

October 2020





## EnBW at a glance



### EnBW at a glance

Key financials
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> Key non-financials

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## EnBW at a glance1



€18.765 m

Total revenue

€2.432.5 m

Adjusted EBITDA

€786.8 m

Adjusted Group net profit

€1.240.7 m

Retained cash flow

One of the largest German utilities

Fully integrated utility in Germany

Stable shareholder structure

13.849 MW generation portfolio

of which

4.398 MW or 31.8%

Renewable Energies

144,000 km electricity grid

~5.5 m customers

23,293 employees

Balanced risk-return profile

~74% FRITDA contribution from low-risk business.

Active in selected foreign markets

Solid investment grade ratings

### **Business segments**



### Sales

Sales of electricity and gas, billing services

Installation and operation of critical infrastructure such as broadband, charging and urban infrastructure



25,000 km gas grid

### **Grids**

Transmission and distribution of electricity, gas and water and the provision of gridrelated services



### Renewable Energies

Generation of electricity from renewable energies (water, wind and solar)



### **Generation & Trading**

Generation of electricity from conventional power plants. generation of heating, storage of gas, electricity and gas trading and system services





## Key financials

KPI	Goal		2019	Target 2020	Target 2025
Adjusted EBITDA	Secure profitability	€ bn	2.4	2.3-2.5	3.2
Internal financing capability	High level of financial discipline	%	82.6	> 100	_ 2
Debt repayment potential					> 14 <sup>3</sup>
ROCE	Increasing Group value	%	5.2	8.5-11.0	6.5-8.0

## Key non financials

KPI	Goal		2019	Target 2020	Target 2025
Installed output of RE in GW and the share of the generation capacity accounted for by RE	Expand Renewable Energies (RE)	GW / %	4.4 / 31.8	5.0 / > 40	7.5 to 8.0 / > 50
CO <sub>2</sub> intensity	Reducing CO <sub>2</sub> intensity by 15 to 20%	g /kWh	419	-15 to -20% (reference year 2015: 609 g/kWh)	-10 to -20% (reference year 2020)
Customer Satisfaction Index (EnBW / Yello)	Customer proximity		116 / 157	> 136 / > 159	125 to 136 / 148 to 159
Employee Commitment Index	Employee commitment		66	65	> 66

<sup>&</sup>lt;sup>1</sup> As of 31 December 2019

<sup>&</sup>lt;sup>2</sup> Following the transition to the growth strategy, the key performance indicator internal financing capability will be replaced by the new key performance indicator debt repayment potential from 2021. Therefore, no target value has been defined for the internal financing capability for 2025.

<sup>&</sup>lt;sup>3</sup> To ensure EnBW achieves its ratings target, the target value will be examined annually based on the requirements of the rating agencies.





EnBW at a glance	<u>02</u>
Market environment	
> COVID-19	
> Political environment	<u>05</u>
> Regulatory environment	
Markets	
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# COVID-19: As an operator of critical infrastructure EnBW well prepared for potential crises



### 24/7 security of supply

> Supply of electricity, gas, water and heat secure at all times

### Protecting the health of EnBW's employees

- > Investments in IT and digital infrastructure pay off
- > 10,000 working from home thanks to the capabilities of modern IT
- > 18,000 video conferences are being held daily (only 1,000 before the coronavirus)

### Dedicated emergency plans for system-critical activities

- > Teams at the control centres for power plants and grids have been separated from one another
- > Physically separate teams for key units, e.g. in grids with backup control rooms and in trading with an alternative trading floor.
- Strict safety measures for field technicians who have to drive to and work at the site alone and wear protective clothing if necessary





### Social responsibility beyond energy supply

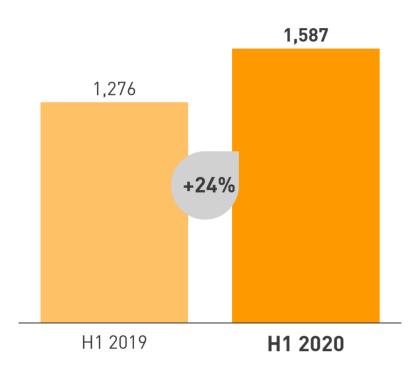
- Donation of a total of €150,000 to the food banks run by the "Tafel" charities in Baden-Württemberg.
  - These aid organisations distribute food to the needy. The pandemic has left them facing special challenges in their work
- > Support for the book business / book stores in Baden-Württemberg
- Donation of face masks to medical facilities
- Nobody should be left without a connection to the energy grid at this exceptional time
- EnBW has restored connections to all those who had their electricity and gas supplies cut off in the first months 2020



# COVID-19: Moderate negative impact on earnings in the first six months of 2020



## Adjusted EBITDA in € m



### **Adjusted EBITDA**

> Only a moderately negative impact of COVID-19

#### Sales

> Lower sales to B2B customers and impairments on receivables likely to manifest themselves further in the second half of 2020

#### **Grids**

> Earnings performance not significantly influenced. Potential negative impact will be compensated

### **Renewable Energies**

> No impact of COVID-19

### **Generation and Trading**

- > Electricity deliveries sold at higher wholesale market prices
- > Earnings contributions from trading activities with positive effect due to growing volatility on the wholesale markets

#### Forecast

Unchanged forecast in six-monthly report assuming that the measures taken by German / state governments to relax the restrictions are maintained



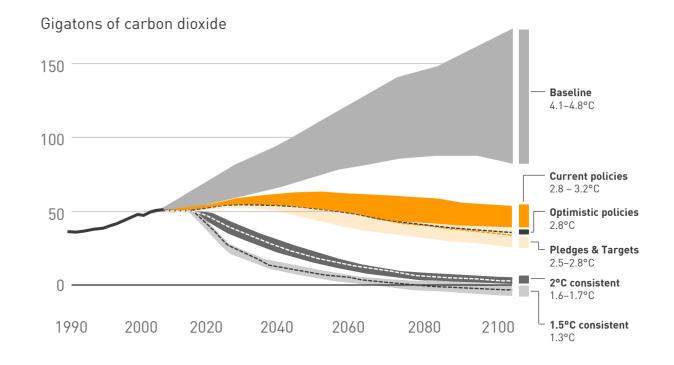
# Decarbonisation: Global regulatory framework on climate change



### The Paris Agreement

- Adopted at the UN Climate Change Conference COP21 in December 2015 by the 196 Parties to the UN Framework Convention on Climate Change (UNFCCC)
- > Established a global warming goal well below +2°C on pre-industrial average with efforts to limit warming to +1.5°C in 2100 in relation to pre-industrial levels
- Aims at achieving net-zero emissions in the second half of this century
- Defined a universal, legal framework where all countries develop and communicate their mitigation measures and "nationally determined contributions" (NDCs)
- World Climate Conference 2020 (COP26) in Glasgow cancelled due to COVID-19 and postponed to 2021

### Effect of current pledges and policies on global GHG emissions





Current pledges lead to global warming of roughly +3°C (not yet including the impact of tipping points, which are likely to occur at temperature increases > 1.5°C)





EU 2020 goals

-20% GHG emissions

20% RE in final energy consumption

Green

Deal

20% Energy savings

Target architecture status quo



EU 2030 goals

-40 0% GHG emissions 32.0% RE in final energy consumption 32.5% Energy savings

### Green Deal

### Economic transformation for a sustainable future:

- Climate neutrality by 2050
- Clean, safe and affordable energy
- Mobilising research and innovation
- Preserving ecosystems and biodiversity
- Sustainable mobility
- Financing the transition
- Zero pollution target
- Circular economy
- Sustainable farming and food
- I eave no one behind
- EU as global leader
- **European Climate Pact**

### The European Green Deal<sup>1</sup>: The new **European Commission's core programme**

### Key goals:

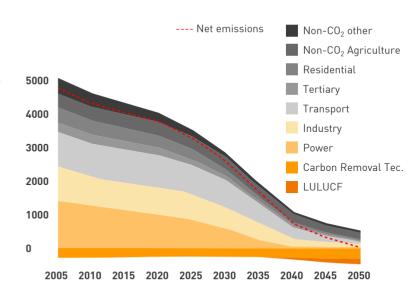
- > Achieve climate neutrality in Europe by 2050
- > Industrial policy to secure sustainable economy and industry in terms of sustainable products and access to natural resources.
- > Protect habitats

### Core climate and energy policy measures:

- Climate neutrality by 2050 in law
- 2030 targets raised (emissions -50 to -55%)
- > Increased sector coupling and decarbonisation of gas sector (hydrogen strategy)
- Offshore wind strategy
- > Renovation wave

## Emissions per sector in Green Deal scenario<sup>2</sup>

Mt CO<sub>2</sub>-equivalent





EU expected to legislate by end of 2020 to achieve net climate neutrality by 2050; 2030 targets expected to be raised; work underway to strengthen supporting legal and financial framework > 1.5°C



## Decarbonisation: Political & regulatory environment in Germany



### Climate package

### German Climate & Energy Policy Goals

-40% GHG emissions by 2020 (-55% by 2030) -20% primary energy consumption by 2020 (-61 to -62% by 2030)

### **Climate Protection Act**



Establishes German climate protection targets by 2050 and sets a **legal framework**.



Climate neutrality by 2050 pursued as long-term target.
Annual sectoral emission budgets specified through to 2030; German government can arbitrarily reallocate sectoral emission budgets.



**Monitoring process** for target attainment by 2030: If sectoral annual emission targets missed, department in charge has to submit an immediate action programme.

### Climate protection program 2030



Target of **65% renewables in 2030** and target ranges specified for specific technologies, e.g. offshore wind target raised and 52 GW PV cap lifted.



New act implements **coal phase out by 2038** at the latest. Reduction of coal-fired capacity from ~40 GW to 30 GW in 2022 and 17 GW in 2030.



New act (BEHG) to implement **national CO<sub>2</sub> pricing system in transport and heating**, starting in 2021 with fixed prices followed by a cap-and-trade system from 2026.

Implementation of legal measures within climate protection package at different stages of advancement: Coal phase out is already legislated, while specific tender quantities for target of 65% renewables by 2030 are expected to be implemented in pending amendment of EEG.

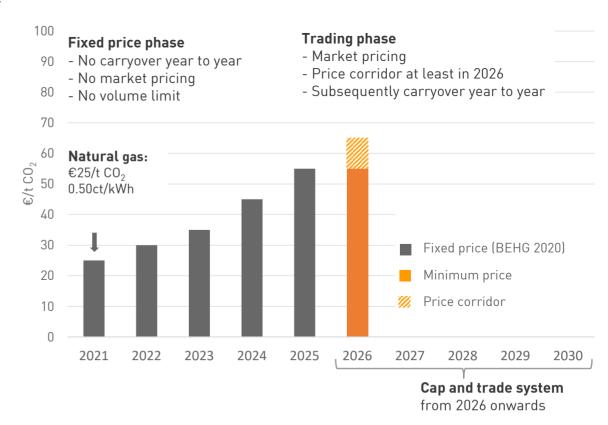




### New installations and measures needed for 65% target

### Putting a price on CO<sub>2</sub> emissions in heating and transport sectors

- New act introducing national CO<sub>2</sub> pricing in transport and heating sector adopted autumn 2019 (Fuel Emissions Trading Act, known by its German abbreviation BEHG)
- Parties placing fossil fuels on the market have to pay a fixed price per ton of CO<sub>2</sub> until 2025, after which certificate trading will be phased in with a price corridor and volume limit
- > More ambitious BEHG price path agreed in late 2019 by German government and German states and to be made law in 2020
- Almost all public revenue from BEHG to be used to reduce the surcharge under the Renewable Energy Sources Act and hence the cost of electricity
- EnBW supports introduction of cross-sectoral CO<sub>2</sub> pricing system and implementation of higher price path in the Act, but at the drafting stage advocated a less complex approach incorporating a CO<sub>2</sub> component in energy taxes



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National CO<sub>2</sub> pricing adds incentives for sector coupling by adding to the price for fossil fuels while cutting the cost of climate-friendly electricity applications

2030

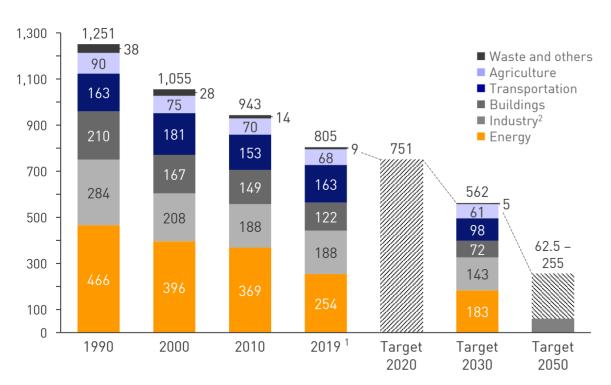


## National GHG emissions and climate protection targets

GHG: Greenhouse gas



### German GHG emissions by sector (in m t CO<sub>2</sub>-equivalent)



## Sector targets for GHG emissions according to the German Action Plan (Klimaschutzplan) 2050

Sector	<b>1990</b> (in m t CO <sub>2</sub> -eq.)	<b>2019</b> <sup>1</sup> (in m t CO <sub>2</sub> -eq.)	<b>2030</b> (in m t CO <sub>2</sub> -eq.)	(reduction compared to
Energy	466	254	175-183	62-61%
Industry <sup>2</sup>	284	188	140-143	51-49%
Buildings	210	122	70-72	67-66%
Transportation	163	163	95-98	42-40%
Agriculture	90	68	58-61	34-31%
Subtotal	1,213	796	538-557	56-54%
Waste and others	38	9	5	87%
Total amount	1,251	805	543-562	56-55%

2020 climate protection targets within reach due to corona effects

**Energy sector records massive drop in emissions** 

EnBW Factbook 2020

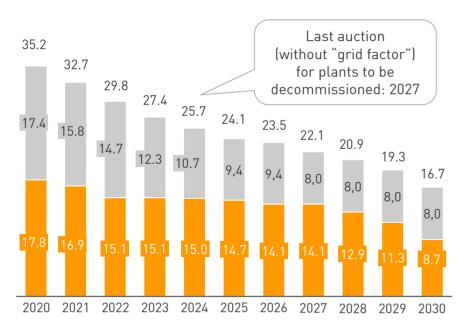


## German Federal Government climate protection policies



Exit paths for lignite and hard coal: output in each target year (market capacity; GW)

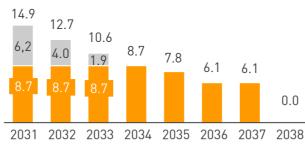
### Competitive bidding for plants to be decommissioned



## Statutory reduction mostly without state compensation





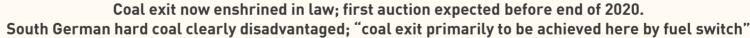


#### Hard coal

- Compensation for decommissioning determined via bids for decommissioning by 2027<sup>1</sup>
- Compulsory decommissioning possible for decommissioning from 2024 if auctions undersubscribed
- South German plants disadvantaged: not eligible to take part in first auction, then bid made uncompetitive by percentage markup for systemrelevance; no award in last auction (due to "grid factor")
- > From 2031: Forced decommissioning with no compensation under statutory reduction plan; exception: Economic assessment for "recent" plants commissioned from 1 January 2010; compensation then still possible

### Lignite

- Decommissioning path and compensation will be the outcome of individual negotiations with operators
- Major decommissionings just shortly before interim target dates (2022, 2030, 2038)



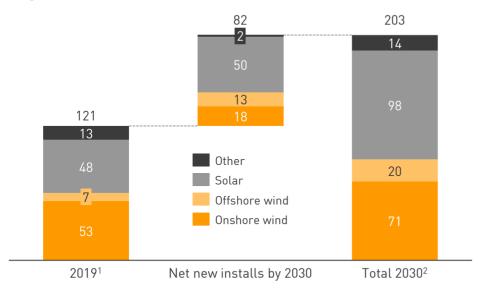


## Renewable energy: Regulatory framework



### Climate Action Programme: RE needed by 2030

- > In a scenario for 2030 with the 65% target, the German government expects slightly less than 580 TWh gross electricity demand
- Attaining that target would need about 380 TWh in renewables generation (now 38% or 225 TWh)



### New installations and measures needed for 65% target

#### Offshore wind

Increased 20 GW target is already politically agreed. Mid-term target of 40 GW offshore wind by 2040 is also planned.

#### Solar

- > 65% target requires ~55 GW (~5.5 GW/year) in gross new installs (EnBW assumption: includes 5 GW in old installations going out of service)
- Abolition of 52 GW cap a first step
- Target attainment depend on: Increased land auction volume combined with sufficient land availability, existing installations kept in operation via smallscale direct marketing (see below) and more new installs on roofs and buildings

### Small-scale direct marketing

- > Direct marketing can be used to keep previously subsidised systems in operation.
- > Financial incentives are still lacking for direct marketing of small solar roof installations.

RE: Renewable Energy

Opportunities from digitization and simplified rules could be a solution.

65% renewables target by 2030 - the regulatory measures adopted so far are not enough to attain it

EnBW Factbook 2020

<sup>&</sup>lt;sup>1</sup> Source www.energy-charts.de; Fraunhofer ISE, as of 30 September 2019



## Regulated grids business



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## Regulatory environment

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



## Challenges for grids in Europe

### Three main challenges for grids:

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

### EnBW's approaches to solutions:

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

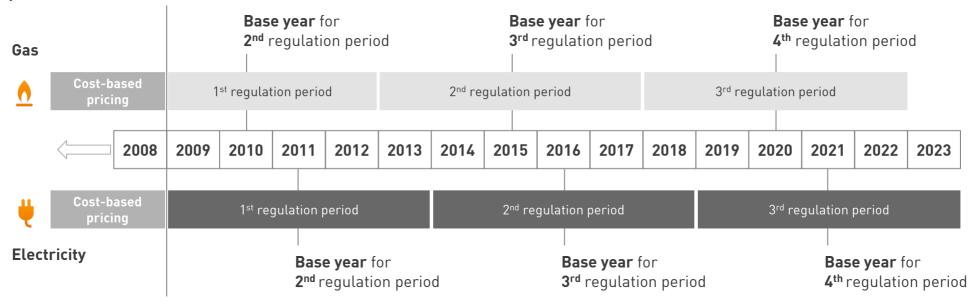


## Regulated grids business: Incentive regulation in Germany



### Introduction of incentive regulation

as of 1 January 2009



- > Following the introduction of incentive regulation in 2009, grid operators are called upon to continuously improve the efficiency and cost-effectiveness of grid investment and grid operation.
- > Key regulatory parameters such as return on equity and the costs recognised for a network operator are set for a several-year regulation period.
- > The costs to be recognised for grid operators are determined in each base year for the following regulation period.



## Regulated grids business: Return on new systems for the 3rd regulatory period





- Irrespective of the actual financing structure, a maximum of 40% of capital employed is subject to the EK-I rate of return as this is capped at 40% of equity by law (Stromnetzentgeltverordnung)
- Capital employed in excess of this amount is subject to the EK-II rate of return.

