarchies and lean processes
- Maximum efficiency
- Stringent cost orientation for defined quality level (target costing)
- Simplicity and standardisation
- Technological development partnerships
- From the region of Baden-Wuerttemberg into Germany, Austria, Switzerland and Turkey
- Operational excellence
- Infrastructure in the energy industry
- Regulatory management
- Active opportunities for third parties to invest and participate

Status: neu
Verantwortlich: Nina Elter
4.2.2 EnBW 2020 strategy: Strategic objectives

- **Generation and Trading**
  - 2012: €1.2 bn
  - 2020: €0.3 bn (−80 %)

- **Renewable Energies**
  - 2012: €0.2 bn
  - 2020: €0.7 bn (+250 %)

- **Grids**
  - 2012: €0.8 bn
  - 2020: €1.0 bn (+25 %)

- **Sales**
  - 2012: €0.2 bn
  - 2020: €0.4 bn (+100 %)

**Total Adjusted EBITDA**: €2.4 bn (2012) vs. €2.4 bn (2020)
4.2.3 EnBW 2020 strategy: Portfolio strategy

Investments and divestitures as part of the expansion of the portfolio\(^1\)

<table>
<thead>
<tr>
<th></th>
<th>Total investments</th>
<th>Divestitures</th>
<th>Net investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already realised</td>
<td>8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planned (2017–2020)</td>
<td>6.1</td>
<td>3.5</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>14.1</td>
<td>5.1</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Figures as of 31 December 2016 (base year 2012).

4 Segments

- **Grids**
  - Expansion of the transmission and distribution grids through to smart grids

- **Renewable Energies**
  - Expansion of renewable energies with a focus on wind power (on-/offshore) and hydropower

- **Sales**
  - Growth markets in the area of the new “Energiewelt”
  - Slight growth – capital light business models

- **Generation and Trading**
  - Moderate investment in thermal generation
4.2.4 Portfolio transition shows substantial progress, in line with EnBW’s 2020 strategy

Adjusted EBITDA

- **2012**: 2.4 € bn
  - Sales: 48%
  - Grids: 33%
  - Renewable Energies: 10%
  - Generation & Trading: 10%

- **2017**: 1.9 – 2.0 € bn
  - Sales: ~15%
  - Grids: ~15%
  - Renewable Energies: ~15%
  - Generation & Trading: ~52%

- **2020**: 2.4 € bn
  - Sales: 30%
  - Grids: 40%
  - Renewable Energies: 15%
  - Generation & Trading: 15%

- Share of low-risk earnings:
  - 2012: 10%
  - 2017: ~15%
  - 2020: 15%

1. Divergence from 100% possible due to rounding effects
2. Estimate

**Notes:**
- **2012**
  - **2017**
  - **2020**

**NB:**
- **EnBW Investor Factbook September 2017**
- **Bereich:** F
- **Verantwortlich:** Gantz / von Wietersheim
- **Status:** aktuell
4.2.5 Concrete measures underpin delivery of 2020 strategy targets

Adjusted EBITDA

2017

- Efficiency programs
- No nuclear fuel tax from 2017
- Earnings contribution from VNG
- Growth in onshore wind
- Growth in offshore wind: Hohe See/Albatros
- Increasing sales earnings:
  - Exit from B2B Commodity Business
  - Decentralized energy solutions

€2.4 bn

2020

- Sales
- Grids
- Renewable Energies
- Generation & Trading

EnBW Investor Factbook September 2017

Bereich: F
Verantwortlich: Gantz / von Wietersheim
Status: aktuell
<< Agenda
Efficiency targets already to be met by 2019

- Unprofitable power plants incorporated in German power plants network reserve
- 2016: exit from unprofitable B2B commodity business
- 2017–2020: ~€100m p.a. from 6.3% management and workforce pay cut
- ~€150m p.a. contribution from functional units, including holdings such as VNG
4.4 2017-2019 investment program kept flexible with focus on growth in low-risk businesses

Investment/Divestment volume 2012-2020\(^1\)
in € bn

<table>
<thead>
<tr>
<th></th>
<th>Planned</th>
<th>Realized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Investment</td>
<td>14.1</td>
<td>8.6</td>
</tr>
<tr>
<td>Total Divestment</td>
<td>5.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Net Investment</td>
<td>9.0</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Investment volume 2017–2019

- Growth investments: 42% (77%)
- Low-risk earnings: 38% (80%)
- Generation & Trading/Sales: 3%
- Grids: 3%
- Renewable energies, mainly offshore: 17%
- Others: 38%

\(^{1}\) As of 30.06.2017; 2012 as reference year
## 4.5.1 Financial and non-financial KPIs and targets: Finance and strategy goal dimensions

<table>
<thead>
<tr>
<th>Goal</th>
<th>KPI</th>
<th>2016</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finance goal dimension</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Securing profitability</td>
<td>Adjusted EBITDA in € bn</td>
<td>1.9</td>
<td>2.3–2.5</td>
</tr>
<tr>
<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>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High level of financial discipline</td>
<td>Internal financing capability in %</td>
<td>72.1</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>The level of net financial liabilities is controlled by limiting net investment to the level of retained cash flow. The Group can thus finance its own restructuring internally.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raise the value of the Group</td>
<td>ROCE in %</td>
<td>7.8</td>
<td>8.5–11</td>
</tr>
<tr>
<td>Return on capital employed (ROCE) is higher than the cost of capital. EnBW is creating value for its stakeholders.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Strategy goal dimension</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of result from Sales</td>
<td>Share in adjusted EBITDA (total) in € bn / in %</td>
<td>0.2 / 13</td>
<td>0.4 / 15</td>
</tr>
<tr>
<td>The operating result for the Sales segment doubles from € 0.2 bn (reference year: 2012) to € 0.4 bn in 2020 and represents around 15 % of the Group operating result. Innovations make this possible.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of result from Grids</td>
<td>Share in adjusted EBITDA (total) in € bn / in %</td>
<td>1.0 / 52</td>
<td>1.0 / 40</td>
</tr>
<tr>
<td>The operating result for the Grids segment increases by 25 % from € 0.8 bn (reference year: 2012) to € 1.0 bn in 2020 and represents around 40 % of the Group operating result. The share accounted for by the stable and regulated business is expanding.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of result from Renewable Energies</td>
<td>Share in adjusted EBITDA (total) in € bn / in %</td>
<td>0.3 / 15</td>
<td>0.7 / 30</td>
</tr>
<tr>
<td>The operating result for the Renewable Energies segment increases by 250 % from € 0.2 bn (reference year: 2012) to € 0.7 bn in 2020 and represents around 30 % of the Group operating result. EnBW is more sustainable.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of result from Generation and Trading</td>
<td>Share in adjusted EBITDA (total) in € bn / in %</td>
<td>0.3 / 17</td>
<td>0.3 / 15</td>
</tr>
<tr>
<td>The operating result for the Generation and Trading segment falls by 80 % from € 1.2 bn (reference year: 2012) to € 0.3 bn in 2020 due to changed framework conditions and only represents around 15 % of the Group operating result.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Other / Consolidation accounts for €0.1 billion / +3 % of the overall adjusted EBITDA.
### 4.5.2 Financial and non-financial KPIs and targets: Other goal dimensions

<table>
<thead>
<tr>
<th>Goal</th>
<th>KPI</th>
<th>2016</th>
<th>Target 2020</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reputation</td>
<td>Reputation Index</td>
<td>50</td>
<td>55.4</td>
<td>In parallel with the restructuring of the business model, EnBW aims to continuously improve its reputation.</td>
</tr>
<tr>
<td>Customer proximity</td>
<td>Customer Satisfaction Index EnBW / Yello</td>
<td>132 / 150</td>
<td>&gt;136 / &gt;159</td>
<td>EnBW and Yello customers are satisfied customers with a high level of customer loyalty. EnBW and Yello are organisations strongly oriented towards customers and meet the needs and wishes of their customers through tailored solutions and products.</td>
</tr>
<tr>
<td>Supply reliability</td>
<td>SAIDI (electricity) in min / year</td>
<td>16</td>
<td>&lt; 25</td>
<td>EnBW regards the maintenance of supply quality to its customers as its chief priority. The high degree of supply reliability in the grid area operated by EnBW is based on comprehensive investment in grids and plants and our abundant system expertise.</td>
</tr>
<tr>
<td>Employee commitment</td>
<td>Employee Commitment Index (ECI)¹</td>
<td>59</td>
<td>65</td>
<td>The commitment of our employees to EnBW is very strong and there is faith in the future viability of the company.</td>
</tr>
<tr>
<td>Occupational health &amp; safety</td>
<td>LTIF¹</td>
<td>3.9</td>
<td>&lt; previous year</td>
<td>The number of accidents at work and the resulting days of absence remains stable or is falling.</td>
</tr>
<tr>
<td>Expand renewable energies (RE)</td>
<td>Installed capacity of RE in GW and the share of the generation capacity accounted for by RE in %</td>
<td>3.1 / 23.1</td>
<td>5.0 / &gt;40</td>
<td>The share of the generation capacity accounted for by renewable energies has doubled compared with 2012. Onshore and offshore wind power and hydropower are at the forefront of this development.</td>
</tr>
<tr>
<td>Climate protection</td>
<td>CO₂ intensity in g/kWh</td>
<td>577</td>
<td>-15 % to -20 %</td>
<td>EnBW actively contributes to climate protection by successively reducing the CO₂ intensity of its own generation of electricity (excluding nuclear power) by 15 to 20 % by 2020 compared to 606 g/kWh in the reference year 2015.</td>
</tr>
</tbody>
</table>

¹ Variations in the group of consolidated companies; see also the definition of key performance indicators on page 28 of the EnBW Report 2016.
4.6.1 Key elements of the energy business are shifting (again) – change becomes the norm

**Phase 1**
- Mainly driven by energy policies and regulation
  - Expansion of renewable energies
  - Exit from nuclear power
  - Decline in economic importance of conventional power generation
  - Expansion of electricity/gas grids

**Phase 2**
- Increasingly market-driven: cost efficiency gains, technical innovation, changing customer needs, changing competitive landscape
  - Increased competitiveness and market integration of renewable energies
  - Technical innovations driving new business models (e.g. e-mobility)
  - Digitization and network energy solutions (e.g. smart grids)
  - Customer needs: individualization and transaction simplicity
4.6.2 We have extended our strategic thinking towards 2025

**Reasons for extension**

- Medium-term planning reaching end of long-term strategic period (2020)
- Major changes in business environment
- Capitalizing on lessons learned from strategy EnBW 2020

**Methodology and approach**

1. Timely anticipation of market/environment and regulatory changes
2. Best possible fit between market potential and EnBW capabilities
3. Long-term competitiveness and future viability as key benchmark for each business and for EnBW as a whole
4. Development of new growth areas – also for further diversification
5. Ongoing organizational renewal across EnBW (structure, processes, leadership, performance)
4.6.3 Our assessment of future trends pinpoints six key developments

1. Decarbonization continues to be a main driver of political and regulatory action
2. Renewable energies and grids will remain pillars of growth in the markets we serve
3. New competitors and technological developments will impact the value chain
4. Energy and infrastructure issues will converge
5. Demand for intelligent, safe and reliable infrastructure will grow significantly
6. Customer expectations will demand greater individualization and be harder to predict
4.6.4 Strategic conclusions we have drawn for our business towards 2025

1. Renewable energies, grids and customer-facing businesses will remain EnBW’s key future growth areas
2. We are developing new growth areas in the field of (critical) infrastructure, including beyond energy
3. We attach great importance to a balanced and diversified business portfolio
4. A key goal of EnBW will remain continuous improvement and performance drive
5. We consider the ability to change and adapt quickly to be a key basic competitive success factor
6. We are preparing EnBW for growth in absolute numbers post-2020
4.6.5 The German infrastructure market will grow strongly, with opportunities in our existing business portfolio and in areas beyond energy.

