

A man in a bright yellow raincoat and dark jeans is walking on a sandy beach. He is holding a black umbrella that is being blown inside out by a strong wind. He has his hands near his face, possibly shielding them from the wind. In the background, a line of wind turbines is visible on the horizon under a cloudy, overcast sky. The overall scene suggests a windy, rainy day.

**RWE**

**Factbook 2019**

# Disclaimer

This document contains forward-looking statements. These statements are based on the current views, expectations, assumptions and information of the management, and are based on information currently available to the management. Forward-looking statements shall not be construed as a promise for the materialisation of future results and developments and involve known and unknown risks and uncertainties. Actual results, performance or events may differ materially from those described in such statements due to, among other things, changes in the general economic and competitive environment, risks associated with capital markets, currency exchange rate fluctuations, changes in international and national laws and regulations, in particular with respect to tax laws and regulations, affecting the Company, and other factors. Neither the Company nor any of its affiliates assumes any obligations to update any forward-looking statements.

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# RWE GROUP



# RWE at a glance



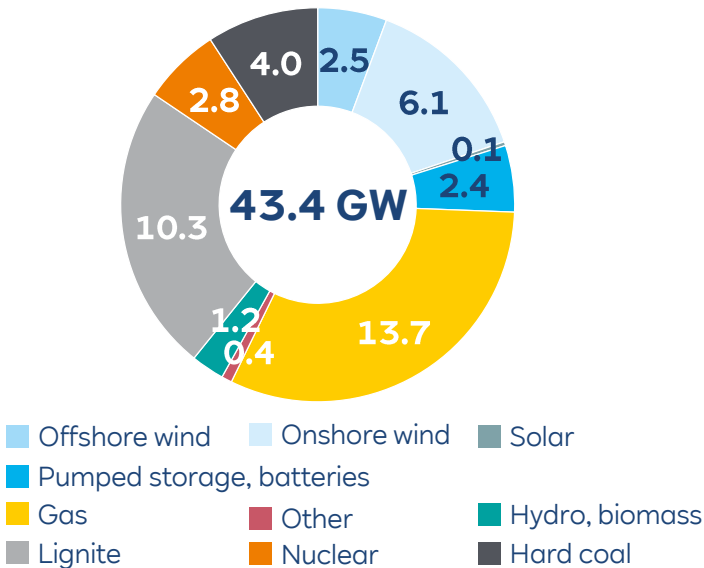
## Driving force behind the energy transition – with a powerful position

<b>Well established</b> robust company with strong financial performance 	<b>120 year</b> track record	<b>&gt;20,000</b> employees	<b>~€17 bn</b> market cap <sup>1</sup>	<b>157%</b> total shareholder return 2017-2019	<b>€1.8 bn</b> dividend payments 2017-2019 <sup>2</sup>
<b>Experienced</b> operator of flexible assets and strong commercial platform 	<b>~43 GW</b> generation portfolio	<b>~153 TWh</b> power generated	<b>2.4 GW</b> pumped storage/ batteries	<b>35 bcma<sup>3</sup></b> total gas sales portfolio	<b>Top 500</b> blue chip customers rely on RWE's commodity solutions
A global <b>leading renewables</b> player with strong growth ambitions 	<b>#2</b> in offshore worldwide	<b>~9 GW</b> wind & solar capacity	<b>2.7 GW</b> under construction	<b>&gt;20 GW</b> development pipeline	<b>~€1.5-2.0 bn</b> net investment per annum

<sup>1</sup> As of 31 Dec 2019. | <sup>2</sup> Dividend proposal of €0.80/share for 2019 fiscal year subject to the passing of a resolution by the 2020 Annual General Meeting. | <sup>3</sup> Billion cubic metres per annum.

# Unique renewables and conventional generation portfolio combined with leading commercial platform

RWE's net generation capacity<sup>1</sup> (pro rata)



- **Global leader in renewables**  
No. **2** in offshore wind
- **Leading European generator with diversified and balanced generation technologies**  
No. **3** gas fleet in Europe  
**~19 GW** installed flexible hydro, biomass and gas portfolio<sup>2</sup>
- **Significant gas portfolio player**  
**4.3 bcm<sup>3</sup>** of gas storage
- **Strong commercial platform**  
**~1,045 TWh** electricity & **~550 bcm** gas traded p.a.

Note: Figures may not add up due to rounding differences. | <sup>1</sup> As of 31 Dec 2019. | <sup>2</sup> Includes 1.6 GW hard coal generation in the Netherlands which co-fires biomass. | <sup>3</sup> Billion cubic metres.