<sup>&</sup>lt;sup>2</sup> KöSt: Körperschaftssteuer – corporate tax



## Regulated grids business: German high-voltage grid

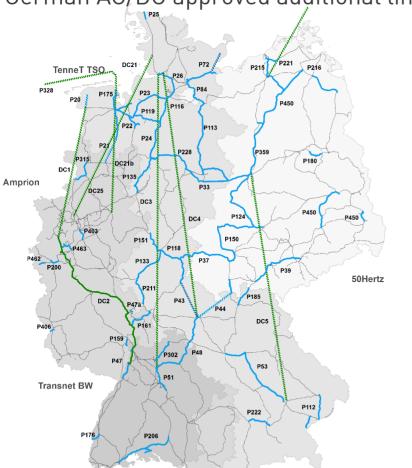
— Existina arid DC lines

> Reinforcement Extension

— AC lines



German AC/DC approved additional lines, rewiring and reinforcement<sup>1</sup>



### 4.400 km upgrading in existing line routes<sup>2</sup>

- > AC reinforcement/ rewiring: ~4.100 km
- > DC rewiring: ~300 km

### 3,450 km grid expansion in new line routes<sup>2</sup>

- > AC new lines: ~350 km
- > DC new lines: ~2.850 km
- > DC new IC-lines: ~250 km
- Existing grid to be expanded by ~20% until 2030 over current grid length (2020)3
- > €50 bn total estimated for investment in transmission grids both onshore and offshore until 20303
  - > whereas €30 bn are dedicated for DC projects and €18 bn to connect new offshore wind farms

DC: Direct current

<sup>3</sup> Source: "Zahlen und Fakten zum deutschen Stromnetz", BMWI

Source: "Netzentwicklungsplan Strom 2019-2030: Bestätigung", BNetzA AC: Alternating current

<sup>&</sup>lt;sup>1</sup> Excluding Offshore-park connection development <sup>2</sup> Source: "Netzentwicklungsplan Strom 2019-2030: Bestätigung", BNetzA



## Market development





## Generation and trading

- > Expansion of renewable energies. especially solar and offshore wind
- > 2020 start of coal phase-out
- Increasing power generation from gas power plants
- Conventional power stations increasingly in back-up role
- > Commodity prices low, increase expected for the future
- > Increasing CO<sub>2</sub> prices
- Increasing volatility of prices and volumes



## → Power and gas grids

- > Volatile electricity generation challenging to arid stability
- > Expansion of transmission grid, especially HVDC
- > Expansion of power distribution grids. e.a. due to increase in e-mobility
- Accelerating expansion of smart grids
- > Expansion of gas transportation grids in Baden-Württemberg, due to higher demand
- > Planning and development of hydrogen infrastructure



### Customers

- > Importance of eco-energy continues to grow: 43% of the tariffs selected include green electricity or greenhouse gas<sup>1</sup>
- > Strong commitment to ecologically oriented providers
- Sustainability ensures high customer satisfaction
- Most common reason for dissatisfaction is energy costs: Higher-than-expected costs (45%) and interim price increases (28%) most often led to dissatisfaction<sup>1</sup>
- Upward trend in electromobility, but obstacles to purchase of electric cars remain: Main arguments are high purchase price (87%), few charging stations (30%) and long charging times combined with short range (40%)1
- **Technological developments**: More diversity, modularity and granularity in the energy system
- **New market participants**: More competition and fragmentation of the value chain
- **Regulatory framework:** Undergoing constant change, rising complexity



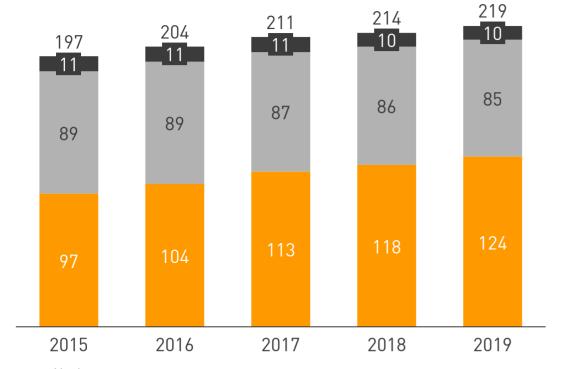
Business models of large utilities are changing; accelerating development of renewable energies and grids as well as new services for customers



## German electricity market: Installed capacity and generation



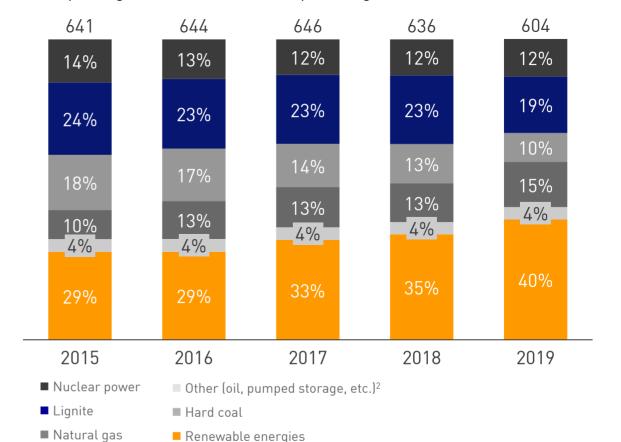
## Installed capacity



- Nuclear power
- Conventional thermal power plants and other
- Renewable energies

### Generation<sup>1</sup>

Gross power generation in billion kWh; percentage shares



<sup>&</sup>lt;sup>1</sup> May not add up to 100% due to rounding

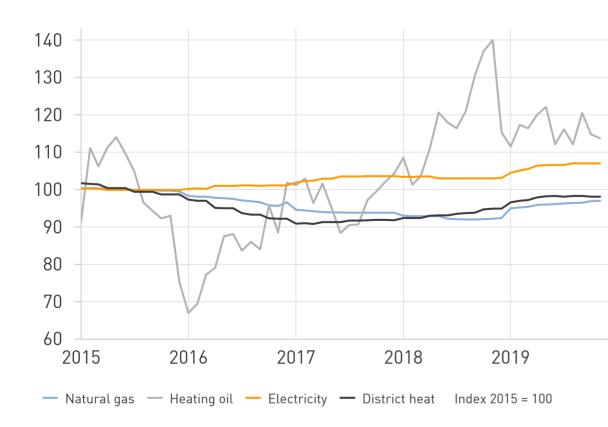
<sup>&</sup>lt;sup>2</sup> Pumped storage generation no longer included, but accounted for as storage withdrawal



# German electricity market: Development of household energy prices and electricity consumption

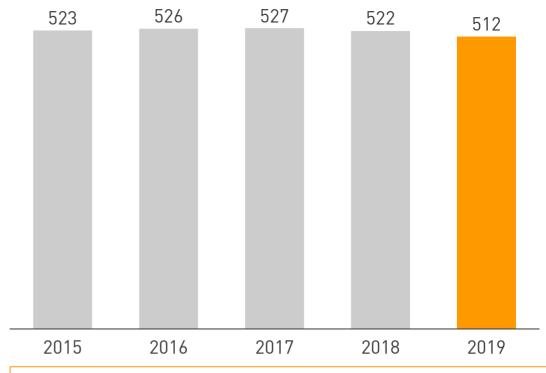


### Energy prices in Germany



Figures as of January 2020; Source: Federal Statistical Office (FS 17, R 2), BDEW (electricity 3,500 kWh/a) The chart shows the development of prices (indexed rates of increase, not absolute fuel prices) for heating oil, gas, electricity and district heating for households since January 2015 relative to the 2015 base year (annual average).

## Electricity consumption in Germany



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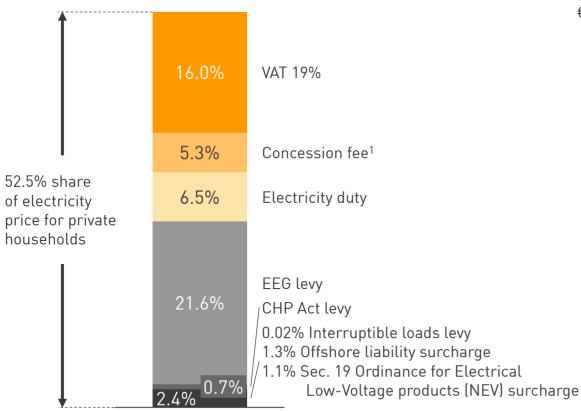
Net electricity consumption declining in recent years; reduction due to efficiency and changes in the economic situation of the industry



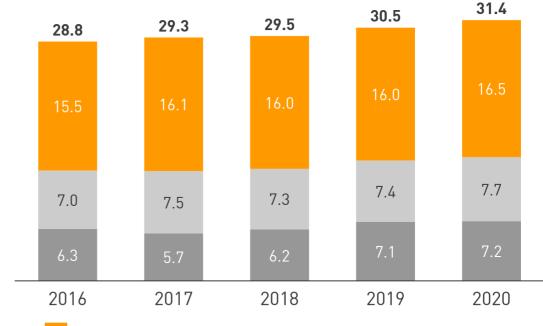
## German electricity market: Electricity price



### Electricity price for private households 2020



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



- Taxes, fees and cost allocation
- Network user charges, including metering, billing and metering station operation
- Procurement and sales

Source: German Federal Association of Energy and Water Management (BDEW), figures as of January 2020 EEG: Erneuerbare Energien-Gesetz (renewable energy act) CHP: cogeneration combined heat and power

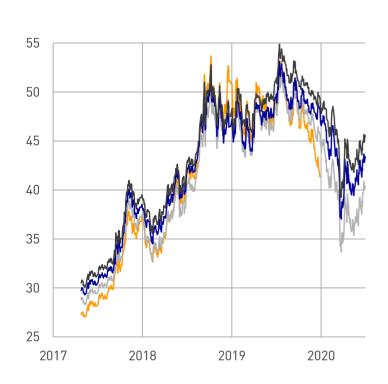
Average concession fee; varies according to size of community



## German electricity market

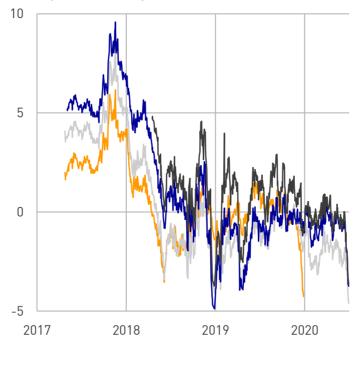


## Forward price for baseload electricity in €/MWh



# Clean-dark-spread peak<sup>1</sup> in €/MWh

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



2021

2022

2023

## Clean-spark-spread peak<sup>2</sup> in €/MWh

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



2020

<sup>&</sup>lt;sup>1</sup>Clean-dark-spread is the corresponding indicator for coal-fired generation of electricity

<sup>&</sup>lt;sup>2</sup> Clean-spark-spread represents the net revenue a generator makes from selling power, having bought gas and the required number of carbon allowances



## Comparison for electricity transmission and distribution grids in Germany





# Transmission grids 380 kV, 220 kV (ultra high voltage)



# Distribution grids up to 110 kV (high/medium/low voltage)

### **Organisation**

- 4 operators: 50Hertz, Amprion, TenneT, TransnetBW
- Grid length: ~36,700 km<sup>1</sup>
- Grids owned by operators

- 883 operators<sup>1</sup>
- Grid length: ~1,814,300 km<sup>1</sup>
- 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

### Challenge of the Energiewende

- Transport of wind-generated electricity from northern to southern Germany
- Building new high voltage direct current (HVDC) transmission lines using underground cables
- Connecting offshore wind farms

- Connection of decentralised renewables (e.g. photovoltaics, wind)
- Integration of charging infrastructure for electric cars
- Use of smart grid tech and digitization of metering operation (e.g. smart meters)

### Unbundling regulations

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

<sup>&</sup>lt;sup>1</sup> Source: "Marktstammdatenregister", BNetzA; "Monitoringbericht 2019, Stand Januar 2020", BNetzA HVDC: High-voltage direct current transmission technology



## Electricity grids are the backbone of the "Energiewende"



### Electricity grids

#### General

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

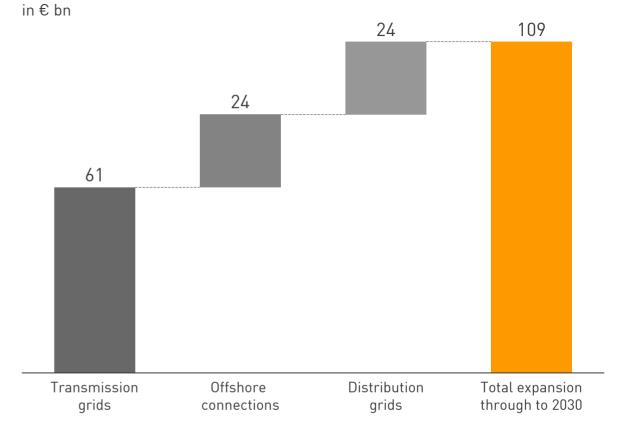
### **Transmission grid**

 Growing geographical imbalance between generation and consumption as main driver for transmission grid – primarily construction of high voltage direct current (HVDC) transmission lines and connection to offshore wind farms

### **Distribution grid**

- > Feed-in growing due to local generation
- > Still strong trend back to municipal ownership (large share of concessions already extended)

# Capex for expansion of the German electricity grid until 2030

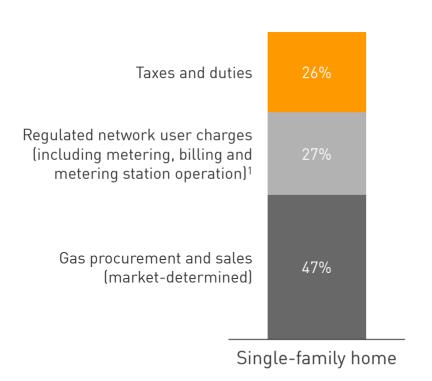




## German gas market: Gas price



### Gas price



## Single-family home, gas central heating

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

### € cents/kWh



Procurement and sales

Network user charges, including metering, billing and metering station operation

Taxes and franchise fees

EnBW Factbook 2020

<sup>&</sup>lt;sup>1</sup> Average net network user charge including charges for metering, metering station operation and billing, subject to large regional variation, figures as of January 2020; Source: BDEW

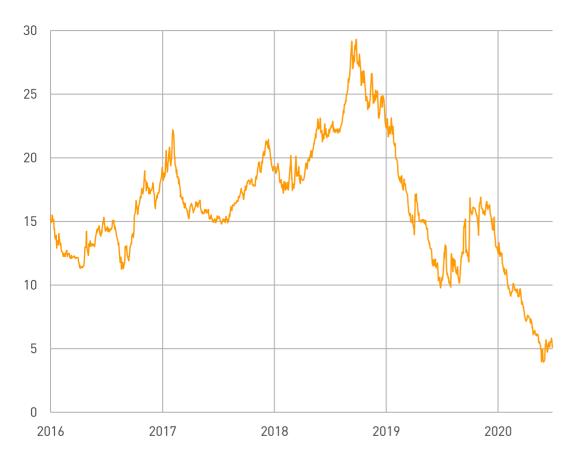
<sup>&</sup>lt;sup>2</sup> Most heating gas customers are customers on contract with the regional default supplier with a reduced concession fee (0.03 ct/kWh); figures as of January 2020; Source: BDEW



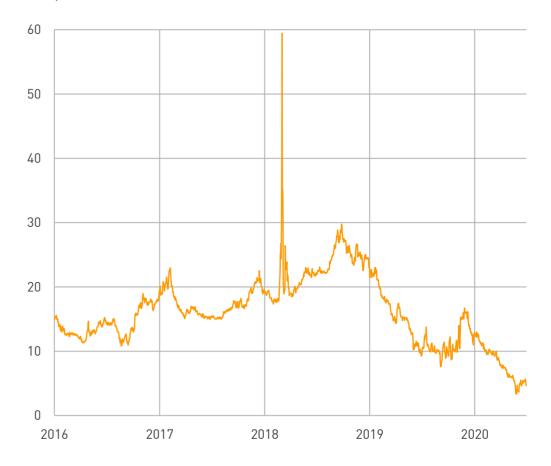
## German gas market: Front month price and spot market development



## Front month reference prices<sup>1</sup> in €/MWh



## Spot market reference prices<sup>1</sup> in €/MWh



<sup>&</sup>lt;sup>1</sup> Average of Gaspool and NetConnect Germany (NCG)



## Comparison for gas transportation and distribution grids in Germany





## Transportation grids



### Distribution grids

### **Organisation**

- 16 grid operators<sup>1</sup>
- Grid length: ~38,500 km<sup>1</sup>
- Grids owned by operators
- Two market areas (NetConnect Germany and Gaspool) (consolidation planned in 2021)

- > 708 grid operators<sup>1</sup>
- Grid length: ~512,200 km<sup>1</sup>
- > Franchises issued by municipalities
- > Competition for franchises

### **Tasks**

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

## Challenge of the Energiewende

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

## Unbundling regulations

Ownership unbundling, independent transmission operator (ITO)

Functional and financial unbundling of the grid business and obligation as to non-discriminatory use of grid information

 $<sup>^{\</sup>rm 1}$  Source: "Monitoring Bericht 2019, as of January 2020", BNetzA DS0: Distribution system operator



## Gas grids are a major element of the "Energiewende"



## Gas grids<sup>1</sup>

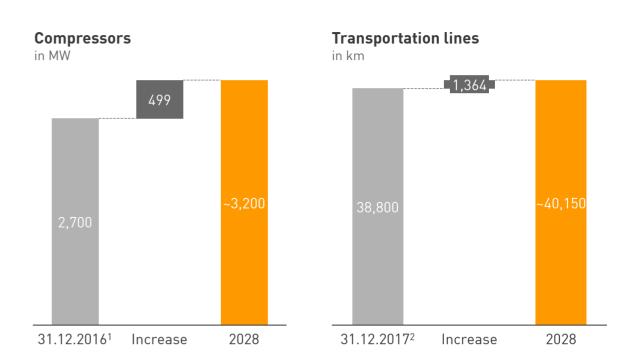
### **Transportation grid**

- Increasing capacity requirements from changes in regulatory environment: Switch in the market from L-gas to H-gas (approx. half of L-gas from Netherlands to be replaced by H-gas from Russia/Norway by 2025)
- > In addition, the capacity requirement increases due to the coalto gas fuel switch and the oil-to-gas switch in the heating sector

### **Distribution grid**

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

# Expansion of the gas transportation grid in Germany until 2028





<sup>&</sup>lt;sup>1</sup>Source: Gas network development plan 2018-2028

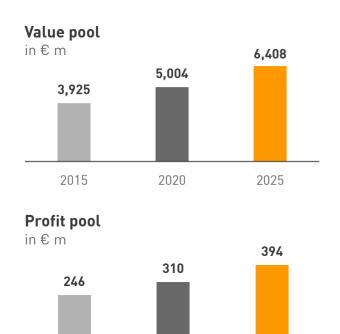
<sup>&</sup>lt;sup>2</sup> Source: BNetzA/BKartA Monitoringbericht (Monitoring Report) 2018 L-gas: low calorific gas H-gas: high calorific gas



## Contracting: Media and services from a single source



### Growth in German contracting market<sup>1</sup>



2020

#### General market trends

- > Increasing importance of distributed energy
- > Slight medium-term rise in interest rates
- > Increasingly complex regulatory framework

#### **Customer trends**

- Growing numbers of (complex) distributed energy systems
- > Focus on core business: capex optimisation, reduction of operating risks in energy provision
- Increasing demand for outside staff (rather than maintaining in-house resources) for "special" task area of distributed energy
- Growing key importance of sustainability, CO<sub>2</sub>-savings and energy efficiency

### Provider/product trends

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



2015

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

2025



## International, national, regional and new competitors



### Competitors

### Companies

### Characteristics

### Position of FnBW

International



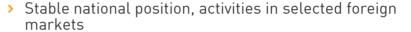
> Broad-based, internationally oriented growth strategy

Growth especially in renewable energies, grids and sales/solutions

**National** (DACH region)







> Focus on market development, for example in renewable energies, grids, sales and/or solutions







Verbund







- > Focus on regional markets
- Business activities mainly focused on grids and sales

New













- Entry of new market participants into core business
- > New competition in consequence of EnBW's market entrance into new business areas

EnBW is positioned as an integrated utility focusing on Germany and selected foreign markets

- Main growth areas:
- Renewable Energies
- Grids
- Customer solutions (especially e-mobility telecommunication and broadband)













Key challenge: Optimal positioning given the regulatory/competitive market environment