German infrastructure market
in € bn

2015 2025
100 150
+50 %

1. Enhanced emphasis on infrastructure aspects in our existing businesses
2. New growth areas beyond energy infrastructure, closely linked to EnBW’s existing core competencies
## 4.6.6 Infrastructure pilots beyond energy already underway

### Pilot segment

<table>
<thead>
<tr>
<th>Broadband/telco</th>
<th>Expand NetCom’s telco and broadband activities into major earnings pillar for EnBW Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mobility/charging infrastructure</td>
<td>Launch and build substantial e-mobility activities focused on grid and charging infrastructure, plus (digital) services</td>
</tr>
<tr>
<td>Urban precinct development</td>
<td>Pool existing activities and products and build integrated, extended portfolio going beyond energy</td>
</tr>
<tr>
<td>Security infrastructure</td>
<td>Devise business models for enhanced public security based on digital solutions and components (e.g. video surveillance)</td>
</tr>
<tr>
<td>Waterway locks</td>
<td>Support lock enlargement on rivers [Neckar, others?] for larger scale vessels</td>
</tr>
</tbody>
</table>

...
4.6.7 We have defined specific growth targets until 2025, with a clear set of priorities.

**Development of earnings**

In € bn

- **2020**: 2.4
  - **Sustainable power infrastructure**: 0.2–0.3
    - Expansion of onshore and offshore wind to > 3,500 MW by 2025
    - Selective international business activities
    - CO2-reduced generation (e.g. midstream gas, fuel switch)

- **2025**: 3.0–3.3
  - **System-critical infrastructure**: 0.1–0.2
    - Expansion of the distribution and electricity transmission grid
    - Expansion of network-related services
    - New areas of system-critical infrastructure (e.g. public security)
  - **Intelligent infrastructure for the customer**: 0.3–0.4
    - Cost reduction and digitization of B2C sales as well as transformation to customer infrastructure business
    - New infrastructure-related business areas beyond energy (e.g. mobility infrastructure)

**Source:** EnBW Investor Factbook September 2017
4.6.8 Resulting investment priorities 2021–2025:
- 80% targeting growth,
- 90% targeting regulated businesses

Allocation of investment spending:

- **€ 10 bn**
  - Growth: 80% (€10bn)
  - Existing business activities: 20% (€2bn)

- **€ 10 bn**
  - Sustainable power infrastructure: 30% (€3bn)
  - Intelligent infrastructure for the customer: 10% (€1bn)
  - System-critical infrastructure: 60% (€6bn)
  - 90% (quasi) regulated business (€9bn)

Focus on future growth:
- 80% of total investment targets strategic growth areas

High proportion of (quasi) regulated business:
- approx. 90% of investment in grids and renewable energies
4.6.9 Strategic long-term plan: growth and significant improvement in our financial situation by 2025

- Significant increase in operating result (adjusted EBITDA) to > € 3 bn (approx. +30 % compared to 2020 target)
- Increased retained cash flow, stronger balance sheet and higher quality earnings
- € 10 bn total (gross) investment over the period 2021–2025, approx. 80 % targeting growth
- Adequate and stable dividend yield
- Substantial increase in the value of EnBW by 2025
4.6.10 Clear-cut goals for EnBW in 2025

- EnBW transformed into a sustainable and innovative infrastructure company
- Balanced portfolio with three key areas and high proportion of stable and regulated businesses: power, infrastructure, customers
- New growth areas beyond energy closely linked to EnBW’s core competencies
- Significant improvement in our financial situation
- Evolution of EnBW into a modern, high-performance organization
4.7.1 The innovation strategy of EnBW

**Internal development**

- **Incubation**
  - Business model development in early stages
- **Company builder**
  - Professional startup support with focus on scaling

**External participations**

- **Venturing**
  - Minority investment into early stage startups
- **Mergers & Acquisitions**
  - Majority investment into later stage companies

**Innovation portfolio**

1. Connected Home
2. Smart City
3. Connected Mobility
4. Virtual Power Plant

**Technology transfer Speedboats**

Bildquelle: fotolia, NicoElNino

Bereich: C-I
Verantwortlich: Manuela Maurus in Abstimmung mit Herrn Leick
Status: neu
4.7.2 Incubation: Creating new business models at the Innovation Campus

Managing

- Adopt the findings from market research and create suitable business models in a startup environment
- Develop new cross-value chain business models based on state-of-the-art methodology
- Significantly improve EnBW’s innovation capability and culture

Innovation capacity to bring ideas swiftly to the market

- Small entrepreneurial, dynamic teams developing and testing new business models from concept to market entry
- Inspiring environment deliberately set apart from group structure
4.7.3 Innovation: Professional support for EnBW startups within a Company Builder

**Company Builder**
- Provides an environment in which key resources, competences and set of rules establish a support system for internal teams in growth and scaling stages

**Capabilities**
- Additional capabilities and skills that are needed in the scaling and commercialization stage

**Automation**
- Automation of processes and optimization of cost to serve

**Framework**
- Appropriate organizational framework for scaling of innovation projects

**Sales**
- Expansion of current and development of new distribution channels
4.7.4 Late stage acquisition: Realisation of substantial growth and market shares

**Late stage acquisition**

- Realisation of substantial growth and market shares through majority acquisitions of mature companies

**Design and structure**

- Acquisition of companies with proven track record, established business model and profitability in sight
- Competences and skills complement EnBW portfolio approach

**Objectives**

- Gain relevant growth
- Strengthen capabilities
- Possess potentials for further scaling
4.7.5 Innovation: Venture Capital investments into innovative startups

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

› Win-Win for both sides, EnBW New Ventures acts as professional VC investor
› Start-up gains access to energy market expertise, customers and suppliers of EnBW
› EnBW participates in fast innovation cycles and growth options
› Cooperative approach to foster business with products and services based on innovative business models

EnBW New Ventures follows an active portfolio approach

› Evergreen with total investment amount of € 100 m
› Direct minority participations
› Open for syndication in a traditional VC approach

Current Portfolio

› DZ-4 GmbH: Generate and use your own solar power on your rooftop without upfront investment. The energy supply of the future is decentral.
› Lumenaza GmbH: The software platform for the energy transition. Peer-to-Peer energy trading “utility in a box”.
› replex GmbH: Analysis and virtualization of data center resources providing a transparent view on complex IT infrastructure.
› THEVA GmbH: Innovation and high-tech in high-temperature superconductors.
4.8 Research and development: Creating know-how for new opportunities

Creating knowledge for long-term, complex or visionary business opportunities

- Emerging technologies
- Game-changing technologies
- New partnerships

Learning by doing: pilots and demonstrations with particular focus on

- Digital energy
- Decentralized energy and storage
- Deep geothermal energy (for heat and electricity generation) and new renewables

Explore new and convincing solutions

- Ready to succeed for the energy future
- Win the public opinion with attractive solutions
- Exciting R&D projects to attract future employees
4.9.1 Corporate Sustainability: Integral part of the strategy

Sustainability at EnBW

Sustainability dimensions
- economical
- ecological
- social /employees

EnBW-Stakeholders
- customers
- communities
- partners
- shareholders
- investors
- society
- employees
- politics

Sustainability at EnBW is integrated in:

- Corporate strategy
- Non-financial TOP KPIs
- Stakeholder Management
- Risk & opportunity analysis
- Board remuneration

Renewables: EnBW "Hohe See"
- EnBW constructing 500 MW North Sea wind farm with Canadian partner Enbridge
- Investment volume of around €1.8 bn

New Products: EnBW Solar+
- Innovative product, which combines PV and battery storage
- Customers can become a member of the "Energy Community" and share power with others

New Products: E-Mobility
- Design and operation of charging stations and expansion of electromobility services
- EnBW and Hyundai Germany cooperate in the area of e-mobility
### 4.9.2 Corporate Sustainability: KPIs and sustainability ratings

**Key performance indicators (KPI)**

Non financial KPIs are part of the corporate Performance Management System (PMS)

<table>
<thead>
<tr>
<th>Customers</th>
<th>Satisfaction Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>Commitment Index</td>
</tr>
<tr>
<td>Environment</td>
<td>Renewables capacity</td>
</tr>
</tbody>
</table>

**Oekom research**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>C+</td>
</tr>
</tbody>
</table>

- Strong improvements in
  - Environment
  - Compliance
  - HR

**Carbon Disclosure Project**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>B</td>
</tr>
</tbody>
</table>

- Effective initiatives in the field of climate protection (energy efficiency, fuel switch coal to gas etc.)
- Transparent reporting on emissions, opportunities and risks on climate change
4.9.3 Corporate Sustainability: Commitment to climate protection

- EnBW supports global efforts to protect the climate and ambitious climate protection targets.
- EnBW is concentrating its investments on renewable energies, grids and developing digitalised business models and promotes the achievement of the targets set at Paris Conference (2015).

### CO₂ intensity in g/kWh (non-financial KPI)

<table>
<thead>
<tr>
<th>Year</th>
<th>CO₂ intensity in g/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>606</td>
</tr>
<tr>
<td>2016</td>
<td>577</td>
</tr>
</tbody>
</table>

**Target in 2020:** Reducing CO₂ intensity of own generation of electricity (excluding nuclear power) by 15 to 20% by 2020 compared to 606 g/kWh in the reference year 2015.