# Business model fully aligned with our strategic focus on the energy transition

## Core

Offshore Wind


- Global offshore activities

Onshore Wind/Solar


- Onshore and solar operations in
  - Europe & APAC
  - Americas

Hydro/Biomass/ Gas


- Hydro, biomass and gas plants in Germany, UK, Netherlands
- Kelag stake

Supply & Trading


- Trading/origination
- Gas & LNG
- Commodity solutions
- Principal investments
- Gas storages

## Coal/Nuclear

- German lignite operations; mines and plants
- German hard coal plants
- German nuclear power plants
- Holding in Dutch EPZ (nuclear)

~28 GW

Installed capacity<sup>1</sup>

299 g/kWh

Carbon factor<sup>2</sup>

23%

Share of coal in Group revenues

<sup>1</sup> Pro rata installed capacity of core business. <sup>2</sup> Calculated for pro forma generation portfolio of core business. | Note: Figures for FY 2019.

# RWE's Executive Board



**Dr. Rolf Martin Schmitz**

Chairman of the Executive Board and Chief Executive Officer (since 10/2016)



Born in 1957 in Monchengladbach; doctorate in engineering.



Member of the Executive Board of rheinische Energie AG (1998-2001); Member of the Board of Management of Thüga AG (2001-2004); Chairman of the Board of Directors of E.ON Kraftwerke GmbH (2004-2005); Chairman of the Executive Board of RheinEnergie AG and Managing Director of Stadtwerke Köln (2006-2009).

## RWE

Chief Operating Officer National of RWE AG (05/2009 – 09/2010); Chief Operating Officer (10/2010-10/2016) and concurrently Deputy Chairman of the Executive Board (07/2012 – 10/2016); Chairman of the Executive Board and Chief Executive Officer of RWE AG since 10/2016; concurrently Labour Director of RWE AG since 05/2017.



**Dr. Markus Krebber**

Chief Financial Officer (since 10/2016)



Born in 1973 in Kleve; Banker; doctorate in economics.



Management Consultant at McKinsey & Company (2000 – 2005); various management positions at Commerzbank AG (2005 – 2012).

## RWE

Managing Director and Chief Financial Officer of RWE Supply & Trading GmbH (11/2012 – 08/2016); Chief Executive Officer of RWE Supply & Trading GmbH (03/2015 – 05/2017); Chief Financial Officer of RWE AG since 10/2016.

# Supervisory Board

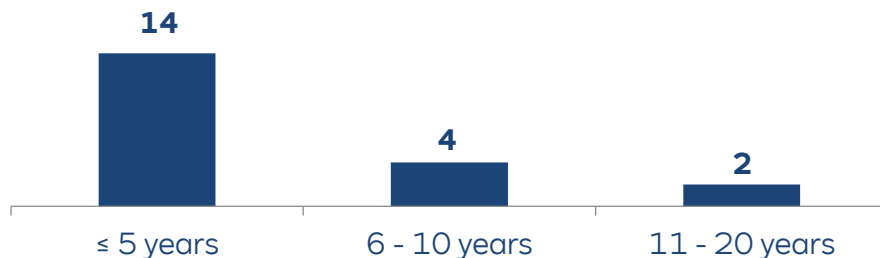
## 20 Board Members

**10** **shareholder representatives** elected by the Annual General Meeting

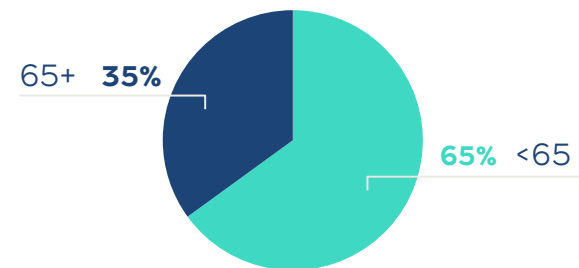
**10** **employee representatives** elected by the employees of RWE AG & its group companies