## The "Energiewende" increases competition

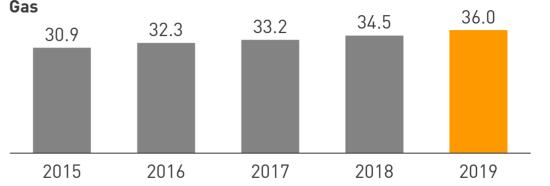


### Retail and customers - trends

- > Growing price sensitivity<sup>1</sup> and new competitors lead to fiercer competition
- > Lateral entrants, disruptive suppliers and intermediaries are increasingly competing for customers and market shares
- Commodity business (electricity and gas) is still significant. In order to make pure electricity and gas products more interesting or emotive for customers, utilities are increasingly supplementing their products with energy-related or non-energyrelated additional services. Non-industry companies continue to be popular sales partners
- > Developing ecosystems for customers in order to be able to serve all their needs: Provision of a broad portfolio is intended to ensure that a household's entire energy requirement is covered by one sole provider
- > Eco-energy has a greater influence on customers' choice of supplier. The popularity of green electricity can be seen in the increasing number of regional electricity tariffs selected since the beginning of 2019: 43% of tariffs for electricity and gas exchangers include eco-energy<sup>1</sup>
- > The regionality of providers has also become significant: 33% of customers who churned indicated that a regional provider was important for them
- > Local energy production by customers on the rise: Consumers are becoming prosumers. Due to cost and environmental considerations and the variety of state funding options, the range of prosumer products increased further in 2019<sup>1</sup>

# Strong competition: Cumulative churn rate of retail customers in %





Source: BDEW 2019





EnBW at a glance	<u>U2</u>
Market environment	<u>05</u>
<ul><li>Strategy</li><li>EnBW 2020 strategy</li><li>EnBW 2025 strategy</li><li>Broadband</li><li>Contracting</li></ul>	
Digitization	
Research and development	
Innovation	<u>33</u>
Corporate sustainability	<u>45</u>
Business seaments	56

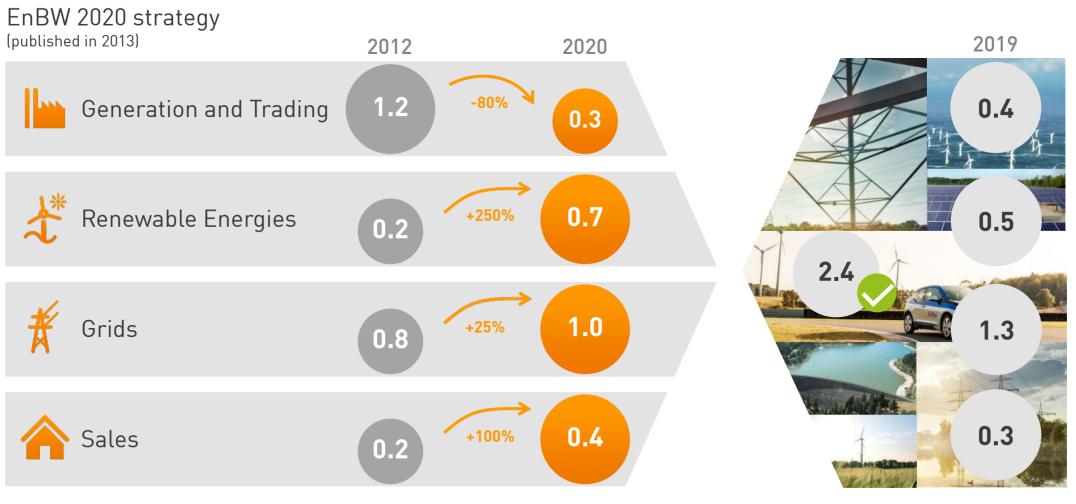
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# Portfolio transformation successful – EBITDA target already achieved in 2019

2.4







# **Evolution of our 2020 strategy into 2025 strategy** is based on key trends





**Decarbonisation** influences political and regulatory actions



**Supply chain is subject to rapid changes**, as new competitors and technological advancements are entering the market



**Decentralised energy system** due to renewable energies and smart grids



**Energy and infrastructure issues converge** due to electrification and digitization (e.g. e-mobility)



Rising need for smart and reliable infrastructure as a consequence of demography, urbanisation etc.



Changing and harder to predict customer behaviour due to **individualisation**, **digitization**, **networking** etc.





# EnBW 2025 strategy - the path to becoming a sustainable and innovative infrastructure partner



### Ongoing strategic development

### Holistic focus on stakeholders











**Finance** 

**Strategy** 

**Customers** and **Society** 

Multi-dimensional goal system

**Employees** 

**Environment** 

### **Integrated corporate strategy**

EnBW 2020 strategy "Energiewende. Safe. Hands on."	>	EnBW 2025 strategy "Making and shaping the infrastructure world of tomorrow."
Realignment and repositioning	>	Growth
Energy utilities	>	Infrastructure provider
Four segments  > Sales  > Grids  > Renewable Energies  > Generation and Trading	>	Three strategic business fields  > Smart infrastructure for customers  > System critical infrastructure  > Sustainable generation infrastructure



# EnBW 2025 strategy - developing into a sustainable and innovative infrastructure partner



## From portfolio transformation to growing profitability Adjusted EBITDA in € bn

#### Sustainable generation infrastructure

- > Increase wind power capacity to 4,500 MW
- > 600 MW solar energy portfolio in Germany
- > First projects in post-EEG phase without subsidies
- > Internationalisation into selected foreign markets



#### **Smart infrastructure for customers**

- > Expansion of quick charging grid to more than 10,000 charging points and retention of market leadership
- > Growth in the telecommunication sector by infrastructure and service activities, targeting top-3 position among "alternative" fibre optic providers
- > Transferring EnBW's competency (managing and operating critical infrastructures) to further new and digital business models

#### System-critical infrastructure

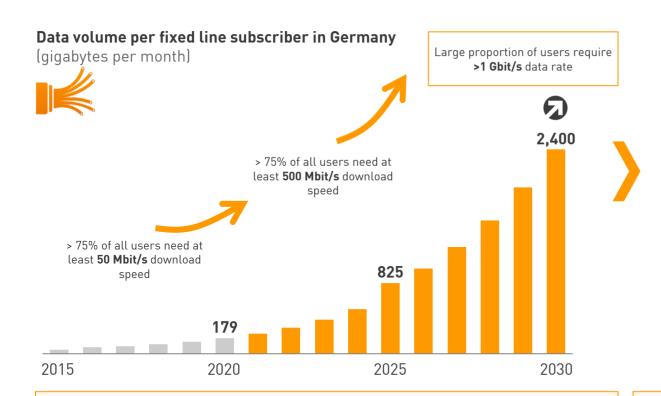
- Expansion of transmission network by construction of Suedlink and Ultranet
- Converting distribution grids into smart grids and preparing them for future demands such as the integration of e-mobility
- Participation model for local authorities in distribution grids
- > Enabling the transformation in the gas sector by getting ready H<sub>2</sub> gas infrastructure



# Broadband and telecommunications market to see strong growth in coming years



Market trends & development Rising data rates



EnBW's ambitions & goals

- Digitization has been massively accelerated by the corona crisis and is driving rapidly growth in demand for high bandwidths and telecommunication services.
- > Telecommunication is an integral part of our further evolution into an infrastructure provider.
- Going beyond the role of operator, EnBW through subsidiaries
   Netcom BW and Plusnet will also establish itself here as
   network infrastructure owner.

#### EnBW provides services spanning the entire value chain





Optical fibre is the only technology that can deliver the bandwidth needed

Telecommunications strategy is integral to our strategy

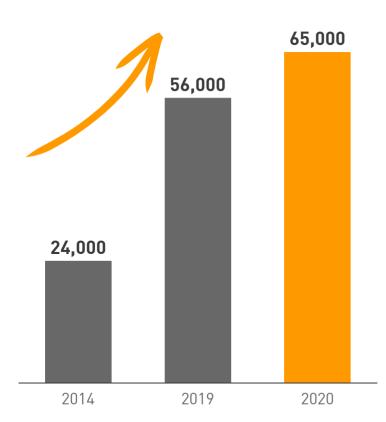


## **Broadband at NetCom BW**

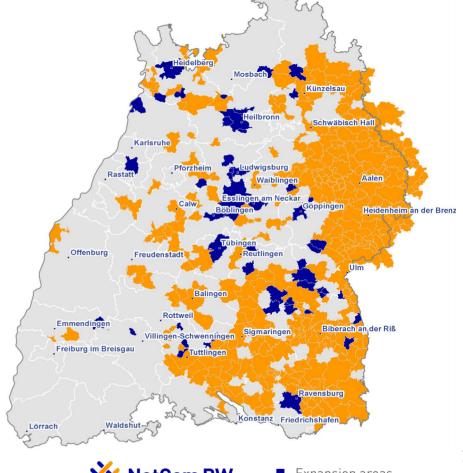


## Total customer growth

Number of customers



- > Approx. 56,000 customers, of which 7.700 commercial and industrial
- > Around 15,200 km of fibre optic cable
- > Second biggest backbone network in Baden-Württemberg
- > Serves > 42% of municipalities in Baden-Württemberg
- > Integration of customer locations outside Baden-Württemberg (in cooperation with GasLINE & Plusnet)
- > 200 connected mobile phone locations in construction and expansion





Expansion areas

Existing areas



## **Contracting: Capability portfolio and competitors**



## What do we do?

# EnBW among the top 5 contracting providers in Germany

Contracts

contract

> 200 plants under

#### **Customers**

- > Industry
- > Housing sector
- > Public sector

#### Regions

Germany (housing sector currently Baden-Württemberg and selected regions)



#### Product/service portfolio

- > Main focus: Design-build-operate-finance services for distributed energy systems under energy supply/energy performance contracting
- Wide range of plant types (including large complex plants, currently up to 100 MWth)
- Integrated single-source packages, custom tailored
- Packages linked with additional services such as direct marketing, energy efficiency optimisation, charging infrastructure, photovoltaics/storage systems
- Operation management and efficient system management e.g. optimisation of system operation
- > Additional services such as networks and energy efficiency

#### Media

> **Heat** (hot water, steam), refrigeration, CHP, compressed air, ventilation







#### Systems/technologies

> CHP plants, boilers, refrigeration systems, gas turbines, compressed air systems, ventilation systems

# Who are our competitors?

- > Highly fragmented market with > 500 providers, most without primary focus in terms of customer segments and media; occasional takeovers
- Five main provider groups







- Contracting subsidiaries of major energy groups (e.g. E.ON, MVV Energy Solutions, Enercity/Danpower)
- Building systems providers/facility management service providers (e.g. Techem and Engie)
- Municipal utilities

- > Independent contractors (e.g. Getec)
- > Component manufacturers (e.g. Siemens/Bosch)

> Energy groups' subsidiaries and independent contractors are EnBW's main competitors (similar capability portfolio and national presence)

>

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



## **Digitization within EnBW**



Value chain			Impact Low High	Relevant dimensions	Focus	
	*	Generation		Products &		Increased availability Predictive maintenance
CORE BUSINESS	$\Rightarrow$	Trading	ading		$\rightleftharpoons$	Automated trading Improved forecasting
	, , , , , , , , , , , , , , , , , , ,				<b>煮</b> ×	Optimisation of maintenance Modern customer interaction
	<b>☆</b> ≭ Grids		Technology		New products Digital customer experience	
		Sales & Operations		People,		Digital business models Interconnection of customers and systems
NEW BUSINESS	ď	e-mobility, virtual power plant, smart cities, quarter development	<u> </u>	organisation and capabilities	A	Development of digital competencies through training / further education and new talent from external sources
		s around data, advanced a lligence, blockchain	analytics,	About 600 communiti		tively involved, with around 15



## Research and development: Creating know-how for new opportunities



#### Learning by doing: Pilots and demonstrations with particular focus on

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

#### The right skills for future business opportunities

- Emerging technologies
- Game-changing technologies
- New partnerships

#### **Explore** new solutions

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

#### Research and development builds capacity for future business opportunities.

Generated through pilot and demonstration projects Example: Offshore wind farms for deeper sea regions

1 2 3 Commercial Request Research approach prepared

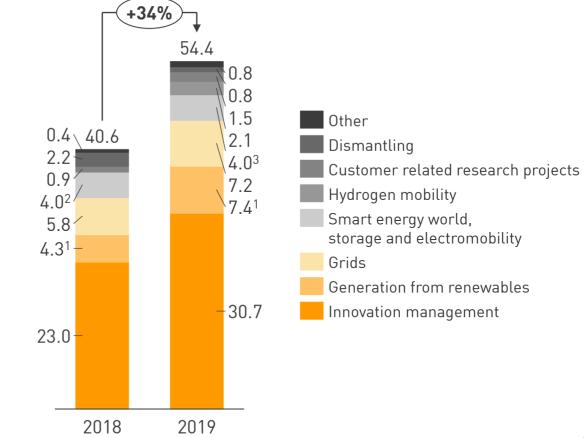
- Wanted how to reconstruct wind farms for floating off-shore operation in deeper sea
- projects together with business units, customers
- Studies and demonstration > and suppliers
- - commercial offers Early-stage strategic collaborations

Capacity building

Reliable basis for



### Expenditure on research, development and innovation in € m







Incubation Company Builder Pre-Seed Seed Scale Start-up SMIGHT NFT7live-X cl:mate HEAT energybase KWK BOp **CHARGEHERE** MeEMob VIRTUELLES KRAFTWERK
EINE INNOVATION DER — EnBW PARCONOMY Gridpool Ben \/**•**T RAUMG@LD WTT Campus ONE

- > 47 projects since launch 16 September 2014<sup>1</sup>
  - 9 projects adopted
  - > 11 projects active in Incubation Phase
  - > 7 projects in Scale Phase
  - > 20 projects stopped

8 Teams adopted by group, 1 handed over to our Venture Capital Unit, EnBW New Ventures:











Revenue more than doubled from 2018 to 2019, with late-phase projects generating over €50 m last year.



## Venture capital investments in innovative start-ups<sup>1</sup>



# EnBW New Ventures is the open innovation connection between start-ups and EnBW Group

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

#### EnBW New Ventures follows an active portfolio approach

- > Evergreen Venture Capital investor with total investment amount of €100 m
- > Secure minority shareholdings of between 10% and 30% in up to 20 start-ups, with an investment period of four to eight years in each case
- > Open for syndication in a traditional venture capital approach



The start-ups that we invest in engage and scale with EnBW in its transformation towards becoming a sustainable and digital infrastructure operator

> 11 start-ups and 1 fund-of-fund investment





- > 7/11 start-ups already collaborate with EnBW
- > Examples:



**vialytics:** Artificial intelligence for better roads – Artificial intelligence solution to help municipalities plan and monitor their road maintenance. vialytics helps EnBW to offer municipalities in their concession area a product to improve their road infrastructure



**DZ-4:** Photovoltaics leasing provider – generate and use your own solar power on your rooftop without upfront investment.

DZ-4 provides their product as white label to Yello Solar.



## **Corporate sustainability**



EnBW at a glance	<u>02</u>
Market environment	<u>05</u>
Strategy	<u>33</u>
Corporate sustainability  > Sustainable finance activities  > Dimensions and activities  > Sustainability ratings  > Decarbonisation  > Climate neutrality	<u>45</u>
Business segments	<u>56</u>

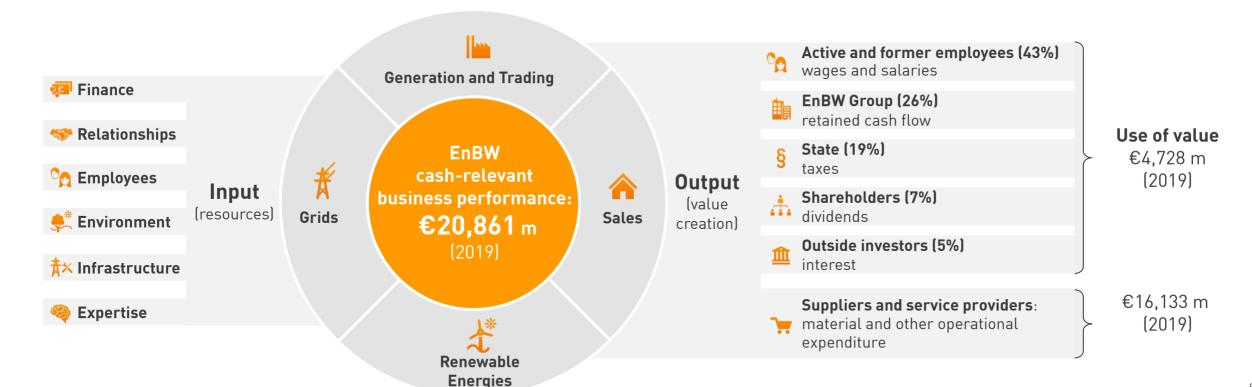
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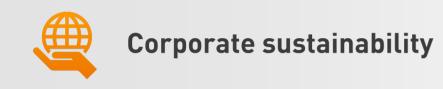
# Transparent presentation of value creation for EnBW and its stakeholders



## EnBW Group value added<sup>1</sup>



<sup>&</sup>lt;sup>1</sup> We define value added as EnBW's cash-relevant business performance in the past financial year minus cash-relevant expenses.





# Corporate responsibility – Integral part of our strategy



**EnBW 2025 strategy**: Transforming ourselves into a sustainable and innovative infrastructure partner.

#### Our understanding of sustainability

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

#### Sustainability is integrated in

- Corporate strategy (e.g. sustainable vision)
- Corporate management (e.g. non-financial top KPIs and targets)
- > Corporate financing (e.g. Green Bonds)
- > Risk management (e.g. risk and opportunities)
- > Stakeholder management and communication (e.g. Integrated Annual Report)

### Economic, environmental and social activities



#### **Economic**

- > EnBW as the first German company to issue a green subordinated bond: Two green subordinated bonds with total issue size of €1 bn [2019]
- > Expansion of the telecommunications business with the acquisition of the broadband and fibre optic company Plusnet (2019)
- > Acquisition of the French developer of wind and solar projects Valeco (2019) opens up potential for international growth



#### **Environmental**

- > Completion of the largest offshore wind project in Germany (2019): EnBW Hohe See/Albatros with a total output of 609 MW
- EnBW as the largest operator of e-mobility quick-charging infrastructure in Germany at the end of 2019
- As one of the first integrated energy companies in Germany/Switzerland EnBW subsidiary Energiedienst became climate neutral already at the beginning of 2020



#### Social

- Projects and campaigns on occupational safety and health for employees
- > Information office and campaigns for the future use of the EnBW Stöckach site for affordable and innovative living
- Making it happen" bus campaign: Support of social and charitable projects by EnBW employees



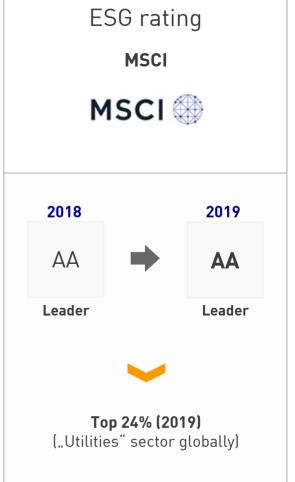
## Corporate sustainability: Ratings













## EnBW sustainable finance activities



## EnBW engagement

#### Active engagement to promote communication and raise awareness on relevant sustainability topics

- > Technical Expert Group on Sustainable Finance (TEG)
- > Task Force on Climate-related Financial Disclosures (TCFD)
- > German Sustainable Finance Committee
- International Integrated Reporting Council (IIRC)









#### EnBW Green Bonds

- > First green bond in October 2018:
  - Issuance size €500 m. senior bond
- > Two green subordinated bonds in July 2019:
  - Total issuance size €1 bn (each €500 m)
  - First German green subordinated bond issuer
- Green subordinated bond in June 2020:
  - Issuance size €500 m

## EnBW reporting



#### EnBW Green Financing Framework and **Green Bond Impact Reporting**

- The Green Financing Framework is based on the ICMA Green Bond Principles. It was published in October 2018 with regular updates as required.
- The Green Bond Impact Report is published annually. It discloses the added value from our projects in terms of benefit for the climate

#### Integrated Reporting

EnBW publishes the Integrated Annual Report based on the recommendations of the International Integrated Reporting Council (IIRC) since 2014

# **Sustainability Reporting**

- Annual sustainability reporting is based on the GRI Standards
- Annual climate reporting as part of the CDP rating









# Decarbonisation: Business activities fully geared to attainment of climate targets

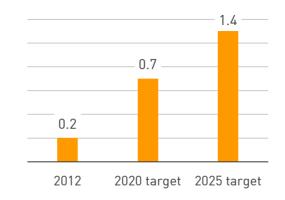


# Why is EnBW committed to climate action?

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

### EnBW renewables growth<sup>1</sup>

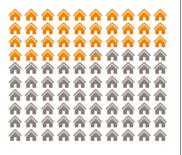
Adjusted EBITDA in € bn



- Onshore wind growth to 1,000 MW by 2020/2,000 MW by 2025
- Offshore wind growth to ≥ 1,500 MW by 2025
- Selective further internationalisation of business by 2025, with substantial base in France and Sweden

## 54%

of household electricity consumption in Baden-Württemberg can theoretically be served by EnBW's renewable energy activities





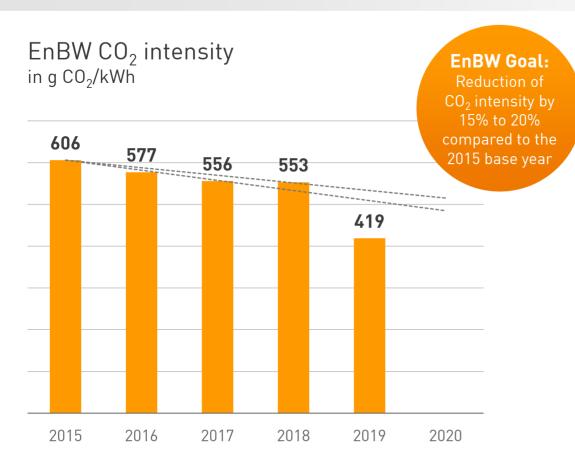
By means of its energy efficiency networks for industrial customers alone, EnBW has delivered annual energy savings equivalent to

~35,000 households (300 GWh/p.a.)