### Task Force on Climate-Related Financial Disclosures (TCFD)

- Financial Stability Board established TCFD in Nov 2015. Thomas Kusterer, CFO of EnBW, is member of the task force.
- TCFD develops climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders.
4.9.5 Corporate Sustainability: Further activities

**Activities**

**Active in networks**
- UN Global Compact: Participant since 2010
- Econsense: EnBW is a member of the "Forum for Sustainable Development of German Business"

**Focused environmental processes**
- The environmental management system at EnBW is certified according to ISO 14001 and valid for all environmentally-relevant activities of EnBW AG

**Responsible employer**
- EnBW was once again rated as one of Germany’s most attractive employers in 2017 ("Top Employers in Germany 2017")

**Corporate Citizenship**
- We concentrate our support for general social issues on the core areas of popular sport, education, social issues, the environment and art and culture
4.10 Corporate Governance: Responsible and transparent management

We are convinced that responsible and transparent management fosters the trust placed in the company by investors, customers, employees and the general public and leads to sustainable added value.

Good corporate governance is an important component of the corporate culture at EnBW.

EnBW is in compliance with the recommendations of the German Corporate Governance Code, as amended on 7 Feb 2017.

The Compliance Management System, which has been implemented throughout the Group, serves to minimise risks and avoid liability issues and a loss of reputation. It focuses on company and sector-specific risks and priorities and encompasses all controlled companies with employees in the EnBW Group. The main focus of compliance activities is placed on the prevention, detection and sanctioning of corruption, the prevention of violations against competition and antitrust laws, the prevention of money laundering and data protection issues. The effectiveness of the corruption prevention and antitrust law areas of the system were tested in accordance with the IDW PS 980 testing standard in 2013, and re-affirmed in 2016. They are deemed appropriate for the detection of the risk that there could be a significant violation of the regulations applicable in these areas in good time and with a sufficient degree of certainty, as well as for the prevention of such violations.

The EnBW Code of Conduct forms part of EnBW’s culture.

The Compliance Department emphasised the most recent compliance incidents in the German economy, particularly in light of the importance of the compliance culture at EnBW, during numerous events (esp. focussed in the latest company-wide management training, which had been the third of its kind) and will also focus on this subject in more depth in the future.

For further information

› Overview Board of Management
› Overview Supervisory Board

German Corporate Governance Code

Compliance
Agenda 5 – Segments

1. EnBW at a glance ............................................................................................................................ »
2. Regulatory Environment and Markets .......................................................................................... »
3. Customers and Competition .......................................................................................................... »
4. Strategy ........................................................................................................................................ »
5. Segments ...................................................................................................................................... »
   › Sales
   › Grids
   › Generation and Trading
   › Renewable Energies
6. The VNG Group .......................................................................................................................... »
7. Key Financials ............................................................................................................................... »
8. Capital Markets ............................................................................................................................. »
9. Service .......................................................................................................................................... »

EnBW Investor Factbook September 2017
5.1 Segment overview

**Sales**
- Adjusted EBITDA 2016: €249.7 m
- Employees: 3,244
- **Task/products**: Sale of electricity, gas, energy-related services and energy industry billing services; energy efficiency consultancy; cooperation with local authorities; collaboration with public utilities

**Renewable Energies**
- Adjusted EBITDA 2016: €295.3 m
- Employees: 1,029
- **Task/products**: Project development and management, construction and operation of renewable energy power plants

**Grids**
- Adjusted EBITDA 2016: €1,004.1 m
- Employees: 8,330
- **Task/products**: Transport and distribution of electricity and gas; provision of grid-related services; water supply; guaranteeing the security of supply and system stability

**Generation and Trading**
- Adjusted EBITDA 2016: €33.2 m
- Employees: 5,076
- **Task/products**: Advisory services, construction, operation and decommissioning / dismantling of thermal generation plants; electricity and gas trading; risk management of market-related risks; development of gas midstream business, district heating; waste management / environmental services; provision of system services; direct marketing of renewable energy power plants
5.2.1 Sales: Multi-brand approach

Multi-brand retail customer approach for Germany

- **EnBW**
  - EnBW as premium energy brand with focus on the Baden-Wuerttemberg mass market and public authorities. In Germany for energy solutions like contracting.

- **Yello**
  - Yello as EnBW’s single national brand for the German national mass market as a viable alternative for every customer.

- **Natur Energie Plus**
  - Natur Energie Plus is the national brand for ecologically oriented households.
5.2.2 Sales: Market feedback

**Brand awareness**

**EnBW**
- The full-line service provider delivers quality and inventiveness made in Baden-Wuerttemberg: electricity, gas, water, energy/environmental services, district/local heating
- Fair prices, excellent service and customer participation
- Selected special products with added value
- Retail/business/industrial customers and municipalities/municipal utilities

**Yello**
- Retail customers in Germany
- Attractive pricing
- Focus on online sales and service
- Electricity and gas for standard service
- Selected special products only in cooperation

**Natur Energie Plus**
- Nationwide sustainability brand
- Ecological products
- Focus on people
- Target group: LOHAS ("Lifestyle of Health and Sustainability")
## 5.2.3 Sales: Electricity and gas sales

**Electricity and gas sales of the EnBW Group**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
<th>Variance in %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electricity sales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail and commercial customers (B2C)</td>
<td>114.8</td>
<td>115.4</td>
<td>-0.5</td>
</tr>
<tr>
<td>Business and industrial customers (B2B)</td>
<td>15.0</td>
<td>15.5</td>
<td>-3.2</td>
</tr>
<tr>
<td>Trade</td>
<td>28.2</td>
<td>31.5</td>
<td>-10.5</td>
</tr>
<tr>
<td></td>
<td>71.6</td>
<td>68.4</td>
<td>4.7</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>139.1</td>
<td>135.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Business and industrial customers (B2B)</td>
<td>10.8</td>
<td>10.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Trade</td>
<td>41.5</td>
<td>69.9</td>
<td>-40.6</td>
</tr>
<tr>
<td></td>
<td>86.8</td>
<td>54.8</td>
<td>58.4</td>
</tr>
</tbody>
</table>
5.2.4 Sales: Retail customer electricity price is mainly regulated/tax-driven

Electricity price

- VAT 19 %: 16.00%
- Electricity tax: 7.10%
- Concession fee¹: 5.80%
- EEG - levy: 22.10%

53.9% share of electricity price for private households

Q2/2017

Source: German Federal Association of Energy and Water Management (BDEW), May 2017

¹ Average concession fee; varies according to size of community
5.2.5 Sales:
Development of retail electricity price

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

In Cent/kWh

Source: BDEW, May 2017
5.3.1 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

Excl. shareholdings: Energiedienst Holding AG, Erdgas Suedwest GmbH, EnBW Ostwuerttemberg DonauRies AG and ZEAG Energie AG
## 5.3.2 Grids: Electricity grids

### Network grid lengths of the EnBW Group

In km

<table>
<thead>
<tr>
<th>Grid Type</th>
<th>Voltage Level</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transmission grid</strong></td>
<td>Extra-high voltage 380 kV</td>
<td>2,100</td>
<td>2,100</td>
</tr>
<tr>
<td></td>
<td>Extra-high voltage 220 kV</td>
<td>1,100</td>
<td>1,100</td>
</tr>
<tr>
<td><strong>Distribution grid</strong></td>
<td>High voltage 110 kV</td>
<td>8,600</td>
<td>8,200</td>
</tr>
<tr>
<td></td>
<td>Medium voltage 30/20/10 kV</td>
<td>46,500</td>
<td>44,900</td>
</tr>
<tr>
<td></td>
<td>Low voltage 0.4 kV¹</td>
<td>94,300</td>
<td>95,300</td>
</tr>
<tr>
<td><strong>Overall length</strong></td>
<td></td>
<td>152,500</td>
<td>151,600</td>
</tr>
</tbody>
</table>

¹ The slight decrease in the length of the distribution grid is mainly attributable to concession agreements not being renewed with some municipalities.
5.3.3 Grids: General and regulatory environment

Challenges of grids in Europe

Three main challenges for the 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 partly possible
› Germany as a transit country – large proportion of cross-border trading

EnBW’s approaches to solutions:

› **TSO**: New transmission lines can bridge the distance between focal point of production and consumption centres, use of HVDC transmission lines
› **DSOs**: Expansion of the grids to integrate renewables, smart expansion of distribution grids, efficient and swift expansion of the distribution grids by municipal partners

Regulatory environment

› Electricity transmission and distribution grids remain regulated, also in the long term, as a natural monopoly
› Regulatory risks manageable through 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 grids on account of changes in the regulatory framework
› Partly improvements in regulatory framework conditions for investments in distribution grids as of the third electricity regulation period [from 2019] due to the reform of the Incentive Regulation Ordinance of mid-2016
› Amendment of Incentive Regulation generally leads to no substantial changes in the regulatory framework for the transmission and distribution grid operators
### 5.3.4 Grids: Comparison of electricity transmission and distribution grids

#### Comparison electricity

#### Transmission grids
- **380 kV, 220 kV**
  - **Organisation**
    - 4 operators: 50Hertz, Amprion, TenneT, TransnetBW
    - Grid length: ~36,000 km
    - Grids owned by operators

#### Distribution grids
- **≤ 110 kV**
  - **Organisation**
    - 817 operators
    - Grid length: ~1,780,000 km
    - Franchises issued by municipalities
    - Competition for franchises

#### Tasks
- Ensuring balance between generation and consumption
- Using balancing power
- Connecting consumers and local providers
- Recording incidents and troubleshooting
- Connection of decentralized renewables (e.g. PV, wind)
- Development of charging-infrastructure for electric cars
- Use of smart grid tech and digitalisation of metering operation (e.g. smart meter)
- Functional & financial unbundling of the grid business and obligation to non-discriminatory use of grid information

#### Challenge of Energiewende
- Transport of electricity from wind power from northern to southern Germany
- Building new HVDC transmission lines
- Connecting offshore wind farms
- Ownership unbundling, independent transmission operator (ITO)

#### Source:
5.3.5 Grids: Electricity grids are the backbone of the “Energiewende”

Electricity grids

General

› The electricity grid business has become a growth business due to the new energy concept

› Changes in legislation have simplified reimbursement for costs of investments in grids: e.g. amendments of the Incentive Regulation Ordinance (ARegV)