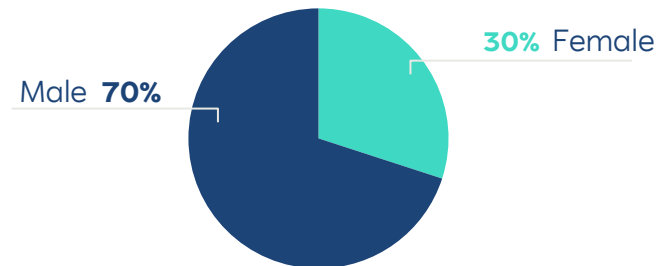
## Board Tenure in Years



## Age

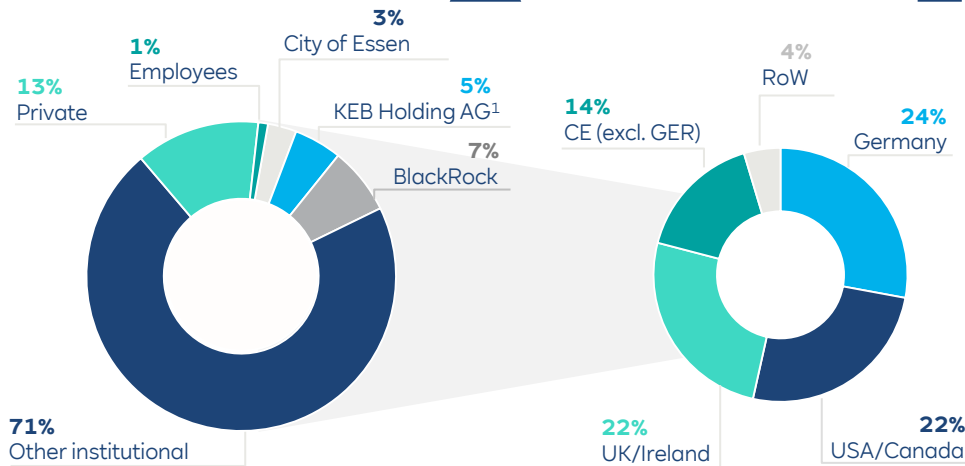


## Gender



# Shareholder structure of RWE AG

## RWE shareholders



## Institutional



## Share indicators



		2018	2019
<b>No. of common shares</b>	thousands	575,745	614,745
<b>No. of preferred shares²</b>	thousands	39,000	-
<b>Total number of shares</b>	thousands	614,745	614,745
Share price of common share³	€	18.97	27.35
Share price of preferred share³	€	18.84	-
<b>Market capitalisation³</b>	€ billion	11.7	16.8

Note: As of the beginning of Jan 2020. | ¹ Backed by the City of Dortmund. | ² Preferred shares converted into common shares mid-2019. | ³ End of fiscal year.



# Capital structure

## RWE net debt (as of 31 Dec 2019)<sup>1</sup> (€ bn)

<b>Financial assets</b>	<b>9.1</b>
<b>Financial liabilities</b>	<b>5.7</b>
Adjustment for hybrid capital	-0.5
<b>Net financial assets</b> (incl. hybrid capital adjustment)	<b>3.9</b>
Provisions for pensions and similar obligations	3.3
Provisions for nuclear waste management	6.7
Provisions for dismantling wind farms	1.0
<b>Net debt of continuing operations</b>	<b>7.0</b>

## • 2.6x 2019 leverage factor<sup>2</sup>

- Targeted **leverage factor** (net debt/core adj. EBITDA) of  $\leq 3.0x$
- Net debt of €7.0 bn after **financial ring-fencing** of coal phase-out liabilities
- Focus on **maintaining investment grade rating with target** of at least **Baa2/BBB**

### RWE's issuances – hybrid bonds

- in April 2015 (€539 m, 2.75%, 10/2020)<sup>3</sup>
- in April 2015 (€282 m, 3.50%, 04/2025)
- in June 2015 (\$317 m, 6.625%, 03/2026)

<sup>1</sup> Rounding differences may occur; new net debt definition, excluding financially ring-fenced mining liabilities and financial assets (receivables against German government). | Note: RWE Annual Report 2019 page 62 shows old definition of net debt. | <sup>2</sup> Net debt/pro forma core adj. EBITDA; pro forma: new business segmentation and inclusion of E.ON's acquired assets for full fiscal year 2019. | <sup>3</sup> First call date 21 Oct 2020.

# Credit Rating



## FitchRatings

**RWE: BBB, Stable Outlook**

- On **26 March 2020** Fitch affirmed its rating view for RWE at BBB with a stable outlook
- The affirmation of the ratings reflects RWE's expansion in the renewables business, improved credit profile due to the quasi-regulated character of the company's new business and greater visibility over conventional generation provided by the coal exit agreement
- The expansion in the renewables business is positive for RWE's credit profile as it contributes to earnings stability and lowers the company's carbon footprint
- Fitch also considers the agreement on coal phase out as supportive of RWE's credit profile, because it eliminates uncertainty and increases visibility around the future performance of lignite operations.