# Decarbonisation and climate protection: CO<sub>2</sub> Intensity key performance indicator





- EnBW Group
- --- Target corridor to 2020

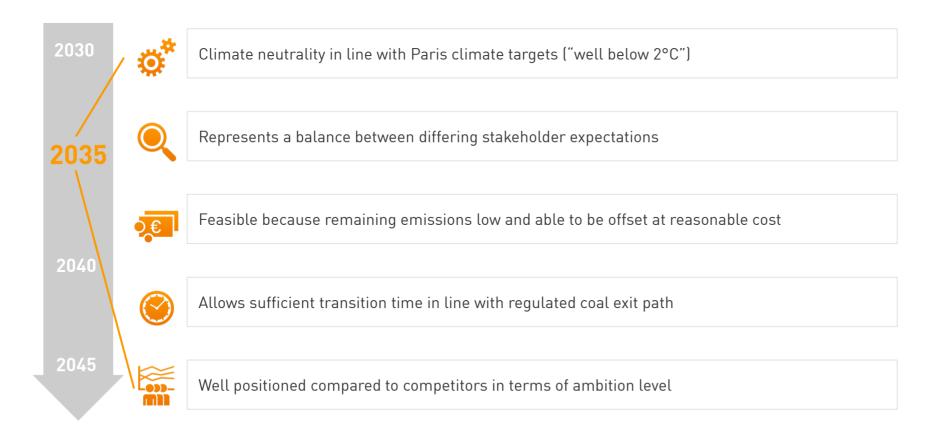
- > The key performance indicator  $\mathrm{CO}_2$  intensity is the ratio between the emissions and the generated volume of electricity. It specifically describes the amount of  $\mathrm{CO}_2$  released by kilowatt hour.
- > The electricity generated by nuclear power plants is not included. So the performance indicator will not be influenced by the phasing out of nuclear energy.
- > In 2019 significant decrease in comparison to the previous year by 24.2% to 419 g/kWh due to:
  - > higher generation from renewable sources
  - electricity generation from our fossil fuel-fired power plants fell much more sharply than forecast due to market-driven developments
- > In 2020, we expect an increase in own electricity generation from renewable energy sources due to the further expansion of renewable energies.
- > Important factors for uncertainty in the 2020 forecast include:
  - the volatility of wind and water supplies
  - > potential impact of coronavirus pandemic on power generation



## EnBW aims for climate neutrality by the end of 2035



Reasons for choosing 2035 as the target year for EnBW to attain climate neutrality





## EnBW uses various instruments on the path to climate neutrality



#### Coal exit/fuel switch

- > (Partly) required by coal phaseout
- Only latest hard coal plants and one lignite plant<sup>1</sup> expected to be still in operation in 2030
- District heating/power generation fuel switch to natural gas, biogas/ biomass, hydrogen etc.

# Use of climate-neutral gases

- Transition to climateneutral gases necessary in medium term
- Climate-neutral hydrogen not expected to be universally available until mid-2030s

## Use of green electricity

- Mainly relevant as substitute for 'grey' grid loss purchases in Scope 2<sup>2</sup>
- > Surcharge for green grid loss purchases

### Offsetting

- Unavoidable residual emissions offset by purchase of recognised offsetting allowances (Scope 13)
- Reduction prioritised over offsetting

### Other options

- Action package to avoid relatively small-scale emissions (such as canteen and building emissions)
- About 2% of total emissions at EnBW

<sup>&</sup>lt;sup>1</sup> Of EnBW's coal-fired power stations, only RDK8, GKM9 and LIP currently still expected to be in service beyond 2030, plus electricity from Walsum in 2030

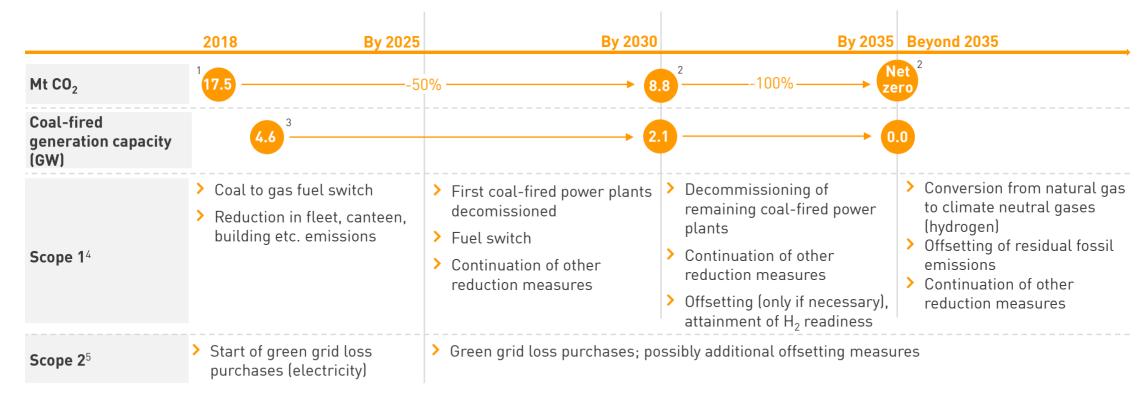
<sup>&</sup>lt;sup>2</sup> Indirect emissions from electricity purchased and used by the organisation.



# EnBW has a clear-cut implementation plan for emission reductions: 50% by 2030, net zero by 2035



## Emission targets and measures



<sup>&</sup>lt;sup>1</sup> Starting figure for Scope 1 and 2 (mainly power generation and grid losses)

<sup>&</sup>lt;sup>2</sup> Target for Scope 1 and 2

<sup>&</sup>lt;sup>3</sup> As of October 2020

<sup>&</sup>lt;sup>4</sup> All direct emissions from the activities of an organisation or under their control.

<sup>&</sup>lt;sup>5</sup> Indirect emissions from electricity purchased and used by the organisation.



## EnBW's transition towards climate neutrality is a just transition





## Clear climate targets

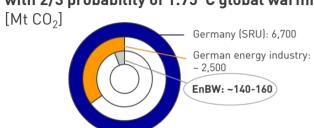
#### Long-term climate targets for EnBW

- > -50% by 2030
- > -100% by year-end 2035
- Offsets for unavoidable residual emissions. from 2036

#### Calculation of Paris-compliant residual emission budget

> Based on German Advisory Council on the Environment (SRU)

EnBW residual emissions budget with 2/3 probability of 1.75°C global warming





## Just transition

#### No additional iob cuts (currently 3,400 employees in conventional generation)

- > Attaining EnBW climate neutrality by 2035 does not mean decommissioning coalfired power plants in excess of the statutory decommissioning path
- > EnBW delivers on its social responsibility in the exit from coal: suitable HR instruments (further training e.g.) and forward-looking HR planning
- > Former conventional power generation employees are already contributing their technical expertise in other areas today. such as in offshore wind power



## Financial feasibility

#### Cost management

- No need for offsetting expected up to 2035 as 50% target realistically attainable by EnBW
- Offsetting only expected to be needed from 2036 to 2040, on declining trend (notably due to use of climate-friendly gases in power plants)
- > EnBW offsets according to Gold Standard and thus complies with prevailing minimum requirements



# **Business segments**



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EnBW's main shareholdings	<u>97</u>
Key financials and non-financials	<u>109</u>
Capital markets	<u>120</u>
Corporate governance	<u>132</u>
Service	<u>136</u>



## **Segment overview 2019**





### Sales

Adjusted EBITDA:
 Employees¹:
 Investments:

€294.3 m
4,394
€132.4 m

**Tasks:** Sale of electricity, gas, energy industry services and energy solutions; energy supply and energy-saving contracting; cooperations with local authorities; collaboration with municipal utilities; telecommunications



## Grids

> Adjusted EBITDA : €1,311.2 m

Employees<sup>1</sup>: 9,254

> Investments: €1,230.9 m

**Tasks:** Transmission and distribution of electricity and gas as well as expansion of HVDC connections; provision of grid-related services; water supply; quaranteeing the security of supply and system stability



## Renewable Energies

> Adjusted EBITDA:
 Employees¹:
 1,384

> Investments: €1,552.6 m

**Tasks:** Project development and management, construction and operation of renewable energy power plants



## Generation and Trading

> Adjusted EBITDA:
 ◆ 383.8 m
 > Employees¹:
 5,499

> Investments: €98.3 m

**Tasks:** Advisory services, construction, operation and dismantling of thermal power plants; storage of gas; trading of electricity and gas, provision of system services; operation of reserve power plants; gas midstream business, district heating; waste management / environmental services; direct distribution of renewable energy power plants



## Selected EnBW companies



- EnBW Energie Baden-Württemberg AG Karlsruhe, Baden-Württemberg, Germany
- EnBW Ostwürttemberg DonauRies AG Ellwangen, Baden-Württemberg, Germany
- Erdgas Südwest GmbH Karlsruhe, Baden-Württemberg, Germany
- GasVersorgung Süddeutschland GmbH Stuttgart, Baden-Württemberg, Germany
- NetCom BW GmbH Ellwangen, Baden-Württemberg, Germany
- Netze BW GmbH Stuttgart, Baden-Württemberg, Germany
- terranets bw GmbH Stuttgart, Baden-Württemberg, Germany
- TransnetBW GmbH Stuttgart, Baden-Württemberg, Germany
- **ZEAG Energie AG** Heilbronn, Baden-Württemberg, Germany
- Energiedienst Holding AG Laufenburg, Switzerland
- Valeco SAS Montpellier, France



EnBW ODR











TR\(\bar{\bar{\bar{N}}}\)NSNET BW

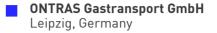










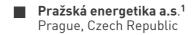












Borusan EnBW Enerji yatırımları ve Üretim A.S.<sup>2</sup> Istanbul, Turkev

























<sup>&</sup>lt;sup>1</sup> Directly and indirectly held shares.

<sup>&</sup>lt;sup>2</sup> Not fully consolidated, accounted for using the equity method.



## **Electricity and gas sales**



100.0



Trading

in bn kWh <sup>1</sup>	2019	2018	Variance in %
Electricity sales	152.6	136.8	11.5
Retail and commercial customers (B2C)	14.8	14.9	-0.7
Business and industrial customers (B2B)	20.5	21.9	-6.4

117.3

	2019	2018	Variance in %
Gas sales	297.0	328.7	-9.6
Retail and commercial customers (B2C)	17.4	17.1	1.8
Business and industrial customers (B2B)	56.2	50.8	10.6
Trading	223.4	260.8	-14.3

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17.3



## Plusnet - Leading nationwide B2B telecoms operator



## Key highlights

#### Customers

- > Well-known and loyal customer base
- > Overall ~25.000 business customers
- > No cluster risk customer base well diversified by region, industry, size and products

#### Sales organisation

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

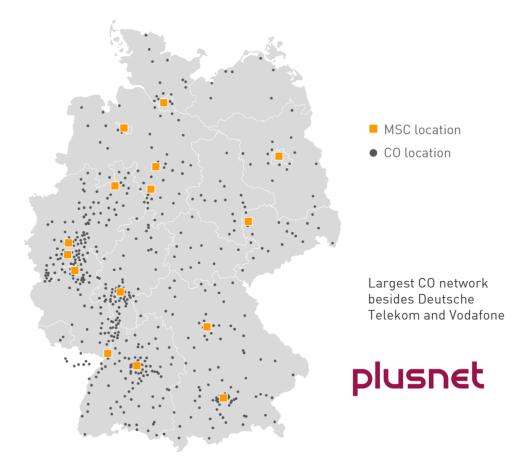
#### Network

- > Fully invested, state-of-the-art redundant 100 Gbit/s backbone
- > Plusnet owns and operates third largest copper-based access network with 1,374 central offices, fully tailored to business (DSL) markets as well as the largest independent B2B WLL network in Germany with ~150 base stations and ~1,050 customer links

#### Municipal utility companies in Germany

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

## Central offices network





# EnBW operations business unit: Our business model for energy-related services



#### Market attractiveness

- > **Market size:** Market for energy-related services very fragmented; the strategic relevant market (2020) in Germany is approximately € 2.7-3.0bn.
- > Market dynamics: Growing challenges for municipal utilities from rising pressure on costs; need to meet regulatory requirements and billing technology for the remodelling of the energy market
- > **Market opportunities:** Technology shift and economies of scale offer significant growth opportunities, especially in the area of smart metering solutions

### Business model

Our EnBW operations business unit provides products and services for internal and external customers.

- > **Customer:** our subsidiaries, EnBW, Yello, Netze BW and Co., and external energy companies, suppliers, distribution system operators, metering point operators
- > **Sales:** Customer-centred sales, targeted exploitation of customer potential across all products, offers and services
- > **Processes:** Increased efficiency through lean customer-focused E2E processes and avoidance of redundant data storage
- > **Technology:** Services either as software-as-a-service (SaaS) only or full-scale business process outsourcing

## Product, services and core competences





## E-mobility: Key facts



## Key highlights

Fast-charging locations today

EnBW offers the most fastcharging locations all over Germany.

#### Examples of partners and references













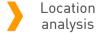




## Our range of services



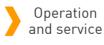
Consultina and sales





Planning. project planning, civil engineering





## EnBW mobility+ app and tariff

- Charging station finder Access to over 100,000 charge points for the same price in six European countries
- Control of charging process Start, monitoring, tracing
- **Pavment** Selection of multiple rates
- **Driving simulation** Over 4,000,000 km simulated
- Data analysis Cost, charge power, drive time, ...



## EnBW mobility+ ...

- ... is operating the most fast-charging locations in Germany
- ... offers the largest network coverage in DACH region
- ... is awarded multiple times:









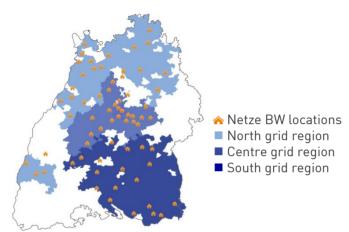




## Local authorities and municipal utilities: Facts and figures



#### Concessions



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

- > 550 electricity concessions
- > 100 gas concessions
- > 2.5 m electricity connections
- > 150k gas connections

#### Our ambition:

Secure and win concessions

## Shareholdings in local services



Alongside our own activities, our shareholdings in local services are a key pillar of our regional business. We place great importance on close teamwork.

Approx. 100 shareholdings 47 network providers and 40 municipal utilities Approx. €3 bn revenue 20% electricity and gas market volume share in Baden-Württemberg

#### Our ambition:

Long-term and durable partnership with municipal shareholders and services.

### Local sale and distribution



Broad portfolio of products and services serving over 1,400 municipalities across Baden-Württemberg and beyond.

- With a strong regional footprint, we work closely with municipal and district councils to deliver tailored solutions.
- Our portfolio focuses on smart mobility, networked infrastructure, sustainable energy, reliable security and innovative local services
- > Revenue 2019 approx. €200 m

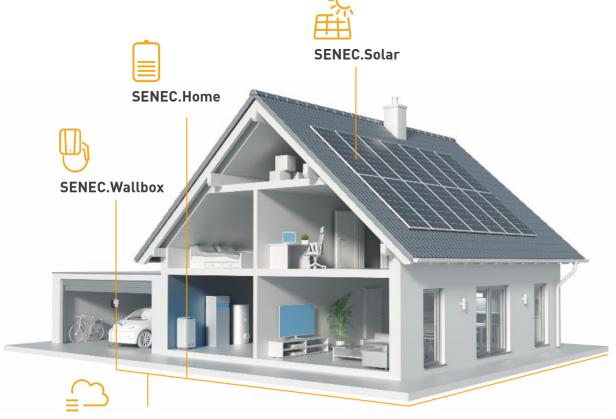
#### Our ambition:

Work together to deliver smart infrastructure for all generations.