Transmission grid

› Growing geographical imbalance between generation and consumption

› Expansion of transmission grid - esp. 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 tendencies towards moving back to municipal ownership (however, large part of concession already extended)

Capex for expanding the German electricity grid through to 2030

in € bn

<table>
<thead>
<tr>
<th></th>
<th>Transport grids</th>
<th>Offshore connection</th>
<th>Distribution grids</th>
<th>Total expansion through to 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: Federal Requirements Plan, draft network development plan 2030, draft of offshore network development plan 2030; BMWi Distribution Grid Study 2014</td>
<td>33</td>
<td>17</td>
<td>20</td>
<td>70</td>
</tr>
</tbody>
</table>
5.3.6 Grids: Expansion of transmission grid to ensure security of supply

Expansion of the EnBW transmission grid

<table>
<thead>
<tr>
<th>Grid section</th>
<th>Scheduled completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC grid reinforcement</td>
<td></td>
</tr>
<tr>
<td>for Rhein river area in Baden</td>
<td>121 km 2021</td>
</tr>
<tr>
<td>for north Baden-Wuerttemberg</td>
<td>156 km 2022</td>
</tr>
<tr>
<td>for north east Baden-Wuerttemberg</td>
<td>158 / plus 56 km 2022 / 2030</td>
</tr>
<tr>
<td>DC expansion</td>
<td></td>
</tr>
<tr>
<td>in corridor C &quot;SuedLink&quot; 4 GW</td>
<td>700 km 2025</td>
</tr>
<tr>
<td>in corridor A &quot;Ultranet&quot; 2 GW</td>
<td>40 km 2021</td>
</tr>
</tbody>
</table>

EnBW contribution: converter, power lines Baden-Wurttemberg

Investment up to 2025: around € 5 bn

Source: BNetzA, EnBW, 2. draft NEP 2030 May 2017

1 In cooperation with TenneT
5.3.7 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-Wuerttemberg:

- Wide use of PV in the grid area
- High expansion targets for wind power
- Increased emergence of electric cars

... necessitate grid expansion using intelligent 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”

**EnBW grid laboratories and grid innovations**

**Grid-lab electric fleets**

Intelligent load management for electric vehicles

**Grid-lab Freiamt**

Further development of innovative equipment

**Grid-lab Niederstetten**

Local grid intelligence

**Grid-lab Sonderbuch**

Integration of renewables in low-voltage grid

**Grid-lab Boxberg and Stockach**

Pilot tests to avoid grid overload

**Bio-oil transformers**

Pilot project with 100 transformers in real grid operation

**grid-control**

Crafting an effective concept for a future-oriented grid

Through to 2025, investments of ~€ 2.5 bn necessary to develop the electricity distribution grid infra-structure in Baden-Wuerttemberg
## 5.3.8 Grids: Gas grids

**EnBW Group’s gas grids**

<table>
<thead>
<tr>
<th>Grid Type</th>
<th>High pressure</th>
<th>Medium pressure</th>
<th>Low pressure</th>
<th>Overall length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-distance transmission grid</td>
<td>2,000</td>
<td>7,900</td>
<td>4,500</td>
<td>16,600</td>
</tr>
<tr>
<td>Distribution grid</td>
<td>2,200</td>
<td>7,600</td>
<td>4,500</td>
<td>16,200</td>
</tr>
</tbody>
</table>

1 Including service lines and unused lines; without VNG (Ontras)
5.3.9 Grids: Comparison of gas transmission and distribution grids

**Comparison gas**

<table>
<thead>
<tr>
<th>Transmission grids</th>
<th>Distribution grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 grid operators</td>
<td>669 grid operators</td>
</tr>
<tr>
<td>Grid length: ~38,000 km</td>
<td>Grid length: ~480,000 km</td>
</tr>
<tr>
<td>Grids owned by operators</td>
<td>Franchises issued by municipalities</td>
</tr>
<tr>
<td>2 market areas (NetConnect Germany and Gaspool)</td>
<td>Competition for franchises</td>
</tr>
</tbody>
</table>

**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
- Long term: potential use of natural gas grid as storage medium for electricity generated from renewables
- Integration of bio natural gas (number of biogas plants increased 145% since 2010)

**Challenge of Energiewende**

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

**Unbundling regulations**

- Ownership unbundling, independent transmission operator (ITO)
- Franchises issued by municipalities
- Competition for franchises

**Source:** BNetzA/BKartA Monitoring Report November 2016
5.3.10 Grids: Gas grids are a major element of the “Energiewende”

Gas grids

General

- Long-term increase in demand for H-gas capacities in Germany:
  - approx. +13% up to 2020
  - approx. +24% up to 2025
  - approx. +33% up to 2030

Transmission grid

- Increasing capacity requirements from changes in regulatory environment: Switch on the market from L-gas to H-gas (replacement of approx. half of the L-gas from NL up to 2025 by H-gas from Russia/Norway)

Distribution grid

- Minor dimension of expansion compared to electricity due to less pronounced effects of “Energiewende”
- Growth potential due to the connection of new communities to the natural gas grid
- Still strong tendencies towards moving back to municipal ownership

Expansion of the gas transmission grid in Germany through to 2027

<table>
<thead>
<tr>
<th>Year</th>
<th>Compressors in MW</th>
<th>Transmission lines in km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Until 2022</td>
<td>470</td>
<td>570</td>
</tr>
<tr>
<td>2022-2027</td>
<td>750</td>
<td>75</td>
</tr>
<tr>
<td>Total</td>
<td>825</td>
<td>825</td>
</tr>
</tbody>
</table>

Investments of ~ €4.5 bn, of which ~€3.6 bn until 2022

Source: Draft gas network development plan 2016-2026

Verantwortlich: Dr. Markus Hemmer
Status: aktualisiert
### 5.4.1 Generation and portfolio of the EnBW Group in 2016

<table>
<thead>
<tr>
<th></th>
<th>Generation portfolio in MW</th>
<th>Own generation in GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
<td>share</td>
</tr>
<tr>
<td><strong>Renewable Energies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Run-of-river</td>
<td>3,140</td>
<td>23 %</td>
</tr>
<tr>
<td>Storage/pumped storage (using natural flow of water)</td>
<td>1,032</td>
<td>8 %</td>
</tr>
<tr>
<td>Wind onshore</td>
<td>1,322</td>
<td>10 %</td>
</tr>
<tr>
<td>Wind offshore</td>
<td>336</td>
<td>2 %</td>
</tr>
<tr>
<td>Other</td>
<td>336</td>
<td>2 %</td>
</tr>
<tr>
<td>Other</td>
<td>114</td>
<td>1 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10,442</td>
<td>77 %</td>
</tr>
<tr>
<td><strong>Thermal power plants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown coal</td>
<td>875</td>
<td>6 %</td>
</tr>
<tr>
<td>Hard coal</td>
<td>3,956</td>
<td>29 %</td>
</tr>
<tr>
<td>Gas</td>
<td>1,784</td>
<td>13 %</td>
</tr>
<tr>
<td>Other</td>
<td>349</td>
<td>3 %</td>
</tr>
<tr>
<td>Pumped storage (not using natural flow of water)</td>
<td>545</td>
<td>4 %</td>
</tr>
<tr>
<td>Nuclear</td>
<td>2,933</td>
<td>22 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,582</td>
<td>100 %</td>
</tr>
</tbody>
</table>
5.4.2 Power plants including equity investments and supply contracts

Germany

Baden-Württemberg

- Onshore wind farm
- Offshore wind farm
- Photovoltaic power plant
- Hydroelectric power plant
- Biomass power plant
- Conventional power plant
- Nuclear power plant

¹ Long-term procurement agreements and partly owned power plants are included in own electricity production.
² Partially or completely in the grid reserve (NetzResV).
³ At the project planning / planning stage.
⁴ At the project development stage.
⁵ Currently being dismantled.
### 5.4.3 Thermal power plants in 2016

#### Conventional

<table>
<thead>
<tr>
<th>Location</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karlsruhe</td>
<td>1,351</td>
</tr>
<tr>
<td>Dusseldorf</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>Capacity (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>Capacity (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, incl. major changes in 2017
2 Decommissioning of HLB 5/6, MAR DT III, MAR GT II, WAL1/2, RDK4s and ALT HKW1 has been announced; continued temporary operation due to system relevance
5.4.4 Hydropower plants in 2016

### Run-of-River

<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>270</td>
</tr>
</tbody>
</table>

### Pumped storage

<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>863</td>
</tr>
<tr>
<td>Glems</td>
<td>90</td>
</tr>
<tr>
<td>Rudolf-Fettweis-Werk Forbach</td>
<td>43</td>
</tr>
</tbody>
</table>
5.4.5 Onshore and offshore wind farms in 2016

**Wind onshore**

<table>
<thead>
<tr>
<th>Location</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuruppin, Goerike, Kemberg, Buchholz,</td>
<td></td>
</tr>
<tr>
<td>Haupersweiler, Eisenach, Oldendorf, Schwienau,</td>
<td></td>
</tr>
<tr>
<td>Rositz, Zernitz, Ostercappeln, Buehlertann etc.</td>
<td>280</td>
</tr>
<tr>
<td>Hartheuser Wald, Ilshofen-Ruppertshofen,</td>
<td></td>
</tr>
<tr>
<td>Braunsbach, Boxberg</td>
<td>75</td>
</tr>
<tr>
<td>Rot am See</td>
<td>10</td>
</tr>
<tr>
<td>SW Duesseldorf</td>
<td>12</td>
</tr>
</tbody>
</table>

**Wind offshore**

<table>
<thead>
<tr>
<th>Location</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baltic 1, Baltic 2</td>
<td>336</td>
</tr>
</tbody>
</table>

¹ Major power plants, incl. major changes in 2017
5.4.6 Offshore wind portfolio and project pipeline

- **Installed capacity 2015:** 336 MW
- **In construction:** 609 MW
- **Secured pipeline:** 900 MW

- **EnBW Hohe See:** 497 MW
  - 71 + 16 = 87 x Siemens SWT 7.0-154 on monopile foundations
  - Commissioning planned for 2019
  - Shareholders: ~50.1 % EnBW & ~49.9 % Enbridge Inc.