## MOODY'S

**RWE: Baa3, Positive Outlook**

- On **12 March 2020** Moody's updated its rating view for RWE and changed the rating outlook to positive from stable. At the same time the rating agency confirmed the Baa3 issuer rating and the short-term rating of P3
- The outlook change to positive reflects Moody's view that RWE's business profile is improving with its ongoing transformation from a pure conventional power generator to a power company with an increasing share of EBITDA generated from contracted renewable assets
- The positive outlook also incorporates Moody's view that RWE will maintain solid operating and financial performance
- It also takes into account the increased visibility into RWE's exit from lignite, where compensation of €2.6 billion from the Government of Germany will partly fund the associated long-term liabilities

# RWE is strongly committed to the UN Sustainable Development Goals

## Seven SDGs were defined as material in relation to the business activities of RWE

<p><b>5 GENDER EQUALITY</b></p> <ul style="list-style-type: none"> <li>• 27% and 19% women in 1<sup>st</sup> and 2<sup>nd</sup> management level<sup>1</sup></li> <li>• Member of the <b>2020 Bloomberg Gender Equality Index</b> (GEI)</li> </ul>	<p><b>7 AFFORDABLE AND CLEAN ENERGY</b></p> <ul style="list-style-type: none"> <li>• Leading operator of wind and solar with <b>~9 GW</b> installed capacity</li> <li>• Highly <b>efficient and flexible</b> power plant portfolio</li> </ul>	<p><b>8 DECENT WORK AND ECONOMIC GROWTH</b></p> <ul style="list-style-type: none"> <li>• Strong employer with workforce of more than <b>20,000 people</b></li> <li>• Regional support for <b>structural change and energy transition</b></li> </ul>	<p><b>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</b></p> <ul style="list-style-type: none"> <li>• Focus on <b>storage technologies</b> to support the energy transition</li> <li>• Part of High-Tech Gründerfonds III since 2017</li> </ul>	<p><b>13 CLIMATE ACTION</b></p> <ul style="list-style-type: none"> <li>• Strong commitment to <b>global climate goals</b></li> <li>• Target to be <b>carbon neutral</b> by 2040</li> </ul>	<p><b>15 LIFE ON LAND</b></p> <ul style="list-style-type: none"> <li>• Recultivation programme with focus on <b>biodiversity</b></li> <li>• Increase in ecology in renaturalised mining areas</li> </ul>	<p><b>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</b></p> <ul style="list-style-type: none"> <li>• Strict compliance requirements with RWE's <b>Code of Conduct</b></li> <li>• Member of <b>Bettercoal</b> to promote standards in hard-coal supply chain</li> </ul>
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**68 out of 100**

**B (Climate)**

**A (from AAA to CCC)**

**54 out of 100 (12<sup>th</sup> out of 30 utilities)**

<sup>1</sup> Below the Executive Board of RWE AG.

# Moving to net zero emissions and a sustainable energy system



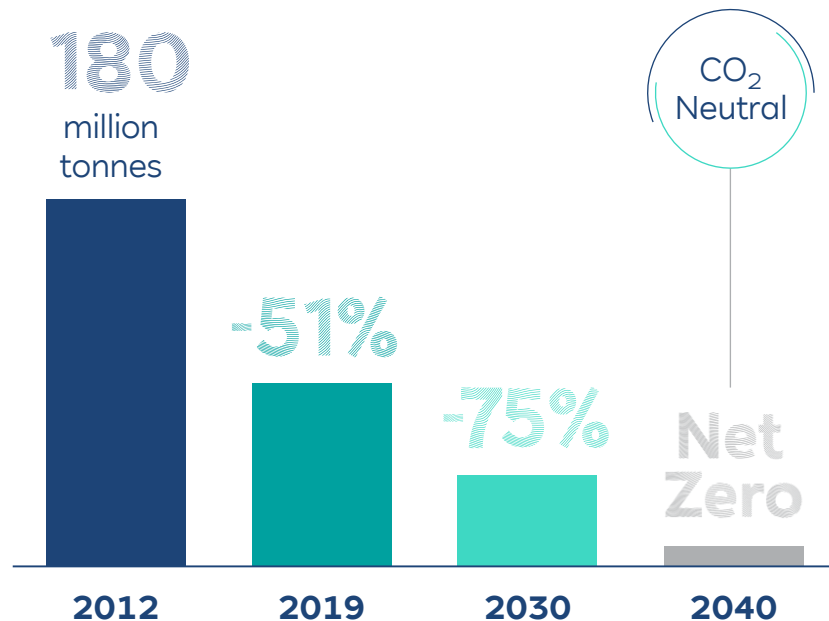
Target to achieve **CO<sub>2</sub> neutrality** for our global generation portfolio by **2040**



Fully supportive of **Paris Climate Agreement**



Proven **track record** of carbon emission reductions





# MARKET DATA

# The electricity market

## Generation



- Power plants generate power from sources of primary energy fuels
- Most common fuel types are uranium (nuclear), hard coal, lignite and natural gas
- Renewable sources include wind, hydro, photovoltaic (PV) and biomass