## SENEC: Decentralised energy solutions for homeowners





**SENEC.Cloud** 

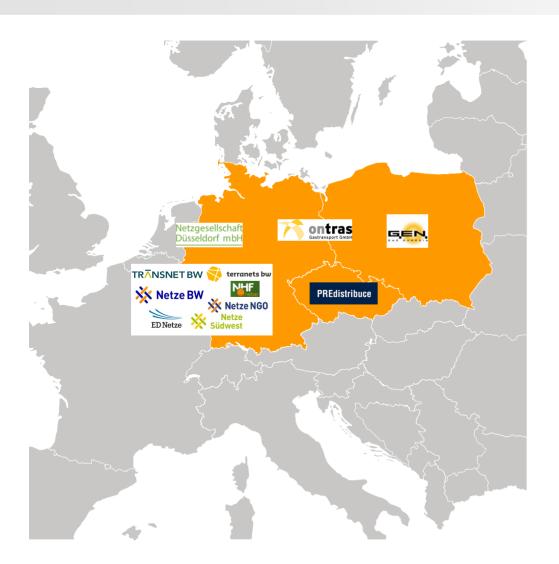
Additional products: SENEC.Cloud to go SENEC.Cloud heat SENEC.Cloud familiy & friends

- > Fully integrated solutions for self-supply with solar power (SENEC 360°)
- > Development and production of electricity storage systems
  - > Distribution of own-brand PV systems and wallboxes
  - > SENEC-Cloud virtual electricity storage
  - > Electric mobility: solar-optimised charging via wallbox
- > Distribution through over 850 certified installers
- > Positioning in high-growth sweet spot of decentralised energy solutions
- > Over 40,000 electricity storage systems sold
- > Presence in major growth markets (Germany, Italy and Australia)
- > Strongly scaling business: Growth more than four times higher since the acquisition in 2018; revenue well above €100 m in 2020



## Electricity and gas grids represent EnBW's core business





## 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



## **Electricity and gas grids**





Transmission grid	2019	2018
Extra-high voltage 380 kV	2,200	2,200
Extra-high voltage 220 kV	1,000	1,000
Distribution grid		

High voltage 110 kV	8,600	8,600
Medium voltage 30/20/10 kV <sup>1</sup>	42,700	44,400
Low voltage 0.4 kV <sup>1</sup>	89,600	94,400

Overall length	144,100	150,600





in km

Transportation grid	2019	2018	
High pressure	9,100	8,900	
Distribution grid			
High pressure	2,300	2,300	
Medium pressure	8,600	8,400	
Low pressure	4,600	4,600	

Overall length	24,600	24,200



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## **Expansion of transmission grid to ensure security of supply**



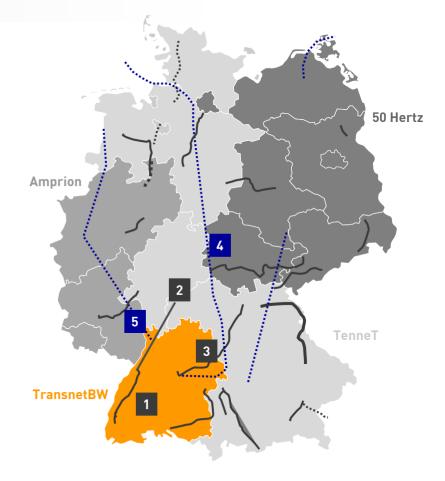
#### **Grid section Scheduled completion**

1 for Rhine river area in Baden	119 km	2023	
2 for north Baden-Württemberg	142 km	2023	
3 for north east Baden-Württemberg	158/+56 km	2022/2030	

#### DC expansion

BO expansion		
in corridor C "SuedLink" 4 GW corridor	700 km <sup>1</sup>	2026
in corridor A "Ultranet" 2 GW corridor  5 EnBW contribution: converter, power lines in Baden-Württemberg	40 km	2024

Investment up to 2025: around €6.5 bn



...... New construction (DC)

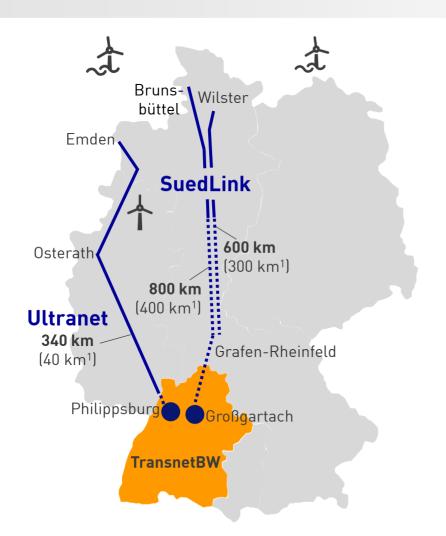
••••• New construction (AC)

— Grid reinforcement (AC)



## SuedLink is the largest infrastructure project of the "Energiewende"







### **Transmission grid:**

6 GW from north to south

- SuedLink largest infrastructure project
- > Construction of Ultranet converter will begin this year

#### **Distribution grid:**

- Grid expansion & upgrading to integrate renewables and supply electric cars
- > Ensuring security and reliability of supply on the grids



# Investing in distribution grid to integrate renewables and supply electric cars whilst securing high quality



## Challenges and activities

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

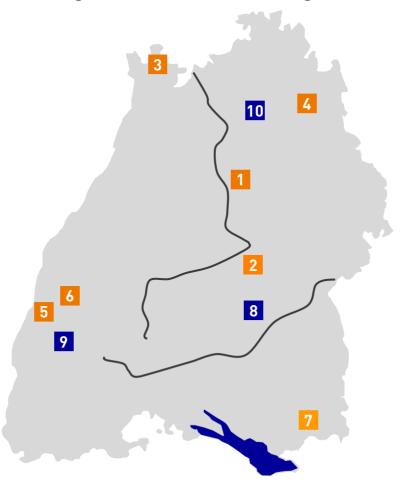
- > Widespread use of photovoltaics in the grid area
- > High expansion targets for wind power
- Growing prevalence of electric cars

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

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

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

## EnBW grid laboratories and grid innovations



#### E-mobility

- 1 E-Mobility Carré Tamm

  Approaches for the integration
  of electric mobility in apartment buildings
- 2 E-Mobility Chaussee Kusterdingen
  Approaches for the integration
  of electric mobility in rural areas
- 3-7 Intelligent home-charging
  Remote controlled charging at home

#### **Smart grid & others**

- 8 Sonderbuch
  Interactive smart grid demonstrator
- Freiamt
  The grid as distributed power plant; implementation of grid traffic light
- Hydrogen-Island Öhringen
  Renewable energies stored as hydrogen in the natural gas grid



## **Generation portfolio 2019**



	Generation portfolio		Own generation	
	<b>2019</b> in MW	share in %	<b>2019</b> in GWh	share in %
Renewable energies	4,398	32	9,988	21
Run-of-river	1,006	7	5,342	11
Storage/pumped storage (using natural flow of water)	1,507	11	959	2
Onshore wind	826	6	1,522	3
Offshore wind	834	6	1,806	4
Other	225	2	359	1
Thermal power plants	9,451	68	37,819	79
Lignite	875	6	2,598	5
Hard coal	3,586	26	8,758	18
Gas	1,165	8	3,634	8
Other	347	3	188	0
Pumped storage (not using natural flow of water)	545	4	1,608	3
Nuclear <sup>1</sup>	2,933	21	21,033	44
Total	13,849	100	47,807	100

<sup>&</sup>lt;sup>1</sup> Block 2 of the Philippsburg nuclear power plant is included in the generation portfolio in 2019 because it was not shut down until the evening of 31 December 2019

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## Offshore wind im Germany: Portfolio and project pipeline





Installed capacity: 945 MW

> Secured pipeline: 900 MW

■ In operation

■ Development stage



	Baltic 1	Baltic 2	Hohe See	Albatros
Country	Germany	Germany	Germany	Germany
Technology	Offshore	Offshore	Offshore	Offshore
Type of turbine	21 x Siemens SWT 2.3-93	80 x Siemens SWT 3.6-120	71 x Siemens SWT 7.0-154	16 x Siemens SWT 7.0-154
Total capacity in MW	48.3	288	497	112
Shareholders	~50.3% EnBW; ~49.7% 19 municipal utilities	~50.1% EnBW ~49.9% PGGM & ÄVWL	~50.1% EnBW ~49.9% Enbridge Inc./CPPIB	~50.1% EnBW ~49.9% Enbridge Inc./CPPIB
Operation date	Apr 2011	Sep 2015	Oct 2019	Jan 2020
Feed-in system	EEG 2009	EEG 2012	EEG 2014	EEG 2014



## Offshore wind in Germany: Windfarm under development





## EnBW He Dreiht



Country	Germany
Technology	Offshore
Type of turbine	To be defined
Total capacity	900 MW
Shareholders	100% EnBW
Commissioning	2025
Feed-in tariff	without EEG funding

# EnBW He Dreiht secured 900 MW grid capacity as one of the first zero subsidy projects in 2017

- > Currently under development, i.e. engineering, tendering of supply contracts, consenting and financing
- > Agreement on 66 kV direct connection of inner array grid to AC/DC converter eliminates costly offshore substation
- > Export connection supplied by transmission system operator (TSO) by 2025
- > Strong operational synergies with neighbouring EnBW wind farms Hohe See and Albatros
- > Final Investment Decision (FID) planned for 2023
- > Start of operation expected for 2025



# Offshore wind in North America and Taiwan: Project development activities



#### **US West Coast**

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

# Sacramento San Francisco California Las Vegas Los Angeles

#### US Fast Coast

- Local subsidiary EnBW North America Inc. legally established and in operation with local staff since 2018
- Project company East Wind LLC established in order to achieve site control by participation in offshore wind lease auctions
- Official offshore wind development targets of states along US East Coast increased to over 20 GW by 2035

# Taiwan, Formosa 3 project location Combination of significant economies of scale with exce

- > Combination of significant economies of scale with excellent wind conditions and a strong local supply chain
- Taiwan long-term energy policy target for offshore wind of up to 15 GW by 2035
- > EnBW's partners JERA and Macquarie development of three offshore wind sites (total capacity of up to 2 GW)
- Allocation of up to 5 GW in several grid allocation auctions for projects going online between 2025 and 2030
- > Plan for next auction round of at least 1 GW (~2022) Formosa III target to secure major parts of the auctioned grid capacity and to keep on developing remaining project sites



EnBW

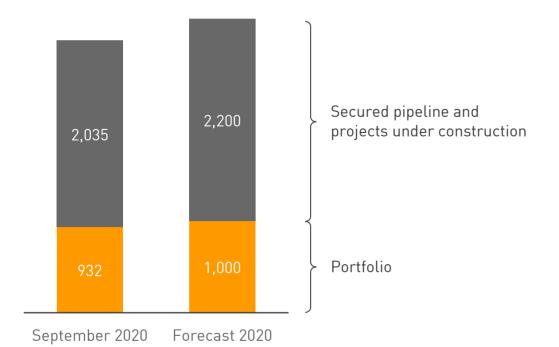


## Onshore wind portfolio and pipeline

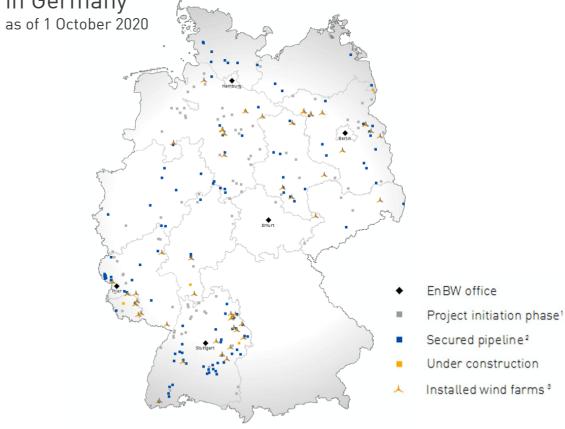




Portfolio and pipeline in MW



Regional distribution of the 2020 portfolio and pipeline in Germany



<sup>&</sup>lt;sup>1</sup> Negotiations for land contracts in Germany (low proportion make it to project development)

<sup>&</sup>lt;sup>2</sup> At least land contracts concluded (large proportion is completed) in Germany

<sup>&</sup>lt;sup>3</sup> Wind parks in operation with EnBW majority shareholding



# Onshore wind in Germany: Portfolio and windfarms under construction





#### Portfolio



# Under construction



Installed total power	679 MW
Number of turbines	306
Number of locations	62

	Königsbronn	Schwienau III	Tantow	Huettersdorf	OberRamstadt
Country	Germany	Germany	Germany	Germany	Germany
Technology	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	E138	V150	V136	N131	SWT130
Total capacity in MW	3.5	12.6	10.8	6.6	8.4
Number of turbines	1	3	3	2	2
Operation date	Dec 2020	Dec 2020	Dec 2021	Dec 2021	Dec 2020
Feed-in system	EEG 2017	EEG 2017	EEG 2017	EEG 2017	EEG 2017



# **Onshore wind in Germany: Installed wind farms** (1/7)







Berghülen

	Aalen- Waldhausen	Alt Zeschdorf	Benndorf	Berghülen	Boxberg- Angeltürn	Boxberg- Bobstadt	Boxberg- Oberschüpf	Braunsbach	Breitenbach
Country	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Technology	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	Vestas V126	Vestas V90	NEG Micon NM1000	Enercon E82-E2	Enercon E- 115	Enercon E- 115	Enercon E-101	Enercon E-115	GE 2,75-120
Total capacity in MW	16.5	6	5	6	12	12	3.1	15	8.25
Number of turbines	5	3	5	3	4	4	1	5	3
Commissioning date	Sep 2017	Dec 2009	Dec 2001	Dec 2012	Dec 2016 Feb 2017	Mar 2018	July 2017	Nov 2016 Dec 2016	2x Dec 2017 1x Jan 2018
Feed-in system	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2017 <sup>1</sup>



# **Onshore wind in Germany: Installed wind farms** (2/7)







Buchholz

	Bremervörde	Brettenfeld	Buchholz	Buchholz II	Buchholz III	Bühlertann	Burgholz	Christinendorf III	Dienstweiler
Country	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Technology	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	Nordex S70	Nordex N131	Vestas V90	Enercon E82-E2	Vestas V126	Vestas V126	Vestas V126	Vestas V90	Nordex N117
Total capacity in MW	9	6.6	36	4	13.2	13.2	9.9	6	4.8
Number of turbines	6	2	18	2	4	4	3	3	2
Commissioning date	Nov 2016	Sep 2017	Dec 2009	Dec 2012	Sep 2017	May 2017	Sep 2017	Dec 2011	Mar 2017
Feed-in system	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older						



# **Onshore wind in Germany: Installed wind farms** (3/7)







Eisenach II

	Dittelsdorf III	Dünsbach	Düsedau	Eisennach II	Elze	Eppenrod	Fichtenau	Freckenfeld	Friedberg
Country	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Technology	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	Vestas V90	Vestas V126	NEG Micon NM72	Vestas V90	Enercon E53	NEG Micon NW52	Vestas V126	Nordex N131	Vestas V90
Total capacity in MW	6	9.9	7.5	12	3.2	2.7	9.9	19.8	6
Number of turbines	3	3	5	6	4	3	3	6	3
Commissioning date	Jun 2010	Aug 2017	Dec 2002	Dec 2009	Dec 2010	Dec 2001	Sep 2017	Dec 2017	Dec 2011
Feed-in system	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older						



# **Onshore wind in Germany: Installed wind farms** (4/7)







Haupersweiler

	Fürth	Görike	Grevenbroich	Harthäuser Wald	Hasel	Haupers- weiler	Homburg	llshofen- Ruppertshofen	Kemberg II
Country	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Technology	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	Nordex N131	Vestas V90	Vestas V90 GS	Enercon E-115	Vestas V126	Nordex N117	Nordex N117	Enercon E-101	Vestas V90
Total capacity in MW	16.5	10	2	54	9.9	15	9.6	6.1	12
Number of turbines	5	5	1	18	3	6	4	2	6
Commissioning date	Jun 2018	Dec 2010	Jul 2014	Nov 2015 Dec 2015 Sep 2017	Nov 2017	Dec 2010	Mar 2017	Jul 2014 Jun 2015	Jul 2014
Feed-in system	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older	EEG 2014 and older



# **Onshore wind in Germany: Installed wind farms** (5/7)







Langenburg

	Königheim	Langenburg	Leddin II	Müncheberg	Neuruppin	Niederlinx- weiler	Nonnweiler	Obhausen	Oldendorf
Country	Germany								
Technology	Onshore								
Type of turbine	Enercon E-115	Vestas V126	Vestas V90	Vestas V90	Vestas V90	Nordex N117	Nordex N117	Enercon E66	Enercon E53
Total capacity in MW	6	33.45	2	8	16	4.8	4.8	36	12
Number of turbines	2	10	1	4	8	2	2	20	15
Commissioning date	Sep 2017	Dec 2017	Dec 2009	Nov 2006	Feb 2014	Dec 2015	Mar 2017	2000-2002	Dec 2010
Feed-in system	EEG 2014 and older								



# **Onshore wind in Germany: Installed wind farms** (6/7)







Rot am See

	Oster- cappeln	Prötzel	Prötzel I	Puschwitz	Rosenberg Süd	Rositz	Rot am See	Schnitt- lingen	Schopfloch	Schulen- burg II
Country	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Technology	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	Nordex S70	Vestas V80	Enercon E115	Vestas V80	Nordex N131	Nordex S70	Vestas V126	DeWind D6	Enercon E82	Vestas V90
Total capacity in MW	18	18	9	20	6.6	13.5	13.2	1	2	6
Number of turbines	12	9	3	10	2	9	4	1	1	3
Commissioning date	Nov 2016	2006 2008	May 2020	Dec 2017	Sep 2017	Nov 2016	Sep 2016 Jun 2019	Dec 2002	Dec 2012	Dec 2010
Feed-in system	EEG 2014 and older	EEG 2014 and older	EEG 2017	EEG 2014 and older						



# **Onshore wind in Germany: Installed wind farms** (7/7)







Winterbach

	Schwienau II	Söllenthin	Webenheim	Westerheim I	Willich	Winterbach	Zernitz
Country	Germany						
Technology	Onshore						
Type of turbine	Vestas V80	Vestas V90	Repower MM92	NEG Micon NM600	Vestas V80	Nordex N131	Enercon E66
Total capacity in MW	10	6	6.15	0.6	4	9.9	14.4
Number of turbines	5	3	3	1	2	3	8
Commissioning date	Dec 2009	Jul 2014	Dec 2016	Dec 1998	Nov 2004	Dec 2017	Nov 2016
Feed-in system	EEG 2014 and older						



# Onshore wind in France: Portfolio and installed wind farms (1/2)





#### Portfolio





Installed total power in MW	141
Number of turbines	66
Number of locations	11

	Audincthun	Belleuse	Bernagues	Cap Espigne
Location	Pas-de-Calais (62)	Somme (80)	Herault (34)	Herault (34)
Technology	Onshore	Onshore	Onshore	Onshore
Type of turbine	Enercon E92	Vestas V100	Enercon E70	Enercon E70
Total capacity in MW	14.1	11.0	16.1	16.1
Number of turbines	6	5	7	7
Commissioning date	Jul 2019	Jan 2020	Dec 2016	Jan 2017
Remuneration	FiP	FiP	FiT	FiT



# Onshore wind in France: Installed wind farms (2/2)





Location	Cap Redounde Tarn (81)	Champs Perdus Somme (80)	<b>La Bessiere</b> Tarn (81)	Puech de Cambert Tarn (81)	Puech de l'Homme Tarn (81)	Saint Félix Charente- Maritime (17)	<b>St. Jean-Lachalm II</b> Haute-Loire (43)
Technology	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore	Onshore
Type of turbine	Alstom Eco 62	Alstom Eco 110	Enercon E70	Alstom Eco 62	Enercon E70	Vestas V100	Enercon E70
Total capacity in MW	3.9	12.0	13.8	11.7	16.1	19.8	6.0
Number of turbines	3	4	6	9	7	9	3
Commissioning date	Aug 2006	Oct 2014	Jan 2012	Jun 2007	Nov 2011	Mar 2020	Dec 2008
Remuneration	FiT	FiT	FiT	FiT	FiT	FiP / AO CRE1	FiT



# Onshore wind in Sweden: Portfolio and wind farm under construction





#### Portfolio





Installed total power in MW	107.5
Number of turbines	52
Number of locations	7

	Råmmarehemmet
Country	Sweden
Technology	Onshore
Type of turbine	Enercon E138
Total capacity in MW	12.6
Number of turbines	3
Operation date	Jul 2021
Feed-in system	Market based (Elcertificates)



## Onshore wind in Sweden: Installed wind farms







Bliekevare

	Bliekevare	Brahehus	Granberget	Hedbodberget	Kulltorp	Röbergsfjället	Säliträdberget
Country	Sweden						
Technology	Onshore						
Type of turbine	Vestas V90	Siemens SWT101	Vestas V90	Vestas V90	Nordex N90	Vestas V90	Vestas V90
Total capacity in MW	32	11.5	10	12	10	16	16
Number of turbines	16	5	5	6	4	8	8
Commissioning date	May 2009	Feb 2011	Mar 2011	Feb 2009	Sep 2009	Dec 2007	Feb 2009
Feed-in system	Market based (Elcertificates)						



# **Onshore wind in Czech Republic: Portfolio**







Country	Czech Republic
Technology	Onshore
Type of turbine	VESTAS V90
Total capacity in MW	4
Number of turbines	2
Number of locations	1
Commissioning date	3 Jul 2009
Feed-in system	Green Bonus