- **EnBW Albatros:** 112 MW

- **EnBW Baltic 1:** 48.3 MW
  - 21 x Siemens SWT 2.3-93
  - Commissioned in 2011
  - Shareholders: ~50.1 % EnBW & ~49.9 % 19 municipal utilities

- **EnBW Baltic 2:** 288 MW
  - 80 x Siemens SWT 3.6-120
  - Commissioned in 2015
  - Shareholders: ~50.1 % EnBW & ~49.9 % Macquarie, PGGM & ÄvWL

- **EnBW He Dreihl:** ~900 MW

**Stefan Kansy**

**Status:** Neu

**Verantwortlich:**

- Construction
- Development stage
- In operation
5.4.7 Onshore wind portfolio: Project pipeline 2017 in line with plans for growth up to 2020

Regional distribution of the 2017 pipeline and portfolio

1 Negotiations for land contracts (low proportion make it to project development); 2 At least land contracts concluded (large proportion are realised); 3 Wind parks in operation with EnBW majority shareholding
5.4.8 Turkish activities\(^1\): Borusan EnBW

Energy portfolio projects

- **Wind**
  - Balabanli: 60.5 MW
  - Saros: 138 MW
  - Koru: 50 MW
  - Bandirma: 87 MW
  - Huatres: 30 MW
  - Fuatres: 2 MW
  - Pamuklu: 6 MW
  - Dayicik: 6 MW
  - Mut: 50 MW
  - Kartaldagi: 46 MW
  - Harmanlik: 50 MW
  - Kartaldagi: 46 MW

- **Hydro**
  - Yedigöl/Aksu: 51 MW

- **Solar**
  - Balabanli: 60.5 MW

- **Geothermal**
  - Yedigöl/Aksu: 51 MW
  - Mut: 50 MW

\(^1\) Figures not consolidated
5.5 EnBW’s trading activities: Central access to wholesale markets to manage price and volume risks

EnBW’s trading activities

- Central interface to wholesale commodity markets for customers and EnBW Group: power, gas, emissions, coal, fuels
- Direct marketing renewables 2017 4,500 MW+
- 375,000+ trades per year
- Annual trading volumes, 2016:
  - 410 TWh power
  - 790 TWh natural gas
  - 80 mn t coal
  - 260 mn t emission certificates
  - 44 mn bbl oil
- 200+ employees

Market access for electricity:

- Energiewende products:
  - direct marketing of renewables, virtual power plants with flexibility close-to-delivery, ramp-up/down products in 15min-periods, GOOs, green power
  - 24/7 service
  - Physical portfolio management and forecast services
  - Commercial asset optimization for gas midstream activities incl. GVS-portfolio
  - Support of customers of EnBW sales units

OTC market access:

- Power: NL, FR, CH, AT, CZ
- Gas: TTF, Gaspool, NCG, Austrian VTP

Exchange market access:

- ICE, CME, EEX, Powernext, EPEX, EXAA, Nordpool Spot
Agenda 6 – The VNG Group

1. EnBW at a glance
2. Regulatory Environment and Markets
3. Customers and Competition
4. Strategy
5. Segments
6. The VNG Group
7. Key Financials
8. Capital Markets
9. Service
6.1 EnBW is fully integrated in the gas market

EnBW is fully integrated in the gas market with a focus on various segments including Exploration & Production, Import, Storage, Portfolio-management, Transport grids, Distribution grids, and Supply. EnBW has a significant presence in the non-regulated and regulated markets with figures such as 740 TWh, 14.000 km, 200 TWh, 2.000 km, 28 TWh, 7.000 km, 100 TWh, 2.700 km, and 2 TWh. Production licenses in Norway and Denmark are also highlighted.

EnBW's operations are managed by Elke Landhäußer, and the status of the report is 'neu' ('new').
6.2.1 VNG Group: Key figures
(German GAAP)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gas sendout</strong> (TWh bn)</td>
<td>362</td>
<td>373</td>
<td>368</td>
<td>362</td>
</tr>
<tr>
<td><strong>Sales</strong> (€ bn)</td>
<td>7.2</td>
<td>9.4</td>
<td>10.0</td>
<td>11.0</td>
</tr>
<tr>
<td><strong>EBIT</strong> (€ m)</td>
<td>84</td>
<td>-54</td>
<td>230</td>
<td>182</td>
</tr>
<tr>
<td><strong>Net income/loss</strong> (€ m)</td>
<td>40</td>
<td>-53</td>
<td>184</td>
<td>89</td>
</tr>
<tr>
<td><strong>Number of employees</strong></td>
<td>1,289</td>
<td>1,441</td>
<td>1,427</td>
<td>1,440</td>
</tr>
</tbody>
</table>

1 Inclusive tax refund for exploration costs of VNG Norge AS
6.2.2 VNG Group: Business areas

The VNG Group, headquartered in Leipzig, with approx. 1,300 employees is a horizontally and vertically integrated group of companies which operates in the European gas sector with more than 20 companies in eight countries. The core business, natural gas, is broken down into four business areas: Exploration & Production, Trading & Sales, Transport and Storage.

VNG – Verbundnetz Gas Aktiengesellschaft, as the parent company of the VNG Group, is also responsible for the gas trading business. VNG Norge AS concentrates on the exploration and production of natural gas off the coast of Norway and Denmark. ONTRAS Gastransport GmbH, an independent transmission system operator, independently and non-discriminatory markets Germany’s second largest high pressure network while VNG Gasspeicher GmbH offers the storage capacities of several underground gas storage facilities in central and northern Germany throughout Europe.
6.2.3 VNG Group: Shareholders of VNG AG

as of May 2017

74.21 %
EnBW Energie Baden-Württemberg AG, Karlsruhe

21.58 %
VNG Verbundnetz Gas Verwaltungs- und Beteiligungsgesellschaft mbH, Erfurt

4.21 %
OWE Energie-Beteiligungs GmbH, Ravensburg

1 Trustee for eight utilities and municipal companies (Annaberg-Buchholz, Chemnitz, Dresden, Hoyerswerda, Leipzig, Lutherstadt Wittenberg, Neubrandenburg, Rostock)
### Exploration & Production

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>VNG Norge AS, Stavanger, Norway</td>
<td>Norway</td>
</tr>
<tr>
<td>VNG Danmark ApS, Denmark</td>
<td>Denmark</td>
</tr>
</tbody>
</table>

### Transport

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONTRAS Gastransport GmbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>GDMcom Gesellschaft fuer Dokumentation und Telekommunikation mbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>GEOMAGIC GmbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>INFRACON Infrastruktur Service GmbH &amp; Co KG, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
</tbody>
</table>

### Storage

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>VNG Gasspeicher GmbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
</tbody>
</table>

### Group Center

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>BALANCE VNG Bioenergie GmbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>Leipziger Biogasgesellschaft mbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>MBG Mitteldeutsche Biogasgesellschaft mbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
</tbody>
</table>

### Trading & Sales

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>VNG – Verbundnetz Gas Aktiengesellschaft, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>ENERGIEUNION GmbH, Schwerin, Germany</td>
<td>Schwerin, Germany</td>
</tr>
<tr>
<td>G.EN. Gaz Energia Sp. z o.o., Tarnowo Podgórne, Republic of Poland</td>
<td>Republic of Poland</td>
</tr>
<tr>
<td>goldgas GmbH, Eschborn, Germany</td>
<td>Eschborn, Germany</td>
</tr>
<tr>
<td>goldgas GmbH, Vienna, Austria</td>
<td>Vienna, Austria</td>
</tr>
<tr>
<td>goldpower GmbH, Walluf, Germany</td>
<td>Walluf, Germany</td>
</tr>
<tr>
<td>HANDEN Sp. z o.o., Warschaw, Republic of Poland</td>
<td>Warschaw, Poland</td>
</tr>
<tr>
<td>SPIGAS S.r.l., La Spezia, Italy</td>
<td>La Spezia, Italy</td>
</tr>
<tr>
<td>VNG Austria GmbH, Gleisdorf, Austria</td>
<td>Gleisdorf, Austria</td>
</tr>
<tr>
<td>VNG Energie Czech s.r.o., Prag, Czech Republic</td>
<td>Prag, Czech Republic</td>
</tr>
<tr>
<td>VNG-Erdgascommerz GmbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>VNG Innovation GmbH, Leipzig, Germany</td>
<td>Leipzig, Germany</td>
</tr>
<tr>
<td>VNG Italia S.r.l., Bologna, Italy</td>
<td>Bologna, Italy</td>
</tr>
</tbody>
</table>

as of 31 December 2016
6.2.5 VNG Group: Exploration & Production in Norway and Denmark

37 Production licenses

2 Operatorships

3 Field developments

5 Shares in producing fields

as of 31 December 2016
6.2.6 VNG Group: Exploration & Production in Norway and Denmark

362 TWh Gas sendout

8 Sales offices in Germany

Wholesale on European Spot and Futures Markets

268,000 retail consumers

as of 31 December 2016
6.2.7 VNG Group: Trading & Sales
Gas Sendout and Procurement

SEND-OUT AND PROCUREMENT 2016
in TWh

- End-users: 5.4
- Industry and power stations: 43.7
- Redistributors: 111.9
- Trading companies: 200.7

- Sales by customer segment:
  - Germany: 125.7
  - Foreign: 35.3

- Sales by sales market:
  - Norway: 23.5
  - Russia: 56.0

- Supply sources:
  - Spot/futures market and others: 283.1
6.2.8 VNG Group: Second largest transmission system operator in Germany

7,000 km High-pressure pipelines
2,700 km Distribution network in Poland
450 Interconnection points
130 Downstream network operators

as of 31 December 2016
6.2.9 VNG Group: Storage
Third largest storage operator in Germany

2.5 bn m³ Storage capacity

4 Storage facilities

2 Types of storage

Working gas volume in million m³

<table>
<thead>
<tr>
<th>Location</th>
<th>Volume (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etzel</td>
<td>151</td>
</tr>
<tr>
<td>Kirchheilingen</td>
<td>180</td>
</tr>
<tr>
<td>VGS storage hub¹</td>
<td>2,186</td>
</tr>
</tbody>
</table>

¹Bernburg: 1,039 million m³, including 92 million m³ leasehold cavern;
Bad Lauchstädt: 1,147 million m³
as of 31 December 2016

Head office of VNG Gasspeicher GmbH
Storage locations of VNG Gasspeicher GmbH
- Salt cavern
- Former gas field
1. EnBW at a glance ............................................................................................................................ »
2. Regulatory Environment and Markets ................................................................................................... »
3. Customers and Competition ................................................................................................................... »
4. Strategy ................................................................................................................................................... »
5. Segments ................................................................................................................................................... »
6. The VNG Group ........................................................................................................................................ »
7. Key Financials .......................................................................................................................................... »
   › Five-year summary
   › Fiscal year 2016
   › Half year 2017
8. Capital Markets ......................................................................................................................................... »
9. Service ....................................................................................................................................................... »
7.1 Five-year summary (1/2)