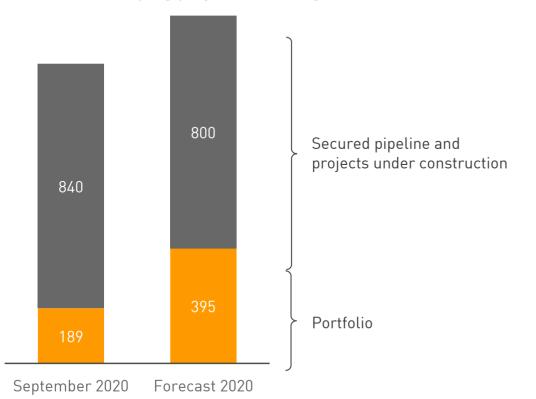
## Photovoltaics portfolio and pipeline



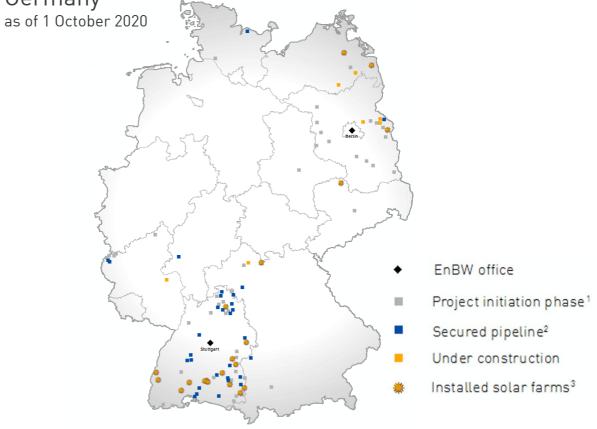


# Portfolio and pipeline in MWp

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



Regional distribution of the 2020 portfolio and pipeline in Germany



<sup>&</sup>lt;sup>1</sup> Negotiations for land contracts (low proportion make it to project development)

<sup>&</sup>lt;sup>2</sup> At least land contracts concluded (large proportion are completed)

<sup>&</sup>lt;sup>3</sup> Solar parks in operation with EnBW majority shareholding



# Photovoltaics in Germany: Portfolio, installed and under construction





Installed total power	103 MWp		
Number of solar parks	> 50		



# Under construction



	Birkenfeld	Inzighofen	Lindendorf
Country	Germany	Germany	Germany
Technology	Solar	Solar	Solar
Total capacity in MWp	5.8	7.5	6.9
Operation date	Nov 2019	Oct 2019	Oct 2019
Feed-in system	EEG 2017	EEG 2017	EEG 2017

	Sophienhof I	Welgesheim	Ulrichshof	Maßbach	Weesow- Willmersdorf	Gottesgabe	Alttrebbin
Country	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Technology	Solar	Solar	Solar	Solar	Solar	Solar	Solar
Total capacity in MWp	8.8	3.2	6.6	28	187	152	151
Operation date	Oct 2020	Nov 2020	Dec 2020	Mar 2021	Dec 2020	Dec 2021	Dec 2021
Feed-in system	EEG 2017	EEG 2017	EEG 2017	EEG 2017 (partly)	without EEG funding	without EEG funding	without EEG funding



# Photovoltaics in Germany: Solarpark Weesow-Willmersdorf under construction



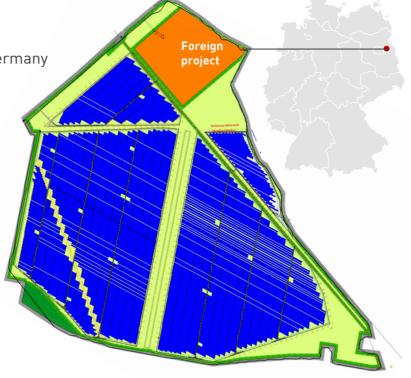


## Under construction

> Largest solar project in Germany

> First solar large-scale project without subsidies in Germany





	Weesow-Willmersdorf	26 km northeast of Berlin
Livin	Building site	164 ha
**	Capacity	187 MWp
*	Annual energy production	185 Mio. kWh/a
CO <sub>2</sub>	Annual CO <sub>2</sub> reduction	129.000 t/a
25	Commissioning	End of 2020
()	Duration of operation	40 years

EnBW Factbook 2020



# Photovoltaics in France: Portfolio and installed solar parks





Installed total power	60 MW
Number of solar parks	10





	Beaucaire	Le Val	Isle-sur-la- Sorge	Megasol	Saint Laurent Solar	Saint Mamet	St Quentin la Tour	Sycala	TEA Fleury Ouest	Terres Rouges I	Terres Rouges II
Location	Gard (30)	Var (83)	Vaucluse (84)	Bouches-du- Rhône (13)	Gard (30)	Gard (30)	Ariège (09)	Lot (46)	Essone (91)	Hérault (34)	Hérault (34)
Technology	Rooftop	Ground mounted	3 x Rooftop 1 x Sunshade	Ground mounted	Rooftop	Rooftop	Ground mounted	Ground mounted	Sunshade	Ground mounted	Ground mounted
Total capacity in MWp	3.7	7.2	2.0	6.2	4.8	2.8	3.1	8.1	10	7.1	5.6
Commissioning	Sep 2019	Aug 2015	Nov 2019	Aug 2016	Apr 2012	Jun 2016	May 2020	May 2011	Sep 2020	Jan 2015	Jan 2017
Remuneration	A0 CRE4	A0 CRE 1	AO CRE 4	AO CRE 1	FiT	A0 CRE 2	AO CRE 4	FiT	A0 CRE 4	FiT	AO CRE 2



# Photovoltaics in Czech Republic: Portfolio and installed solar parks





Installed total power

26 MW

Number of solar parks

16



	FVE Dačice	FVE Hořovice	FVE Hrouda	FVE Jinonice	FVE Kondrac	FVE Lhotka	FVE Mikulov
Total capacity in MWp	4.848	1.087	0.028	0.173	1.109	0.060	0.941
Operation date	2009/2010	2010	2010	2010	2009	2010	2009

	FVE Ořechovská	FVE Pozorka	FVE Pozořice	FVE Pražačka (I-III)	FVE Rajhradská	FVE Sever	FVE Světlík
Total capacity in MWp	3.168	3.998	4.596	0.138	3.168	0.204	2.154
Operation date	2009	2010	2010	2010	2009	2010	2009/2010



# **Hydropower plants**







Rhine power plants	527
Neckar, Donau, Murg, Nagold, Enz, Glatt, Jagst, Kocher, Argen	151
Iller power plants	51
EnAlpin	277

Schluchsee power plants	870
Vorarlberger Illwerke	1,049
Glems	90
Rudolf-Fettweis-Werk Forbach	43





Ifffezheim Forbach

EnBW Factbook 2020



## Thermal power plants<sup>1</sup>





# Conventional in MW

Karlsruhe	1,351
Düsseldorf	941
Lippendorf	875
Heilbronn	778
Altbach/Deizisau	589
Mannheim	546
Rostock	259
Walsum	250
Stuttgart	209
Walheim	136



Nuclear in MW

Neckarwestheim	1,096
Cattenom (France)	



# Grid reserve power plants<sup>2</sup> in MW

Marbach	426
Heilbronn	250
Walheim	244
Karlsruhe	353
Altbach	433







Altbach

<sup>&</sup>lt;sup>1</sup> Major power plants, as of 1 January 2020

<sup>&</sup>lt;sup>2</sup> Continued temporary operation of 9 power plant units due to system relevance: HLB 5/6, MAR DT III, MAR GT III, WAL1/2, RDK4s and ALT HKW1



# New-built gas turbine power plant for grid stability purposes in South Germany



# Additional capacity for grid stability in South Germany necessary

- > In 2017, the federal regulation agency approved 1.2 GW additional power generation capacity in southern Germany to maintain grid stability in the context of the "Energiewende".
- > August 2019: Award of contract for design and installation of 300 MW gas turbine power plant at existing EnBW Marbach a.N. site.

#### Timeline and next steps

- > Construction permit received
- Detail engineering finalised, fabrication of long-lead items instructed and partly started
- > Construction works on site started mid 2020
- > Delivery of the rotating equipment in 2021
- > Commissioning mid 2022
- > Commercial operation planned for October 2022



Artistic impression of the gas turbine power plant at the site Marbach a.N.



# EnBW's trading activities: Central access to wholesale markets to manage price and volume risks





## EnBW's trading activities

- Market access to wholesale commodity markets for customers and EnBW group: electricity, gas, emissions, coal, fuels
- Direct marketing of renewables 2020: 3,900 MW+
- > Annual trading volumes, 2019:
  - > 600 TWh electricity
  - > 3400 TWh natural gas
  - > 60 million t coal
  - > 400 million t FUAs
  - > 90 million bbl oil
- > 200+ employees
- > 2,000,000+ trades per year

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





## EnBW's main shareholdings



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Strategy	<u>33</u>
Corporate sustainability	<u>45</u>
Business segments	<u>56</u>

#### EnBW's main shareholdings

- > Energiedienst Holding AG
- > Pražská energetika, a. s.
- > Stadtwerke Düsseldorf Group
- > VNG AG
- > Borusan EnBW Enerji yatırımları ve Üretim A.S.

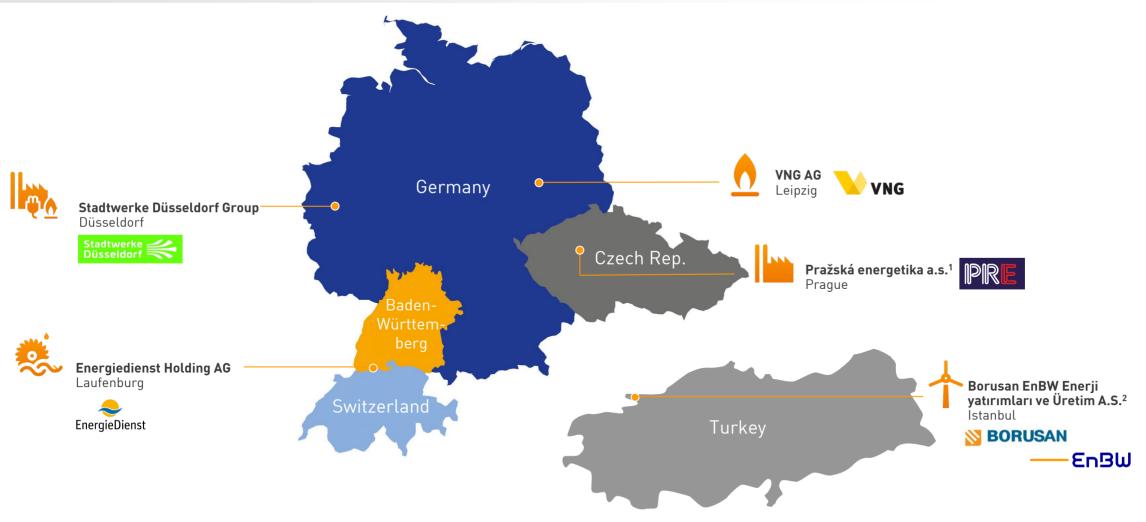
<u>97</u>

Key financials and non-financials	<u>109</u>
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## EnBW's main shareholdings





<sup>&</sup>lt;sup>1</sup> Directly and indirectly held shares.

EnBW Factbook 2020

<sup>&</sup>lt;sup>2</sup> Not fully consolidated, accounted for using the equity method.



### **Energiedienst Holding AG**





# Established



**Employees** 987











#### **Profile**

- > Energiedienst generates green electricity from hydropower and sells electricity and gas. The group's own grid companies supply customers with electricity.
- > The Energiedienst Group is one of the first integrated energy companies in Germany and Switzerland to be carbon neutral. Energiedienst is focused on growth with three main strategic pillars: customer-focused energy solutions, system-relevant infrastructure and renewable generation infrastructure.

#### Current key topics and projects

#### **Group transformation**

> Focus on eight growth areas to successfully shape change

#### **Photovoltaics**

> Sale of solar equipment and additional products in Switzerland and Germany

#### E-mobility

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

#### **Concessions**

> Applications are underway for multiple electricity concessions

#### Power-to-gas

> Flagship project at Wyhlen hydropower plant to produce hydrogen as fuel

#### Digital roadmap

> Digitization as a key component in strategy implementation



## **Energiedienst Holding AG at a glance**



#### Active in Swiss & German markets Solid business model

- 652 MW installed capacity in renewables (primarily run-of-river power plants)
- > Approximately 8,100 km low-voltage grid
- Around 270,000 electricity and gas customers
- > 987 employees

- > Stable cash flows in traditional businesses
- Clear strategic focus on developing new businesses

#### Key figures

- > Adjusted EBITDA: €91.0 m
- > Funds from operations (FF0): €77.9 m
- Non-current assets: €1.582.1 m
- > Current assets: €346.8 m
- > Non-current liabilities: €538.8 m
- > Current liabilities: €198.0 m

#### Three business segments

Customer-oriented energy solutions	Sales power and gas Photovoltaic	Heat and energy solutions	Electric mobility \rightarrow Land development
Systemically relevant infrastructure	Distribution power and gas	Network-related services	Services in infrastructure sector
Renewable generation infrastructure	Hydropower plants	Photovoltaic (ground-mounted systems)	Power-to-X-technology



#### Pražská energetika, a. s.





#### **Established**

1897



# Employees 1.547











#### **Profile**

- > Electricity distribution in Prague
- > Electricity and gas supplies to all customer segments in the Czech Republic; focus on B2C segment in Prague
- > Renewable generation
- > Energy infrastructure services for B2C, B2G and B2B

#### Current key topics and projects

#### E-Mobility

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

#### **Fibre**

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

#### **Smart city**

- > Digitization of network operation; upgrade to smart distribution stations
- > Implementation of a smart district pilot in Prague (smart lighting, high speed internet, e-mobility charging)
- > Planning and development of smart buildings

#### **Energy services**

- > Installation of roof-top solar systems incl. storage
- > Installation of heating, ventilation and air conditioning systems
- > Servicing of local distribution networks



#### Pražská energetika, a. s. at a glance



#### Number 3 utility in the Czech Rep.

- > 6,296 GWh electricity distributed
- > Stable shareholder structure
- > 1,547 employees
- > Strong roots in Prague

#### Balanced risk-return profile

#### Focus on

- Distribution (~60% FBITDA)
- > Electricity and gas supply [~30% FBITDA]

#### Key figures

- > Adjusted EBITDA: €192.9 m
- > Funds from operations (FF0): €160.8 m
- Non-current assets: €1,212.4 m
- Current assets: €211.4 m
- Non-current liabilities: €357.7 m
- > Current liabilities: €193.5 m



**Electricity** 

Generation

Procurement

Distribution

Sales

#### Three business segments



#### Sales

- > Employees: 697
- Activities/products: Sale of electricity and gas; focus on customer retention in Prague (PRE brand) and growth outside of Prague (Yello brand)



#### **Grids**

- > Employees: 576
- > Activities/products: Distribution of electricity; provision of grid-related services; guaranteeing security of supply and system stability



#### Renewable Energies / Energy Services

- > Employees: 274
- Activities/products: Energy-related services; project development and management; construction and operation of renewable energy power plants (photovoltaics); energy efficiency consultancy; e-mobility services; operation of local distribution networks



#### Stadtwerke Düsseldorf Group





#### Established

20 September 1866



Employees











#### **Profile**

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

#### Optimization of conventional business

- > Stadtwerke Düsseldorf supports the City of Düsseldorf in its goal of climate neutrality by 2035
- > Interaction between the gas and steam power plant "Fortuna", the waste incineration plant and the Düsseldorf district heating system makes a major contribution to reducing emissions
- > There are firm plans for further improving and decarbonising the heat system

#### New business areas

- > A new mobility product, CleverShuttle Düsseldorf, started in 2019
- > CleverShuttle Düsseldorf is a cooperation of Stadtwerke Düsseldorf and CleverShuttle (Berlin). It is an environmentally friendly RidePooling service, that comfortably takes customers from door to door
- > There are only electric cars in the fleet charged with green electricity
- > The cooperation with CleverShuttle gives Stadtwerke Düsseldorf valuable insights for other mobility projects. Because in addition to CleverShuttle, Stadtwerke are making many other contributions to the mobility transformation such as the e-scooter sharing "eddy", the ridesharing platform "route D" or charging infrastructure for e-mobility





## Stadtwerke Düsseldorf Group at a glance



#### Key figures

- > Adjusted EBITDA: €165.9 m
- > Funds from operations (FF0): €121.2 m
- > Non-current assets: €1,406.5 m
- Current assets: €488.1 m

- > Non-current liabilities: €762.6 m
- > Current liabilities: €377.8 m

#### Five business segments

Ų	Electricity	Generation	Procurement	Trading	Distribution	Sales
<u>^</u>	Gas	Procurement	Trading	Distribut	ion	Sales
<u> </u>	District heating	Generation		Distribution		Sales
	Water	Generation	n $\rangle$	Distribution		Sales
	Waste	Therma	l waste treatment		Non-thermal waste	e treatment



#### **VNG AG**

**Established** 

1958















#### **Profile**

- > VNG is a group of over 20 companies active in the European energy industry with a broad, future-oriented portfolio of products and services in gas and infrastructure, and more than 60 years of experience in the energy market. Headquartered in Leipzig, the Group organises its business activities in four business areas: Trading & Sales, Transport, Storage and Biogas.
- On the basis of these core competencies, VNG is increasingly focusing on new fields of business such as green gases and digital infrastructures in line with the "VNG 2030+" strategy.

#### Current key topics and projects

#### Trading & Sales

- > Optimisation of market position in terms of procurement and sales
- > Focus on development of midstream excellence and moderate growth in retail business
- Development of business cases for supply, trading and sale of hydrogen

#### Storage

- > Focus on ensuring and extending cost and innovation leadership
- > Integration of and scaling up of service business for third parties
- Development of business cases for underground storage for hydrogen

#### Transport

- > Continuous optimisation in the regulatory framework (e.g. efficiency improvements)
- > Focus on a sustainable, green use of the gas infrastructure with renewable gases

#### **Biogas**

> Acquisition, integration and optimisation of biogas plants as well as the development of concepts beyond the current subsidy scheme

#### Digital infrastructure

- Becoming a leading independent provider of fibre optic backbone infrastructure
- Establishment of a fiber optic network in certain regions in East Germany
- Becoming a leading independent provider of fibre optic network services in the field of planning, construction, management and maintenance

#### Innovations and start-up-activities

- > Strategic partnership with accelerators e.g. SpinLab
- > Focused investments in start-ups with a strategic fit to VNG
- > Lean internal entrepreneur/innovation process



# VNG AG at a glance





#### **Trading & Sales**

- > Wholesale and Retail divisions in Germany and Europe
- > 516 bn kWh gas send-out
- > Power and gas consumers (B2C)
  - > Germany: 150,000 | Austria: 41,000 | Poland: 42,000



#### **Storage**

- > Third-largest storage facility operator in Germany
- Four underground storage facilities (Bad Lauchstädt, Bernburg, Etzel, Jemgum)
- > 2.2 bn m<sup>3</sup> storage capacity

# $\rightleftharpoons$

#### **Transportation**

- > As an independent transmission operator, ONTRAS Gastransport GmbH is responsible for Germany's second-longest gas transportation system
- > 7,000 km high-pressure gas pipeline system
- > 450 network interconnection points



#### Biogas

- > One of the largest system operators in Germany
- > 27 biogas facilities in eastern and northern Germany
- > 95 MW of installed rated thermal input

#### Key figures

- > Adjusted EBITDA: €184.9 m
- > Funds from operations (FF0): €120.1 m

- Non-current assets: €2,914.7 m
- > Current assets: €4,365.2 m

- Non-current liabilities: €1,135.0 m
- > Current liabilities: €4,382.4 m



# Borusan EnBW Enerji yatırımları ve Üretim A.S.





**Established**September 2009



Employees ~150



#### **Profile**



Borusan EnBW Enerji continues its activities with a vision of being a leading energy generation company in the wind energy segment. From investments to operations, in all of its activities, efficiency and respect to society and nature are of utmost importance.

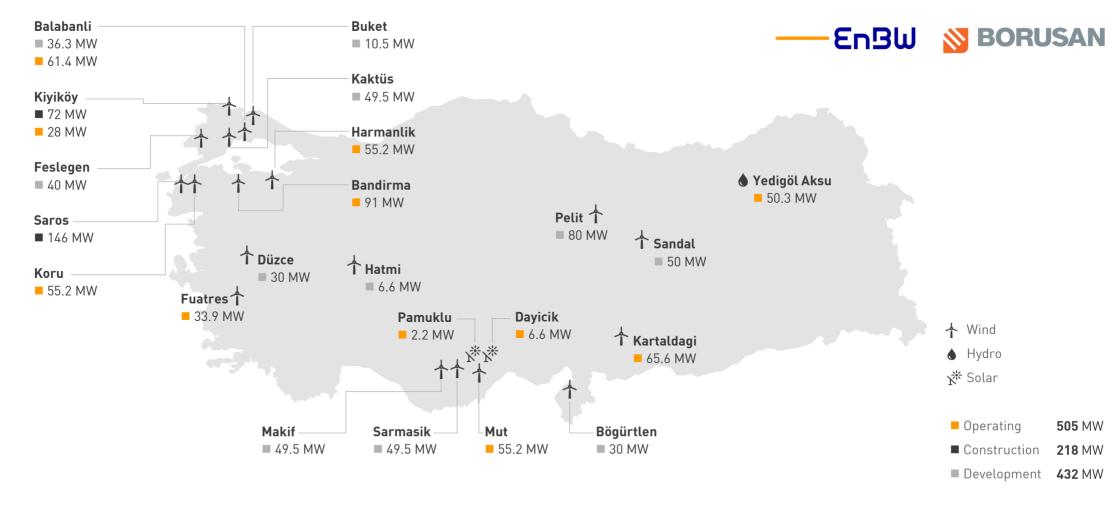






## Activities in Turkey<sup>1</sup>: Borusan EnBW energy portfolio and projects







# Key financials and non-financials



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<ul> <li>Key financials and non-financials</li> <li>&gt; Five-year summary</li> <li>&gt; Fiscal year 2019</li> <li>&gt; Half year 2020</li> <li>&gt; Finance strategic and other goal dimensions</li> </ul>	109
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## Multi-year overview (1/2)



## EnBW Group

ı		2019	2018	2017	2016	2015
Earnings						
External revenue <sup>1</sup>	€ m	18,765	20,815	21,974	19,368	21,167
Adjusted EBITDA	€ m	2,433	2,158	2,133	1,939	2,110
Adjusted Group net profit/loss <sup>2</sup>	€m	787	438	793	N/A	N/A
Balance sheet						
Equity	€ m	7,445	6,273	5,863	3,216	5,123
Net debt	€ m	12,852	9,586	8,418	10,046	6,736
Net financial debt	€m	6,022	3,738	2,918	3,654	3,329
Cash flow						
Retained cash flow	€ m	1,241	999	3,050	950	1,718
Internal financing capability <sup>1</sup>	%	82.6	92.2	111.9	72.1	347.8
Profitability						
Return on capital employed (ROCE)	%	5.2	6.5	7.3	7.8	9.5
Value added	€ m	0	32	152	124	354
Earnings per share	€	2.71	1.23	7.58	-6.64	0.58
Dividend per share	€	0.70	0.65	0.50	0.00	0.55
Energy sales						
Electricity	bn kWh	153	137	122	115	115
Gas <sup>1</sup>	bn kWh	297	329	250	139	135

<sup>&</sup>lt;sup>1</sup> The figures for the previous year have been restated.

<sup>&</sup>lt;sup>2</sup> In relation to the profit / loss attributable to the shareholders of EnBW AG.





## EnBW Group

		2019	2018	2017	2016	2015
Sales segment						
Electricity sales <sup>1</sup>	bn kWh	37	38	40	44	48
Gas sales <sup>1</sup>	bn kWh	74	68	57	54	82
External revenue <sup>1</sup>	€m	7,679	7,348	7,354	7,771	9,061
Adjusted EBITDA <sup>1</sup>	€m	294	268	330	250	255
Grids segment						
External revenue	€ m	3,460	3,215	7,472	6,644	6,351
Adjusted EBITDA	€m	1,311	1,177	1,046	1,004	747
Renewable Energies segment						
Electricity sales	bn kWh	3	2	2	3	3
External revenue	€ m	653	478	508	511	447
Adjusted EBITDA	€m	483	298	332	295	287
Generation & Trading segment						
Electricity sales <sup>1</sup>	bn kWh	112	97	80	68	65
Gas sales <sup>1</sup>	bn kWh	223	260	193	85	53
External revenue <sup>1</sup>	€m	6,970	9,768	6,631	4,434	5,300
Adjusted EBITDA <sup>1</sup>	€ m	384	431	377	337	777

<sup>&</sup>lt;sup>1</sup> The figures for the previous year have been restated.



## Fiscal year 2019: Financial key performance figures



Financial and strategic performance indicators		2019	2018	Change in %
TOP Adjusted EBIDA	€m	2,432.5	2,157.5	-9.9
Share of adjusted EBITDA accounted for by Sales <sup>1</sup>	€ m / %	294.3 / 12.1	268.4 / 12.4	9.6 /-
Share of adjusted EBITDA accounted for by Grids	€ m / %	1,311.2 / 53.9	1,176.9 / 54.5	11.4 /-
Share of adjusted EBITDA accounted for by Renewable Energies	€ m / %	482.8 / 19.8	297.7 / 13.8	62.2 /-
Share of adjusted EBITDA accounted for by Generation and Trading <sup>1</sup>	€ m / %	383.8 / 15.8	430.8 / 20.0	-10.9 /-
Share of adjusted EBITDA accounted for by Other/Consolidation	€ m / %	-39.6 / -1.6	-16.3 / -0.7	-142.9 /-
Internal financing capability <sup>1</sup>	%	82.6	92.2	-
TOP Return On Capital Employed (ROCE)	%	5.2	6.5	-
Adjusted Group net profit <sup>2</sup>	€ m	786.8	438.3	79.5
Group net profit <sup>2</sup>	€m	734.2	334.2	119.7
Earnings per share from Group net profit in $\mathbb{C}^2$	€	2.71	1.23	119.7

<sup>&</sup>lt;sup>1</sup> The figures for the previous year have been restated.

<sup>&</sup>lt;sup>2</sup> In relation to the profit / loss attributable to the shareholders of EnBW AG



## Fiscal year 2019: Non-financial key performance figures



Customers and society goal dimension	2019	2018	Change in %
TOP Reputation Index	52.8	51.3	2.9
EnBW/Yello Customer Satisfaction Index	116 / 157	120 / 152	-3.3 / 3.3
SAIDI (electricity) in min./year	15	17	-11.8
Employees goal dimension			
Employee Commitment Index <sup>1</sup>	66	62	6.5
LTIF for companies controlled by the group <sup>2</sup> /LTIF overall <sup>3</sup>	2.1 / 3.8	2.3 / 3.6	-8.7 / 5.6
Environment goal dimension			
Installed output of renewable energies in GW and the share of the generation capacity accounted for by renewable energies in %	4.4 / 31.8	3.7 / 27.9	18.9 /-
TOP CO <sub>2</sub> intensity in g/kWh	419	553	-24.2
Employees of the EnBW Group <sup>4</sup>	31.12.2019	31.12.2018	Change in %
Employees	23,293	21,775	7.0
Full-time equivalents <sup>5</sup>	21,843	20,379	7.2

LTIF: Lost Time Injury Frequency

SAIDI: System Average Interruption Duration Index

<sup>&</sup>lt;sup>1</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered [except ITOs]).

<sup>&</sup>lt;sup>2</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered except for companies in the area of waste management as well as external agency workers and contractors).

<sup>&</sup>lt;sup>3</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered except external agency workers and contractors).

<sup>&</sup>lt;sup>4</sup> Number of employees excluding apprentices / trainees and inactive employees.

<sup>&</sup>lt;sup>5</sup>Converted into full-time equivalents.



## Fiscal year 2019: ROCE and value added



#### Group level

- > ROCE at 5.2 % compared to 6.5% in the prior year
- > Increase in average capital employed

		A Sales		₩ Grid	s	Renev Energ	wable jies	Gene & Tra	ration ding	+ Other Conso	/ lidation	Total	
Value added to the EnBW Group by segment <sup>1</sup>		2019	2018	201	9 2018	2019	2018	2019	2018	2019	2018	2019	2018
Adjusted EBIT incl. the adjusted investment result <sup>2</sup>	€m	174.0	218.0	839.7	768.4	267.1	123.7	-178.0	-21.9	-91.2	-46.6	1,011.6	1,041.6
Average capital employed	€ m	1,308.8	1,067.1	8,033.3	7,019.8	4,840.6	3,667.4	2,044.0	2,109.0	3,088.4	2,190.0	19,315.1	16,053.3
Return On Capital Employed (ROCE)	%	13.3	20.4	10.5	10.9	5.5	3.4	-8.7	-1.0	-	_	5.2	6.5
Weighted Average Cost of Capital (WACC)	%	7.6	7.7	4.2	5.3	5.3	6.1	7.8	8.0	_	_	5.2	6.3
Value added	€ m	74.6	135.5	506.1	393.1	9.7	-99.0	-337.3	-189.8	-	-	0.0	32.1

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<sup>&</sup>lt;sup>1</sup> The figures for the previous year have been restated.

<sup>&</sup>lt;sup>2</sup> Investment result of €59.4 m, adjusted for taxes (investment result/0.706 - investment result; with 0.706 = 1 - tax rate 29.4%). Does not include impairment losses and reversals to impairment losses on investments, the result from the sale of equity investments, the share of the result from entities accounted for using the equity method not relevant to the ongoing management of the company and the result from equity investments held as financial assets.



# Fiscal year 2019: Segment reporting<sup>1</sup>



in € m

	<b>A</b> Sales		<b>☆</b> Grids		Renew Energi		Gener & Trac		+ Other Conso	/ lidation	Total	
Revenue	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
External revenue	7,678.9	7,347.7	3,459.6	3,215.4	653.0	477.5	6,970.1	9,767.8	3.3	7.0	18,765.0	20,815.4
Internal revenue	769.6	727.8	1,359.6	2,353.1	405.0	333.1	3,085.0	2,719.6	-5,619.3	-6,133.6	0.0	0.0
Total revenue	8,448.5	8,075.5	4,819.2	5,568.5	1,058.1	810.6	10,055.1	12,487.4	-5,616.0	-6,126.6	18,765.0	20,815.4
Earnings indicators												
Adjusted EBITDA	294.3	268.4	1,311.2	1,176.9	482.8	297.7	383.8	430.8	-39.6	-16.3	2,432.5	2,157.5
EBITDA	272.5	225.1	1,275.6	1,120.0	469.2	285.1	228.1	415.4	-0.2	44.0	2,245.2	2,089.6
Depreciation and amortisation	-115.3	-68.5	-517.7	-457.5	-221.1	-173.7	-589.4	-471.0	-44.3	-29.3	-1,487.8	-1,200.0
Impairment losses	0.0	-2.5	-1.1	0.0	-11.6	-0.8	-148.0	-9.4	0.0	-1.1	-160.7	-13.8
Net profit/loss from entities accounted for using the equity method	2.0	1.1	19.1	22.2	1.2	-48.3	6.5	0.9	0.0	0.0	28.9	-24.1
Significant non-cash items	-22.7	-11.9	21.5	48.9	3.9	4.8	48.6	30.9	-15.1	-5.7	36.2	67.0

<sup>&</sup>lt;sup>1</sup> The figures for the previous year have been restated



## First six months 2020: Financial key performance figures



Financial and strategic performance indicators		1.1. – 30.6.2020	1.1. – 30.6.2019	Change in %
TOP Adjusted EBITDA	€ m	1,586.6	1,276.0	24.3
TOP Share of adjusted EBITDA accounted for by Sales <sup>1</sup>	€ m / %	135.8 / 8.6	123.5 / 9.7	10.0 / –
Share of adjusted EBITDA accounted for by Grids <sup>1</sup>	€ m / %	744.9 / 46.9	740.7 / 58.0	0.6 / –
TOP Share of adjusted EBITDA accounted for by Renewable Energies <sup>1</sup>	€ m / %	425.8 / 26.8	212.9 / 16.7	100.0 / –
Share of adjusted EBITDA accounted for by Generation and Trading <sup>1</sup>	€ m / %	395.0 / 24.9	283.5 / 22.2	39.3 / -
Share of adjusted EBITDA accounted for by Other/Consolidation <sup>1</sup>	€ m / %	-114.9 / -7.2	-84.6 / -6.6	-35.8 / -
TOP Internal financing capability <sup>1</sup>	€m	1,359.1	1,071.1	26.9
TOP Return On Capital Employed (ROCE)	€ m	943.8	572.3	64.9
Adjusted Group net profit <sup>2</sup>	€ m	370.2	510.0	-27.4
Group net profit <sup>2</sup>	€ m	184.2	286.2	-35.6
Earnings per share from Group net profit/loss <sup>2</sup>	€	0.68	1.06	-35.6



## First six months 2020: Non-financial performance indicators<sup>1</sup>



Customers and society goal dimension  TOP Reputation Index	1.1. – 30.6.2020	1.1. – 30.6.2019	Change in %
EnBW/Yello Customer Satisfaction Index	120 / 159	116 / 161	3.4 / -1.2
SAIDI (electricity) in min./year	7	8	-12.5
Employees goal dimension			
LTIF for companies controlled by the group <sup>2</sup> /LTIF overall <sup>3</sup>	1.9 / 3.1	2.1 / 3.6	-9.5 / -13.9
Employees of the EnBW Group <sup>4</sup>	30.06.2020	30.06.2020	Change in %
Employees	23,685	22,488	5.3
Full-time equivalents <sup>5</sup>	22,184	21,086	5.2

SAIDI: System Average Interruption Duration Index

LTIF: Lost Time Injury Frequency

<sup>&</sup>lt;sup>1</sup> The values for the key performance indicators Reputation Index, Employee Commitment Index (ECI), "Installed output of renewable energies (RE) in GW and the share of the generation capacity accounted for by RE in %" and CO<sub>2</sub> intensity will be exclusively collected at the end of the year.

<sup>&</sup>lt;sup>2</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered except for companies in the area of waste management as well as external agency workers and contractors [except ITOs]).

<sup>&</sup>lt;sup>3</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered except for external agency workers and contractors [except ITOs]).

<sup>&</sup>lt;sup>4</sup> Number of employees excluding apprentices / trainees and inactive employees.

<sup>&</sup>lt;sup>5</sup> The number of employees for the ITOs (ONTRAS Gastransport GmbH, terranets bw GmbH and TransnetBW GmbH) is only updated at the end of the year; for intervals of less than a year, the number of employees from 31 December 2019 is carried forward.

<sup>&</sup>lt;sup>6</sup> Converted into full-time equivalents.



# Financial and non-financial KPIs and targets: Finance and strategy goal dimensions



Goal	KPI	2019	Target 2020	Target 2025
Finance				
Secure profitability	Adjusted EBITDA in € bn	2.4	2.3–2.5	3.2
High level of financial discipline	Internal financing capability in % Debt repayment potential in %	82.6	> 100 -	_ 1 > 14 <sup>2</sup>
Increasing Group value	Return On Capital Employed (ROCE) in %	5.2	8.5 - 11	6.5–8
Strategy <sup>1</sup>				
Share of result accounted for by "Customer proximity" / Sales	Share of overall adjusted EBITDA in € bn / in %	0.3 / 12.5	0.4 / 15.0	0.6 / 20.0 (Smart infrastructure for customers <sup>3</sup> )
Share of result accounted for by Grids	Share of overall adjusted EBITDA in € bn / in %	1.2 / 54.5	1.0 / 40.0	1.3 / 40.0 (System critical infrastructure <sup>3</sup> )
Share of result accounted for by Renewable Energies	Share of overall adjusted EBITDA in € bn / in %	0.3 / 13.8	0.7 / 30.0	1.3 / 40.0
Share of result accounted for by Generation and Trading	Share of overall adjusted EBITDA in € bn / in %	0.4 / 19.9	0.3 / 15.0	(Sustainable generation infrastructure <sup>3</sup> )

<sup>&</sup>lt;sup>1</sup> Following the transition to the growth strategy, the key performance indicator internal financing capability will be replaced by the new key performance indicator debt repayment potential from 2021.

Therefore, no target value has been defined for the internal financing capability for 2025.

<sup>&</sup>lt;sup>2</sup>To ensure EnBW achieves its ratings target, the target value will be examined annually based on the requirements of the rating agencies.

<sup>&</sup>lt;sup>3</sup> The four segments Sales, Grids, Renewable Energies and Generation and Trading will become the three strategic business fields of Smart infrastructure for customers, System critical infrastructure and Sustainable generation infrastructure from 2021.



# Financial and non-financial KPIs and targets: Other goal dimensions



Goal	КРІ	2019	Target 2020	Target 2025
Customers & society				
Reputation	Reputation Index	53	55.4	58 to 62
Customer proximity	EnBW / Yello Customer Satisfaction Index	116 / 157	> 136 / > 159	125 to 136 / 148 to 159
Supply reliability	SAIDI (electricity) in min./year	15	< 25	< 20
Employees Employee commitment	Employee Commitment Index <sup>1</sup>	66	65	> 66
Occupational safety	LTIF for companies controlled by the Group <sup>2</sup> LTIF overall <sup>3</sup>	2.1 3.8	< previous year -	2.1 3.5
Environment				
Expand renewable energies (RE)	Installed output of RE in GW and the share of the generation capacity accounted for by RE in %	4.4 / 31.8	5.0 / > 40	7.5 to 8.0 / > 50
Climate protection	CO <sub>2</sub> intensity in g/kWh	419	-15% to -20% (reference year 2015: 609 g / kWh)	-10% to -20% (reference year 2020)

LTIF: Lost Time Injury Frequency

SAIDI: System Average Interruption Duration Index

<sup>&</sup>lt;sup>1</sup>Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered [except ITOs]).

<sup>&</sup>lt;sup>2</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered except for companies in the area of waste management as well as external agency workers and contractors).

<sup>&</sup>lt;sup>3</sup> Variations in the group of consolidated companies (all companies with more than 100 employees are generally considered except for external agency workers and contractors).