### EnBW Group

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Earnings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue € m</td>
<td>19,368</td>
<td>21,167</td>
<td>21,003</td>
<td>20,545</td>
<td>19,324</td>
</tr>
<tr>
<td>EBITDA € m</td>
<td>1,939</td>
<td>1,918</td>
<td>2,137</td>
<td>2,000</td>
<td>2,307</td>
</tr>
<tr>
<td>Group net profit2</td>
<td>-1,797</td>
<td>158</td>
<td>-466</td>
<td>51</td>
<td>484</td>
</tr>
<tr>
<td><strong>Balance sheet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity ratio %</td>
<td>8.3</td>
<td>13.4</td>
<td>11.9</td>
<td>17.0</td>
<td>17.3</td>
</tr>
<tr>
<td>Adjusted net debt3</td>
<td>10,003</td>
<td>6,736</td>
<td>7,983</td>
<td>7,271</td>
<td>8,419</td>
</tr>
<tr>
<td><strong>Cash flow</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating cash flow € m</td>
<td>474</td>
<td>1,918</td>
<td>1,776</td>
<td>1,919</td>
<td>856</td>
</tr>
<tr>
<td>Free cash flow € m</td>
<td>-495</td>
<td>652</td>
<td>330</td>
<td>1,168</td>
<td>206</td>
</tr>
<tr>
<td><strong>Profitability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROCE %</td>
<td>7.8</td>
<td>9.5</td>
<td>10.0</td>
<td>9.7</td>
<td>11.1</td>
</tr>
<tr>
<td>Value added € m</td>
<td>123</td>
<td>354</td>
<td>376</td>
<td>180</td>
<td>364</td>
</tr>
<tr>
<td><strong>Capital market</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dividend per share €</td>
<td>0.00</td>
<td>0.55</td>
<td>0.69</td>
<td>0.69</td>
<td>0.85</td>
</tr>
<tr>
<td><strong>Energy sales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity bn kWh</td>
<td>115</td>
<td>115</td>
<td>126</td>
<td>128</td>
<td>136</td>
</tr>
<tr>
<td>Gas bn kWh</td>
<td>139</td>
<td>135</td>
<td>117</td>
<td>100</td>
<td>73</td>
</tr>
</tbody>
</table>

1 The figures for 2014 have been restated; 2 In relation to the profit/loss attributable to the shareholders of EnBW AG; 3 Includes investments held as financial assets
# 7.1 Five-year summary (2/2)

## EnBW Group

<table>
<thead>
<tr>
<th>Sales segment</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>44</td>
<td>48</td>
<td>48</td>
<td>52</td>
<td>59</td>
</tr>
<tr>
<td>Gas</td>
<td>54</td>
<td>82</td>
<td>72</td>
<td>69</td>
<td>58</td>
</tr>
<tr>
<td>Revenue</td>
<td>7,771</td>
<td>9,061</td>
<td>9,067</td>
<td>9,568</td>
<td>9,278</td>
</tr>
<tr>
<td>Adjusted EBITDA</td>
<td>250</td>
<td>255</td>
<td>231</td>
<td>227</td>
<td>241</td>
</tr>
</tbody>
</table>

## Grids segment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>bn kWh</td>
<td>6,444</td>
<td>6,351</td>
<td>6,231</td>
<td>5,708</td>
<td>5,340</td>
</tr>
<tr>
<td>Revenue</td>
<td>1,004</td>
<td>747</td>
<td>886</td>
<td>962</td>
<td>773</td>
</tr>
<tr>
<td>Adjusted EBITDA</td>
<td>1,004</td>
<td>747</td>
<td>886</td>
<td>962</td>
<td>773</td>
</tr>
</tbody>
</table>

## Renewable Energies segment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>bn kWh</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Revenue</td>
<td>511</td>
<td>447</td>
<td>407</td>
<td>372</td>
<td>353</td>
</tr>
<tr>
<td>Adjusted EBITDA</td>
<td>295</td>
<td>287</td>
<td>191</td>
<td>220</td>
<td>239</td>
</tr>
</tbody>
</table>

## Generation & Trading segment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>bn kWh</td>
<td>68</td>
<td>65</td>
<td>75</td>
<td>60</td>
<td>57</td>
</tr>
<tr>
<td>Gas sales</td>
<td>85</td>
<td>53</td>
<td>45</td>
<td>31</td>
<td>15</td>
</tr>
<tr>
<td>Revenue</td>
<td>4,434</td>
<td>5,300</td>
<td>5,290</td>
<td>4,888</td>
<td>4,346</td>
</tr>
<tr>
<td>Adjusted EBITDA</td>
<td>337</td>
<td>777</td>
<td>900</td>
<td>839</td>
<td>1,125</td>
</tr>
</tbody>
</table>

---

1 The figures for 2014 have been restated.

2 Since the beginning of 2015, electricity sales from the Grids segment are no longer disclosed because the Independent Transmission Operators (ITO) no longer report their data.
### 7.2.1 Fiscal year 2016

**Key performance figures**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
<th>Variance in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow from operating activities</td>
<td>€ m</td>
<td>473.6</td>
<td>1,918.3</td>
</tr>
<tr>
<td>Free cash flow</td>
<td>€ m</td>
<td>-494.7</td>
<td>651.6</td>
</tr>
<tr>
<td>Equity ratio</td>
<td>%</td>
<td>8.3</td>
<td>13.4</td>
</tr>
<tr>
<td>Net debt</td>
<td>€ m</td>
<td>10,002.9</td>
<td>6,735.5</td>
</tr>
<tr>
<td>Dynamic leverage ratio</td>
<td></td>
<td>5.16</td>
<td>3.19</td>
</tr>
<tr>
<td>Value added(^1)</td>
<td>€ m</td>
<td>123.4</td>
<td>354.3</td>
</tr>
<tr>
<td>ROCE</td>
<td>%</td>
<td>7.8</td>
<td>9.5</td>
</tr>
<tr>
<td>Group net profit (^1,2)</td>
<td>€ m</td>
<td>-1,797.2</td>
<td>158.2</td>
</tr>
<tr>
<td>Earnings per share from Group net profit/loss (^1,2)</td>
<td>€</td>
<td>-6.64</td>
<td>0.58</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.
7.2.2 Fiscal year 2016: ROCE and value added

Group level

- Decreasing value added at € 123 m (2015: € 354 m)
- ROCE at 7.8 % compared to 9.5 % in the prior year
- Increase in average capital employed

<table>
<thead>
<tr>
<th></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>Adj. EBIT incl. investment result [€ m]</td>
<td>193.2</td>
<td>668.2</td>
<td>130.1</td>
<td>44.8</td>
<td>40.2</td>
<td>1,076.5</td>
</tr>
<tr>
<td>Average capital employed [€ m]</td>
<td>617.4</td>
<td>5,085.1</td>
<td>2,995.8</td>
<td>2,072.8</td>
<td>2,944.5</td>
<td>13,715.6</td>
</tr>
<tr>
<td>ROCE (%)</td>
<td>31.3</td>
<td>13.1</td>
<td>4.3</td>
<td>2.2</td>
<td>-</td>
<td>7.8</td>
</tr>
<tr>
<td>WACC (%)</td>
<td>8.3</td>
<td>5.8</td>
<td>7.5</td>
<td>8.4</td>
<td>-</td>
<td>6.9</td>
</tr>
<tr>
<td>Value added [€ m]</td>
<td>142.0</td>
<td>371.2</td>
<td>-95.9</td>
<td>-128.5</td>
<td>-</td>
<td>123.4</td>
</tr>
</tbody>
</table>

¹Prior-year figures restated
## 7.2.3 Fiscal year 2016

### Segment reporting

<table>
<thead>
<tr>
<th>Segment reporting</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><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External revenue</td>
<td>7,771.1</td>
<td>9,061.2</td>
<td>6,643.7</td>
<td>6,350.6</td>
<td>4,433.9</td>
<td>5,300.4</td>
</tr>
<tr>
<td>Internal revenue</td>
<td>431.4</td>
<td>319.1</td>
<td>2,639.0</td>
<td>2,592.0</td>
<td>2,341.8</td>
<td>2,705.6</td>
</tr>
<tr>
<td>Total revenue</td>
<td>8,202.5</td>
<td>9,380.3</td>
<td>9,282.7</td>
<td>8,942.6</td>
<td>6,775.7</td>
<td>8,005.8</td>
</tr>
<tr>
<td><strong>Earnings indicators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted EBITDA</td>
<td>249.7</td>
<td>255.3</td>
<td>1,004.1</td>
<td>747.4</td>
<td>337.2</td>
<td>777.3</td>
</tr>
<tr>
<td>EBITDA</td>
<td>177.1</td>
<td>329.5</td>
<td>897.2</td>
<td>818.9</td>
<td>-739.3</td>
<td>579.9</td>
</tr>
<tr>
<td>Scheduled amortisation and depreciation</td>
<td>-56.5</td>
<td>-56.1</td>
<td>-367.2</td>
<td>-345.0</td>
<td>-513.2</td>
<td>-110.9</td>
</tr>
<tr>
<td>Impairment losses</td>
<td>-44.2</td>
<td>-6.7</td>
<td>-2.9</td>
<td>-4.2</td>
<td>-11.8</td>
<td>-13.1</td>
</tr>
<tr>
<td>Net profit/loss from entities accounted for using the equity method</td>
<td>-</td>
<td>-</td>
<td>12.9</td>
<td>22.2</td>
<td>-16.5</td>
<td>-16.2</td>
</tr>
<tr>
<td>Significant non-cash items</td>
<td>22.0</td>
<td>-34.2</td>
<td>16.8</td>
<td>57.2</td>
<td>8.6</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>Assets and liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital employed</td>
<td>525.6</td>
<td>578.7</td>
<td>5,310.8</td>
<td>4,936.9</td>
<td>3,066.2</td>
<td>2,960.3</td>
</tr>
<tr>
<td>of which carrying amount of entities accounted for using the equity method</td>
<td>-</td>
<td>-</td>
<td>(282.7)</td>
<td>(304.4)</td>
<td>(207.7)</td>
<td>(193.2)</td>
</tr>
<tr>
<td>Capital expenditure on intangible assets and property, plant and equipment</td>
<td>51.9</td>
<td>67.9</td>
<td>795.6</td>
<td>710.8</td>
<td>208.1</td>
<td>439.4</td>
</tr>
</tbody>
</table>
7.3.1 KFK: Payments of utilities in funds lead to release of nuclear storage obligations