# **Capital markets**



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## Financial objectives and financing strategy





- > Flexible access to capital markets at all times
- > Well-diversified portfolio of financing sources
- Solid investment grade ratings
- Stable credit ratios
- > Close integration of corporate and financing strategy



### EnBW's financing strategy

- > Multi-pillar strategy to ensure maximum flexibility in financing
- > Diversified market and investor approach
- > Funding mix complemented by ESG linked instruments
- > Well-balanced maturity profile
- > Subordinated capital to support senior debt holders



# Financial Asset Management: Covering the Group's pension and nuclear provisions while also considering ESG criteria

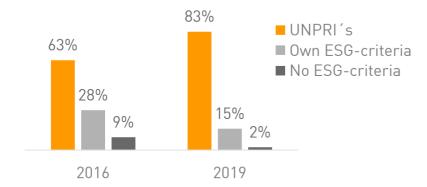


### Investment targets



- Risk-optimised investments with performance in line with market trends
- Ensuring the functionality of EnBW's Asset Liability Management Model at the same time

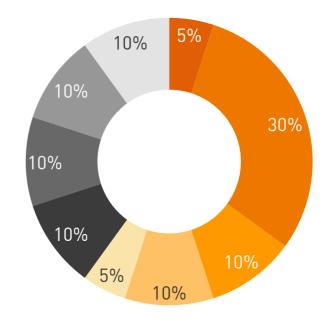
# Rising number of EnBW's asset managers incorporate ESG criteria in their investment decisions



ESG criteria are linked to EnBW's overall UN-SDG Strategy:

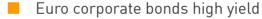
- > Improvements in climate protection
- > Risk minimisation through the governance factor (e.g. reputation, fraud, corruption).
- Ensure diversity to avoid undesired risk concentration

### Strategic asset allocation









- USD corporate bonds investment grade
- Equities Eurozone







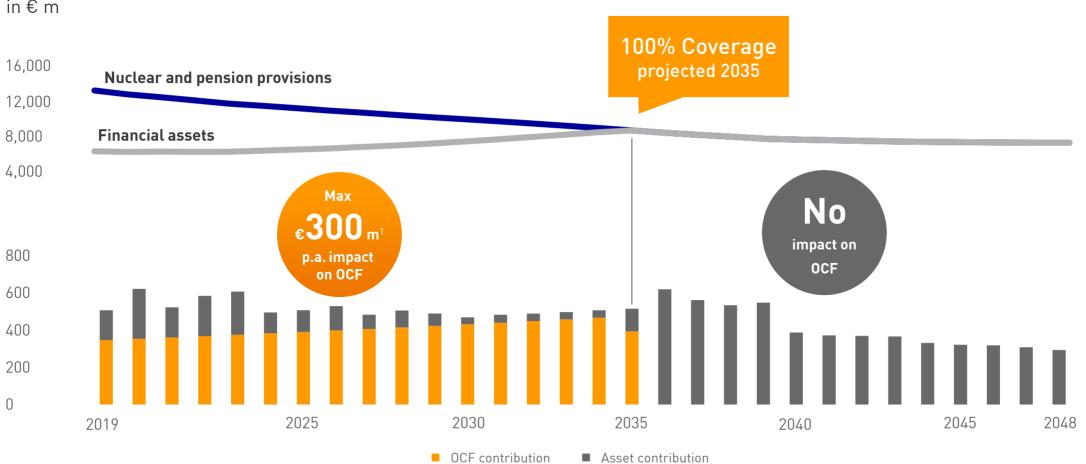




# Asset Liability Management Model Management of financing needs for pension and nuclear obligations





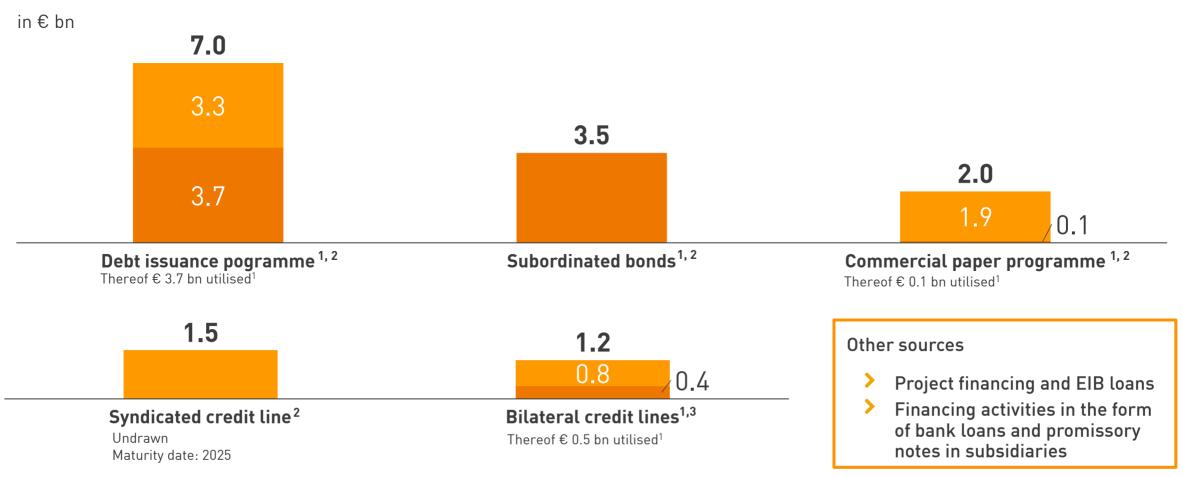


EnBW Factbook 2020



## EnBW has a flexible access to various financing sources





<sup>&</sup>lt;sup>1</sup> Rounded figures

EnBW Factbook 2020

<sup>&</sup>lt;sup>2</sup> as of 19 October 2020 <sup>3</sup> as of 30 September 2020

<sup>124</sup> 



## Fixed income: EnBW's senior bonds



Issuer: EnBW International Finance B.V.

Bond Type	CCY	Denomination	Volume (m)	Term (years)	Issue date	Maturity	Coupon (%)	Interest date	Security No. (WKN)	ISIN No.	Stock Exchange
Senior	CHF	5,000	100	10	12.7.2013	12.7.2023	2.250	1.7.	A1HM5N	CH0217677654	S
Senior	EUR	1,000	500	20	9.12.2004	16.1.2025	4.875	16.1.	A0DG9U	XS0207320242	L
Senior	EUR	1,000	500	5	7.4.2020	17.4.2025	0.625	17.4.2021	A28V1E	XS2156607702	L
Senior	EUR	1,000	500	12	4.6.2014	4.6.2026	2.500	4.6.	A1ZJ9E	XS1074208270	L
Senior	EUR	1,000	500	10	12.10.2020	19.10.2030	0.250	19.10.	A283UQ	XS2242728041	L
Green Senior	EUR	1,000	500	15	31.10.2018	31.10.2033	1.875	31.10.	A2RTNC	XS1901055472	L
Senior	EUR	100,000	100	20	13.6.2014	13.6.2034	2.875	13.6.	Pri	vate Placement	
Senior	YEN	100,000,000	20,000	30	16.12.2008	16.12.2038	3.880	16.6. & 16.12.	Pri	vate Placement	
Senior	EUR	1,000	600	30	7.7.2009	7.7.2039	6.125	7.7.	A1AJTV	XS0438844093	L
Senior	EUR	100,000	100	25	16.6.2014	16.6.2039	3.080	16.6.	Pri	vate Placement	
Senior	EUR	100,000	75	22	15.1.2019	21.1.2041	2.080	21.1.	Pri	vate Placement	
Senior	EUR	100,000	50	30	1.8.2014	1.8.2044	2.900	1.8.	Pri	vate Placement	



## Fixed income: EnBW's subordinated bonds



### Issuer: EnBW Energie Baden-Württemberg AG

Bond Type	CCY	Denomination	Volume (m)	Term (years)	Issue date	Maturity	Coupon (%)	Interest date	Security No. (WKN)	ISIN No.	Stock Exchange
Subordinated	EUR	1,000	1,000²	62	18.3.2014	2.4.2076	3.625	2.4.	A11P78	XS1044811591	F, L
Subordinated	USD <sup>1</sup>	2,000	3002	60.5	5.10.2016	5.4.2077	5.125	5.4.	A2BN7K	XS1498442521	L
Subordinated	EUR	1,000	725 <sup>2</sup>	60.5	5.10.2016	5.4.2077	3.375	5.4.	A2BPFD	XS1405770907	L
Green Subordinated	EUR	100,000	500	60	5.8.2019	5.8.2079	1.625	5.8.	A2YPEQ	XS2035564629	L
Green Subordinated	EUR	100,000	500	60.25	5.8.2019	5.11.2079	1.125	5.11.	A2YPEP	XS2035564975	L
Green Subordinated	EUR	100,000	500	60	22.6.2020	29.6.2080	1.875	29.6.	A289QA	XS2196328608	L

as of 19 October 2020

L: Luxembourg, F: Frankfurt, CCY: Currency

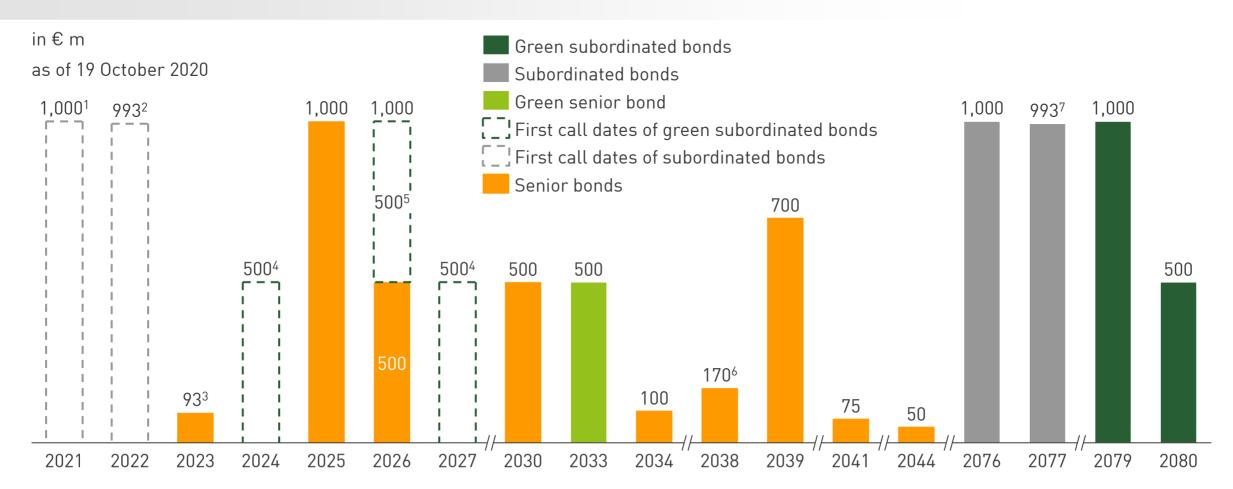
<sup>&</sup>lt;sup>1</sup> Regulation: These Notes are not offered or sold within the United States or to, or for the account or benefit of, U.S. persons

<sup>&</sup>lt;sup>2</sup> Subordinated bond coupon initially



#### Maturities of EnBW's bonds





<sup>&</sup>lt;sup>1</sup> First call date: subordinated maturing in 2076

<sup>&</sup>lt;sup>2</sup> First call date: subordinated maturing in 2077; includes USD 300 million (swap in €), coupon before swap 5.125%

<sup>&</sup>lt;sup>3</sup> CHF 100 million, converted as of the reporting date of 19.10.2020

<sup>&</sup>lt;sup>4</sup> First call date: green subordinated maturing in 2079

<sup>&</sup>lt;sup>5</sup> First call date: green subordinated maturing in 2080

<sup>&</sup>lt;sup>6</sup> JPY 20 billion (swap in €), coupon before swap 5.460%

<sup>&</sup>lt;sup>7</sup> Includes USD 300 million, converted as of 5.10.2016



## Fixed income: Credit ratings



Rating: Portfolio transformation and sound financial policy form the basis of solid credit quality

Moody's INVESTORS SERVICE

A3 / negative 11 June 2020

STANDARD & POOR'S **RATINGS SERVICES** McGRAW HILL FINANCIAL

A-/stable

 $\mathbf{A}$ - / stable<sup>1</sup> **Fitch**Ratings

BBB+ / stable<sup>2</sup>

- > Leadership position as vertically integrated utility within Baden-Württemberg
- Significant proportion of EBITDA, around 50%, from lowrisk regulated distribution and transmission activities and growing share of renewables under contracts
- Historically balanced financial policy and demonstrated commitment to robust credit quality
- Difficult operating environment in Germany for conventional generation and challenging retail markets
- Execution risks relating to a large investment programme, including offshore wind development
- Somewhat weak credit metrics following VALECO and Plusnet acquisitions, increasing pension and nuclear liabilities because of lower discount rates
- Strong shareholder support

- > EnBW is strategically lowering its earnings portfolio
- Limited exposure to COVID-19 effects
- > Headroom reduced significantly due to an increase in nuclear and pension provisions and the acquisitions of VALECO and Plusnet
- New sources of EBITDA (contracted renewables and financial leverage caused by acquisitions in 2019
- Increased visibility in credit metrics, strengthened by increasing share of sustainable power infrastructure and resilient grid business
- > Moderate likelihood of government support

- Downgrade by one notch reflecting weaker credit metrics due to increased capital spending, including acquisitions of VALECO and Plusnet
- But one-notch uplift to debt ratings due to rising share of regulated EBITDA, reflecting above-average expected recovery
- Continued shift in the EBITDA mix away from conventional generation towards regulated and contracted businesses supports a stronger business model and higher headroom
- High earnings visibility, but execution risk in grids and renewables projects could have timing effects on cash flows
- Geographical risk is concentrated on Germany
- Stronger leverage metrics than majority of peers

- regulated network business) will compensate for higher

risk, with improved cash flow visibility



## EnBW share in figures<sup>1</sup>



		2019	2018	2017	2016	2015
Annual high	€	61.00	34.00	29.63	24.25	27.00
Annual low	€	29.00	25.40	20.00	18.29	20.21
Closing price	€	50.50	29.20	28.78	19.69	20.62
Number of shares outstanding as of 31 December <sup>2</sup>	Thousand shares	270,855	270,855	270,855	270,855	270,855
Market capitalisation as of 31 December <sup>2</sup>	€bn	13.7	7.9	7.8	5.3	5.6
Stock exchange trade (total)	Number of shares	106,534	86,190	157,021	80,173	125,440
Stock exchange trade (daily average)	Number of shares	426	435	604	391	568
Dividend distribution <sup>3</sup>	€m	190	176	135.4	0.00	149.0
Dividend per share	€	0.70	0.65	0.50	0.00	0.55

### Stock exchange information

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

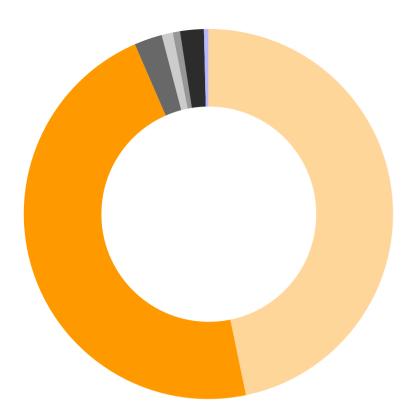
 $<sup>^{\</sup>rm 1}$  Share price based on closing price trading the EnBW share in XETRA  $^{\rm 2}$  Total number of shares 276.605 million shares

<sup>&</sup>lt;sup>3</sup> Distribution related to eligible shares as of year-end



## Shareholder structure<sup>1</sup>





OEW Energie-Beteiligungs GmbH	46.75%
■ NECKARPRI-Beteiligungsgesellschaft mbH²	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%

<sup>&</sup>lt;sup>1</sup> May not add up to 100% due to rounding; figures as of 30 September 2020 <sup>2</sup> 100% subsidiary of NECKARPRI GmbH, which is a 100% subsidiary of the State of Baden-Württemberg



### Financial KPI's are focused on credit investors' needs



# Key performance indicators used to manage our credit metrics

Until 2020 Internal financing capability:

RCF / cash-relevant net investments ≥ 100%

Net investments financed by internal cash flows

From 2021

Debt repayment potential:

RCF / Net debt > 14%1

# Management of financing needs for pension and nuclear obligations

Asset Liability Management Model in place since 2003

Impact on operating cash flow limited to €300 m p.a.<sup>3</sup>

Timely coverage of nuclear and pension obligations by financial assets

Projected year of full coverage: 2035

### Dividend policy<sup>2</sup>

Annual payout ratio limited to a range of

40% to 60% of adjusted Group net profit

<sup>3</sup> Adjusted for inflation.

<sup>&</sup>lt;sup>1</sup> To ensure EnBW's rating target is met, the target value is reviewed annually in line with the requirements of the rating agencies.

<sup>&</sup>lt;sup>2</sup> The size of the dividend is based on the amount of net investment and the retained cash flow, whereby EnBW strives to generally distribute between 40 % and 60 % of Adjusted group net profit attributable to the shareholders of EnBW AG.



## **Corporate governance**



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Corporate governance  > Responsible and transparent management > German Corporate Governance Codex > Compliance					

> Data protection



## Corporate governance: Responsible and transparent management



#### Board of Management



**Dr. Hans-Josef Zimmer**Chief Technology Officer

**Dr. Frank Mastiaux**Chief Executive Officer

**Thomas Kusterer** Chief Financial Officer

Colette Rückert-Hennen
Chief Personnel Officer

- > Responsible Group management
- > Represents the company legally

#### **EnBW** corporate culture

**Transparent & responsible** 

## Strengthen trust and confidence in

- Customers
- > Capital providers
- Employees
- > Public

#### > Supervisory Board



#### Lutz Feldmann

Chairman of the Supervisory Board

- > **20 members:** 10 shareholder representatives, 10 employee representatives, thereof 3 union representatives
- Appoints members of Board of Management and defines their remuneration
- > Supervises the Board of Management
- > Advises them on management of the company

Long-term success



## Corporate governance: Compliance



#### Number of participants in compliance training events<sup>1</sup>

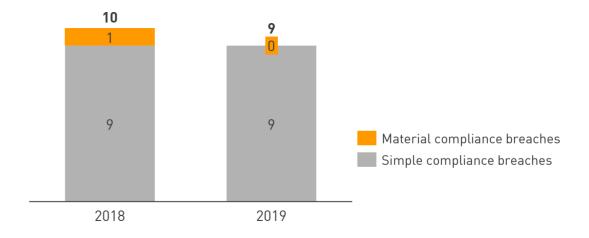
#### Management personnel +26% New management personnel / employees Sensitive areas 1,185 229 962 182 778 754 441 186 184 904 158 746 546 523 363

2017

2018

2019

### Number of compliance breaches in 2019<sup>1</sup>



### Compliance management system:

- > Serves to minimise risks and avoid liability issues and loss of reputation
- > Focuses on company- and sector-specific risks and priorities
- > Encompasses all controlled companies with employees in the EnBW Group
- Various tools used e.g. training/workshops focused on compliance attitude –
   Code of Conduct, Annual Compliance Risk Assessment and Ombudsman

2016

2015



## Corporate governance: Data protection in the value chain<sup>1</sup>



### Data protection compliance cycle



#### Processes involving data protection in all parts of the value chain

#### This has so far involved.

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

### Processes involving data protection in all parts of the value chain

- > Central organisation of data protection at the EnBW Group
- > 1 Head of Compliance and data protection
- > 2 Data protection officers<sup>2</sup>
- > 2 Data protection & compliance employees
- > 1 Business Partner digitization and data protection
- > 14 Local Data Protection Managers<sup>3</sup>

<sup>&</sup>lt;sup>1</sup> as of 31 December 2019

<sup>&</sup>lt;sup>2</sup> Data Protection Officer under Article 37-39 of the GDPR

<sup>&</sup>lt;sup>3</sup> Managers in the following business areas: 1 Human Resources, 1 IT, 1 Trading, 1 Generation, 1 Nuclear, 2 Operation & Sales, 1 Grids, 6 Other Businesses





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13 November 2020

Publication figures Q3 2020 Conference time Investor and Analyst Conference Call: 01:00 pm

25 March 2021

Publication figures full year 2020 Conference time Investor and Analyst Conference Call: 03:00 pm

5 May 2021

Annual General Meeting 2021

10 May 2021

Publication figures Q1 2021
Conference time Investor and Analyst Conference Call: 01:00 pm

29 July 2021

Publication figures Q2 2021 Conference time Investor and Analyst Conference Call: 01:00 pm

12 November 2021

Publication figures Q3 2021 Conference time Investor and Analyst Conference Call: 01:00 pm









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"Active communication and ongoing dialogue with our investors enable us to underscore EnBW's potential for generating value added. When taking strategic decisions, the interest of our investors is always of relevance." (Ingo Peter Voigt)





EnBW group online	www.enbw.com
EnBW Investor Relations	www.enbw.com/investors
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EnBW Overview Supervisory Board	https://www.enbw.com/company/the-group/about-us/supervisory-board/
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Unless indicated otherwise, all data contained hereinafter refers to the EnBW Group and is calculated according to IFRS.

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