Across all affected utilities

<table>
<thead>
<tr>
<th>Provisions</th>
<th>35% risk premium</th>
<th>Total volume externalised by affected utilities on 3 July 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate storage</td>
<td>4.9</td>
<td>6.2</td>
</tr>
<tr>
<td>Final storage “Konrad”</td>
<td>3.2</td>
<td>17.9</td>
</tr>
<tr>
<td>Final storage site for highly radioactive waste</td>
<td>9.8</td>
<td>24.1</td>
</tr>
</tbody>
</table>

16 June 2017: German state becomes responsible for radioactive waste storage (law approved by European authorities)

26 June 2017: Contract signing provides long-term legal security for all parties involved

Operators remain responsible for decommissioning, dismantling and packaging radioactive waste
7.3.2 KFK: Complete payment of provisions and risk premium by EnBW lead to net debt increase, but de-risking

in € billion

Affecting EnBW

- Intermediate storage: 3.6 €
- Final storage "Konrad": 0.6 €
- Final storage site for highly radioactive waste: 2.1 €

EnBW's provisions: 3.6 €
EnBW's share of risk premium: 1.2 €
Volume externalised by EnBW on 3 July 2017: 4.8 €

Cash outflow in Q3 2017; balance sheet contraction

€ 10 bn financial assets to cover long-term obligations before transfer allowed complete payment

EnBW's cash flow-based Asset Liability Management System remains in place
7.3.3 Law initiated by KFK has had a negative impact in 2016... 
...but will have a positive impact as of 2017ff

**Impact on EnBW’s EBT 2016**

- Decrease of decommissioning provisions: €2.4 billion
- Increase of decommissioning provisions: €1.0 billion
- Externalisation effect (Mainly risk premium): €1.4 billion

**Financial result will improve by € ~ 200 m p.a.**

- Risk-free interest rate of on average 0.5 %
- Rate of increase of costs of ~1.4 %
- Spread of around -0.9 % as real interest rate

- Increase of remaining nuclear power provisions by €1,045 m to €6,214 m due to lower spread
- Nominal amount of remaining nuclear provisions: €5,743 m²

**... but EBT will rise by € ~100 m p.a. only**

- Higher annual depreciation over remaining life time of nuclear power plants

---

1 Depending on future development of interest rate to be applied
2 The nominal amount (without taking into account the effects of the discount rate and rate of increase of costs).
7.4 Nuclear fuel tax reimbursement a positive one-off effect, but no easing of efforts to deliver 2020 strategy

H1 2017

7 June Federal Constitutional Court ruling declared nuclear fuel tax unconstitutional, leading to tax refund

~€ 1.1 bn refunded to EnBW in June (total paid by EnBW 2011-2016: € 1.44 bn)

H2 2017

Remaining ~€ 300 m refunded in July

Additional ~€ 200 m in interest also refunded

~€ 145 m pro-rata payout to co-owner of GKN II
Half-year 2017 key financials underpin 2020 strategy execution

**Adjusted EBITDA**
- **in € million**
- H1 2016: 968 (935) 138
  - Sales: 524 (+11%)
  - Grids: 149 (153)
  - Renewable Energies: 153
  - Generation & Trading: 27
- H1 2017: 1,073
  - Sales: 611
  - Grids: 152
  - Renewable Energies: 181
  - Generation & Trading: 27

**Net debt**
- **in € million**
- 31.12.2016: 10,003
  - Net debt relating to pension and nuclear obligations: 6,358
  - Net debt relating to other obligations: 3,645
- 30.06.2017: 8,948
  - Net debt relating to pension and nuclear obligations: 5,383
  - Net debt relating to other obligations: 3,565

- **First-time consolidation of VNG**
- **No nuclear fuel tax in 2017**
- **Positive effects related to other periods**
- **Nuclear fuel tax refund**
- **Provisions down due to higher discount factor**
- **Positive free cash flow**
- **49.89% of EnBW Hohe See sold to Enbridge**
7.5.2 H1 2017: Sales and Grids with positive development

**Adjusted EBITDA**

<table>
<thead>
<tr>
<th></th>
<th>H1 2016</th>
<th>H1 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>138</td>
<td>181</td>
</tr>
<tr>
<td>Grids</td>
<td>524</td>
<td>611</td>
</tr>
</tbody>
</table>

**Sales**

+ 31%  

- Positive effects from withdrawal from the unprofitable EnBW and Watt B2B commodity business in 2016
- Temporary prior-year effects

**Grids**

+ 17%  

- Positive effects due to first-time consolidation of VNG
- Temporary prior-year effects
7.5.3 H1 2017: Renewable Energies on prior-year level; Generation & Trading mainly characterised by negative effects

### Adjusted EBITDA

#### Renewable Energies

- **H1 2016:** 153 € million
- **H1 2017:** 152 € million
- **Change:** -0.5%

+ Higher wind yields compared to previous year, in particular offshore wind farms
- Reduced water level of our run-of-river power plants
- Electricity delivered from run-of-river power plants was sold on the forward market at lower wholesale market prices

#### Generation and Trading

- **H1 2016:** 149 € million
- **H1 2017:** 102 € million
- **Change:** -31%

- Downtime and early inspection of nuclear power plant KKP 2
- Electricity delivered was sold on the forward market at lower wholesale market prices
+ Positive effects from the elimination of the nuclear fuel tax which will increase in the course of the year
7.5.4 H1 2017: Significant FFO increase mainly due to refund of nuclear fuel tax

<table>
<thead>
<tr>
<th></th>
<th>EBITDA in € million</th>
<th>FFO in € million</th>
<th>Retained CF in € million</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H1 2016</td>
<td>H1 2017</td>
<td></td>
</tr>
<tr>
<td>Provisions</td>
<td>888</td>
<td>2,640</td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-cash items</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net interest/dividends received</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contribution to dedicated financial assets</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EnBW Investor Factbook September 2017
7.5.5  H1 2017: Net debt decreased mainly in the light of the refund of the nuclear fuel tax

Net debt in € million

<table>
<thead>
<tr>
<th>Date</th>
<th>Net debt</th>
<th>Effect</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.12.2016</td>
<td>10,003</td>
<td>FFO</td>
<td>-1,914</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Working Capital</td>
<td>+51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net investments</td>
<td>+392</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other effects</td>
<td>-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hybrid bond repaid (50 %)</td>
<td>+500</td>
</tr>
<tr>
<td>30.06.2017</td>
<td>8,948</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.6 Hedge levels\(^1\)

- **2018**: 90-100%
- **2019**: 30-70%
- **2020**: 0-20%

\(^1\) As of 30 June 2017
7.7 Confirmation of outlook 2017

<table>
<thead>
<tr>
<th>Sales</th>
<th>Grids</th>
<th>Renewable Energies</th>
<th>Generation and Trading</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>1,004</td>
<td>295</td>
<td>337</td>
<td>1,939</td>
</tr>
</tbody>
</table>

Adj. EBITDA 2016
in € million

Forecast 2017
in %

+15 to +25
-5 to +5
+5 to +15
-10 to -20
0 to +5
7.8 H1 2017: Calculation of net debt

in € million

- Financial debt and others: 7,145
- 50% equity credit: -996
- Operating cash & cash equivalents: -2,584
- Net financial liabilities: 3,565
- Pension and nuclear power provisions (net): 16,421
- Dedicated financial assets: -11,038
- Net Debt: 8,948
7.9  H1 2017: Working capital effects

in € million

-270

Trade receivables/payables

Derivatives  13

Inventories  120

Others  188

51

Change in WC

Others  51
Agenda 8 – Capital Markets

1. EnBW at a glance
2. Regulatory Environment and Markets
3. Customers and Competition
4. Strategy
5. Segments
6. The VNG Group
7. Key Financials
8. Capital Markets
   - Asset Liability Management model
   - Bonds
   - Maturity profile
9. Service

EnBW Investor Factbook September 2017

- Ratings
- Shareholder structure
8.1 Service-focused Investor Relations

Ingo Peter Voigt

Head of Finance, M&A and Investor Relations

- EnBW views investor relations as a service provided for one of its most important stakeholders.

- Investor Relations strives to meet the information requirements of investors, analysts, rating agencies and banks in a timely fashion. Active communication facilitates ongoing dialogue with the target groups and enables 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 to ensure access to the capital markets at all times.

- EnBW is aware of the importance of investor relations. The interest of our investors is always of relevance when taking strategic decisions.
8.2 EnBW’s finance strategy is geared to maintaining a strong credit standing

**Objectives of EnBW’s finance strategy and financial management**

**EnBW’s finance strategy**
- Optimising the cost of capital
- Ensuring sufficient liquidity for operations at all times
- Limiting the interest rate risk for the Group
- Maintaining a strong credit standing

**EnBW’s financial management**
- Multi-pillar strategy offering maximum flexibility in financing
- Diversified market approach
- Widely spread maturity profile; 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
8.3 Asset Liability Management model – EnBW covers nuclear and pension provisions even after KFK transfer

EnBW’s CF-based model in € m

Provisions

Financial assets

100 % Coverage projected 2029

Max. € 300 million\(^1\) impact on OCF

\(^1\)adjusted for inflation

Bereich: F-F
Verantwortlich: Gantz / von Wietersheim
Status: aktuell

EnBW Investor Factbook September 2017

<< Agenda
## 8.4 New financial framework for operating business

### Asset Liability Management Model
- Timely coverage of pension and nuclear obligations

### Operating business
- Management of net financial debt

<table>
<thead>
<tr>
<th>Asset Liability Management Model</th>
<th>Operating business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active management of corresponding financial assets</td>
<td>Internal financing capability new key performance indicator</td>
</tr>
<tr>
<td>Impact on operating cash flow of a max. € 300 m p.a. adjusted for inflation</td>
<td>Limitation of cash relevant net investments to retained cash flow of an average € 1.3 bn p.a.</td>
</tr>
<tr>
<td>After full coverage no more funding through operating cash flow</td>
<td>Further implementation of strategy can be executed by internal financial resources only</td>
</tr>
</tbody>
</table>

**Future dividend payout will be based on the earnings performance and the internal financing capability**
8.5 EnBW has a flexible access to various financing sources

<table>
<thead>
<tr>
<th>Financing Source</th>
<th>Amount</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Issuance Programme</td>
<td>€ 7 billion</td>
<td>thereof € 3 bn utilised</td>
</tr>
<tr>
<td>Hybrid bonds</td>
<td>€ 2 billion</td>
<td></td>
</tr>
<tr>
<td>Commercial Paper Programme</td>
<td>€ 2 billion</td>
<td>undrawn</td>
</tr>
<tr>
<td>Syndicated credit line</td>
<td>€ 1.5 billion</td>
<td>undrawn</td>
</tr>
<tr>
<td>Bilateral free credit lines</td>
<td>€ 1.3 billion</td>
<td></td>
</tr>
<tr>
<td>Project financing and low-interest loans from the EIB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 As of 30 June 2017
2 Rounded figures
8.6.1 Fixed income: EnBW’s senior bonds

**Issuer: EnBW Finance B.V.**

<table>
<thead>
<tr>
<th>CCY</th>
<th>Increments</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 Ex.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF</td>
<td>5,000</td>
<td>100</td>
<td>5</td>
<td>12/7/2013</td>
<td>12/7/2018</td>
<td>1.25</td>
<td>12 July</td>
<td>A1HM5M</td>
<td>CH0217677605</td>
<td>S</td>
</tr>
<tr>
<td>€</td>
<td>50,000</td>
<td>750</td>
<td>10</td>
<td>20/11/2008</td>
<td>20/11/2018</td>
<td>6.875</td>
<td>20 Nov</td>
<td>A0T3US</td>
<td>XS0399861086</td>
<td>L</td>
</tr>
<tr>
<td>CHF</td>
<td>5,000</td>
<td>100</td>
<td>10</td>
<td>12/7/2013</td>
<td>12/7/2023</td>
<td>2.25</td>
<td>12 July</td>
<td>A1HM5N</td>
<td>CH0217677654</td>
<td>S</td>
</tr>
<tr>
<td>€</td>
<td>1,000</td>
<td>500</td>
<td>20</td>
<td>9/12/2004</td>
<td>16/1/2025</td>
<td>4.875</td>
<td>16 Jan</td>
<td>A0DG9U</td>
<td>XS0207320242</td>
<td>L</td>
</tr>
<tr>
<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 June</td>
<td>A1ZJ9E</td>
<td>XS1074208270</td>
<td>L</td>
</tr>
<tr>
<td>€</td>
<td>100,00</td>
<td>100</td>
<td>20</td>
<td>13/6/2014</td>
<td>13/6/2034</td>
<td>2.875</td>
<td>13 June</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YEN</td>
<td>100,000,000</td>
<td>20,000</td>
<td>30</td>
<td>16/12/2008</td>
<td>16/12/2038</td>
<td>3.880</td>
<td>Private Placement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<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 July</td>
<td>A1AJTV</td>
<td>XS0438844093</td>
<td>L</td>
</tr>
<tr>
<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 June</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<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 Aug</td>
<td>Private Placement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As of 30 June 2017
L = Luxembourg, S = Switzerland
8.6.2 Fixed income: EnBW's hybrid bonds

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

<table>
<thead>
<tr>
<th>CCY</th>
<th>Increment</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 Ex.</th>
</tr>
</thead>
<tbody>
<tr>
<td>€</td>
<td>1,000</td>
<td>750¹</td>
<td>60.4</td>
<td>28/10/2011</td>
<td>2/4/2072</td>
<td>7.375</td>
<td>2 April</td>
<td>A1MBBB</td>
<td>XS0674277933</td>
<td>L</td>
</tr>
<tr>
<td>€</td>
<td>1,000</td>
<td>250¹</td>
<td>60²</td>
<td>2/4/2012</td>
<td>2/4/2072</td>
<td>7.375</td>
<td>2 April</td>
<td>A1MBBB</td>
<td>XS0674277933</td>
<td>L</td>
</tr>
<tr>
<td>€</td>
<td>1,000</td>
<td>1,000¹</td>
<td>62</td>
<td>18/3/2014</td>
<td>2/4/2076</td>
<td>3.625</td>
<td>2 April</td>
<td>A11P78</td>
<td>XS1044811591</td>
<td>F, L</td>
</tr>
<tr>
<td>USD³</td>
<td>2,000</td>
<td>300¹</td>
<td>60.5</td>
<td>5/10/2016</td>
<td>5/4/2077</td>
<td>5.125</td>
<td>5 April</td>
<td>A2BN7K</td>
<td>XS1498442521</td>
<td>L</td>
</tr>
<tr>
<td>EUR</td>
<td>1,000</td>
<td>725¹</td>
<td>60.5</td>
<td>5/10/2016</td>
<td>5/4/2077</td>
<td>3.375</td>
<td>5 April</td>
<td>A2BPFD</td>
<td>XS1405770907</td>
<td>L</td>
</tr>
</tbody>
</table>

As of 30 June 2017

L = Luxembourg, F = Frankfurt

1 Hybrid bond coupon initially
2 Increase of hybrid bond ISIN No. XS0674277933
3 Regulation S: This Notes are not offered or sold within the United States or to, or for the account or benefit of, U.S. persons
8.6.3 Fixed Income: Maturity profile

- First call dates of hybrid bonds
- Senior bonds
- Hybrid bonds

1 Includes CHF 100 million, converted as of the reporting date of 30/6/2017
2 First call date: hybrid maturing in 2076
3 CHF 100 million, converted as of the reporting date of 30/6/2017
4 Includes USD 300 million (swap in EUR)
5 Includes USD 300 million, converted as of the reporting date of 05/10/2016
6 Includes USD 300 million, converted as of the reporting date of 05/10/2016
7 Includes USD 300 million, converted as of the reporting date of 05/10/2016
Rating: a sound financial policy has allowed EnBW to maintain solid ratings against the negative sector trend

**Moody’s INVESTORS SERVICE**

**Baa1/stable**
24 May 2017

- Conventional generation to remain challenging
- EnBW 2020 strategy to compensate for negative impact of changing market conditions; de-risking of EBITDA mix, increasing contribution from more stable profit streams
- KFK agreement creates additional financial burden
- Continuing implementation of measures to defend credit quality
- Strong shareholder support

**FitchRatings**

**A-/stable**
20 June 2017

- Considerable progress in its business repositioning strategy
- Funding of nuclear waste-related liabilities without major disruptions to strategy or capital structure
- Nuclear tax refund will support recovery of credit measures
- Stable outlook reflects expectation that network operations and growing renewable business will mitigate volatility in power generation and sales, and that credit measures will recover in the near term

**A-/stable**
7 July 2017

- Ratings reflect strong integration, expected increase in earnings visibility and lower financial leverage than many of its peers
- Payment to the state-run nuclear fund (KFK) puts pressure on credit metrics
- Prudent investment and dividend policy supporting credit ratios
- Nuclear fuel tax refund will lead to increased headroom assuming that at least part of the amount will be used for strengthening the balance sheet
8.7.1 Equity capital market: Shareholder structure

**Shareholder structure**

- OEW Energie-Beteiligungs GmbH: 46.75%
- NECKARPRI-Beteiligungsgesellschaft mbH: 46.75%
- Badische Energieaktionärs-Vereinigung: 2.45%
- Gemeindeelektrizitätsverband Schwarzwald-Donau: 0.97%
- Neckar-Elektrizitätsverband: 0.63%
- EnBW Energie Baden-Württemberg AG: 2.08%
- Other shareholders: 0.39%

**Stock exchange information**

- ISIN/security ident. no.: DE0005220008/ 522000
- Stock exchange abbreviation: Bloomberg EBK GY/reutersEBK/EBKG.DE
- Transparency level: General Standard
- Indices: General All Share, DAXsector 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

---

1 Divergence from 100 % possible due to rounding effects ;
2 100% subsidiary of NECKARPRI GmbH which is a 100% subsidiary of the federal state of Baden-Württemberg

as of 30 June 2017
8.7.2 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)
### Equities 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>Annual high</td>
<td>€ 24.25</td>
<td>€ 27.00</td>
<td>€ 28.39</td>
<td>€ 30.89</td>
<td>€ 38.32</td>
</tr>
<tr>
<td>Annual low</td>
<td>€ 18.29</td>
<td>€ 20.21</td>
<td>€ 24.50</td>
<td>€ 25.00</td>
<td>€ 30.00</td>
</tr>
<tr>
<td>Closing price</td>
<td>€ 19.69</td>
<td>€ 20.62</td>
<td>€ 25.60</td>
<td>€ 26.85</td>
<td>€ 30.15</td>
</tr>
<tr>
<td>Number of shares outstanding</td>
<td>m 270,855</td>
<td>m 270,855</td>
<td>m 270,855</td>
<td>m 270,855</td>
<td>m 270,855</td>
</tr>
<tr>
<td>Market capitalisation as of 31 December</td>
<td>€ bn 5.3</td>
<td>€ bn 5.6</td>
<td>€ bn 6.9</td>
<td>€ bn 7.3</td>
<td>€ bn 8.2</td>
</tr>
<tr>
<td>Stock exchange trade (total)</td>
<td>Number of shares</td>
<td>80,173</td>
<td>125,440</td>
<td>157,809</td>
<td>95,634</td>
</tr>
<tr>
<td>Stock exchange trade (daily average)</td>
<td>Number of shares</td>
<td>391</td>
<td>568</td>
<td>711</td>
<td>439</td>
</tr>
<tr>
<td>Distribution</td>
<td>€ m 0.00</td>
<td>€ m 149.0</td>
<td>€ m 186.9</td>
<td>€ m 186.9</td>
<td>€ m 230.2</td>
</tr>
<tr>
<td>Dividend per share</td>
<td>€ 0.00</td>
<td>€ 0.55</td>
<td>€ 0.69</td>
<td>€ 0.69</td>
<td>€ 0.85</td>
</tr>
</tbody>
</table>

---

1 Share value based on closing price trading the EnBW share in XETRA
3 Distribution in terms of shares entitled as of year-end.
1. EnBW at a glance
2. Regulatory Environment and Markets
3. Customers and Competition
4. Strategy
5. Segments
6. The VNG Group
7. Key Financials
8. Capital Markets
9. Service
9.1 Financial calendar 2017 and 2018

2017

- **Report: January – September 2017**
  Conference time: 01:00 pm

2018

- **Integrated Annual Report:**
  January - December 2017
- **Annual General Meeting 2018**
9.2 Important links

- EnBW Group online
- VNG Group online
- EnBW Strategy
- EnBW Renewables Energies
- EnBW Current ratings
- EnBW Corporate Governance
- EnBW Annual Report 2016 [pdf]
- EnBW Overview Board of Management
- EnBW Overview Supervisory Board
- EnBW Dividend history
- EnBW Current share price
- EnBW Financial calendar
- EnBW IR Contact
9.3 EnBW’s IR team

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