## Trading



- Acts as commercial hub for utilities, buying and selling energy in the wholesale market
- Traders also handle the commodity risk arising from fuel procurement

## Transmission



- High voltage
- Delivers electricity from power plants to local distribution power lines
- Perceived to be a 'natural monopoly' and therefore it is regulated in most markets by the local regulator/government

## Distribution



- Medium and low-voltage, local power lines
- Delivers electricity to end users
- Perceived to be a 'natural monopoly', and therefore it is regulated in most markets by the local regulator/government

## Retail/end user supply



- Power is bought by suppliers on the wholesale market and sold on to the customers (e.g. private households)
- Suppliers work in a competitive market and customers can choose any supplier to provide them with gas and electricity
- In a few markets retail remains regulated, e.g. Italy



## How is the power price set?



- **Power price is set by auction principle**
- **Consequently, prices are set by marginal costs.** All available generating units in a given region will bid their units according to the individual variable operating costs, with the exception of those plants enjoying priority of dispatching
- **All dispatched plants get paid the same price**
- Generators' gross margin is the difference between the market clearing price for power and their individual variable costs

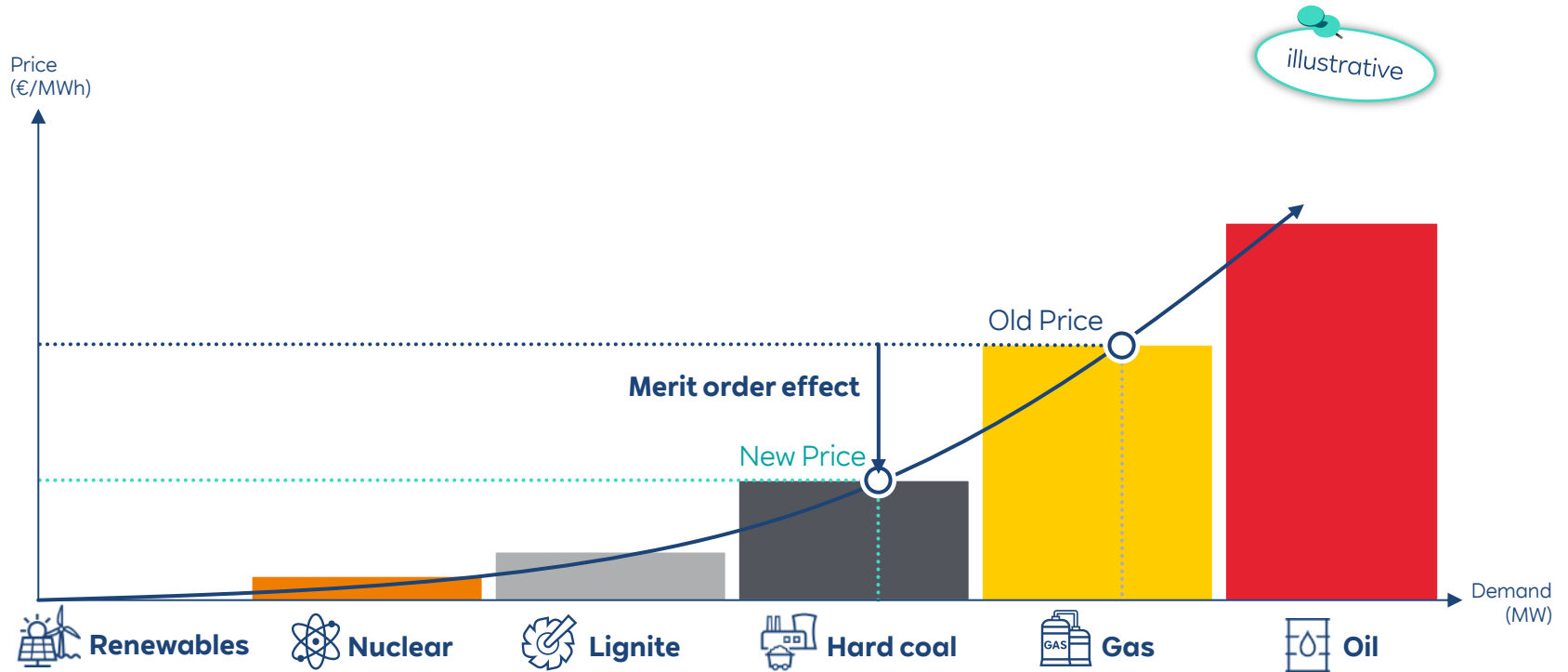
## What moves the price?



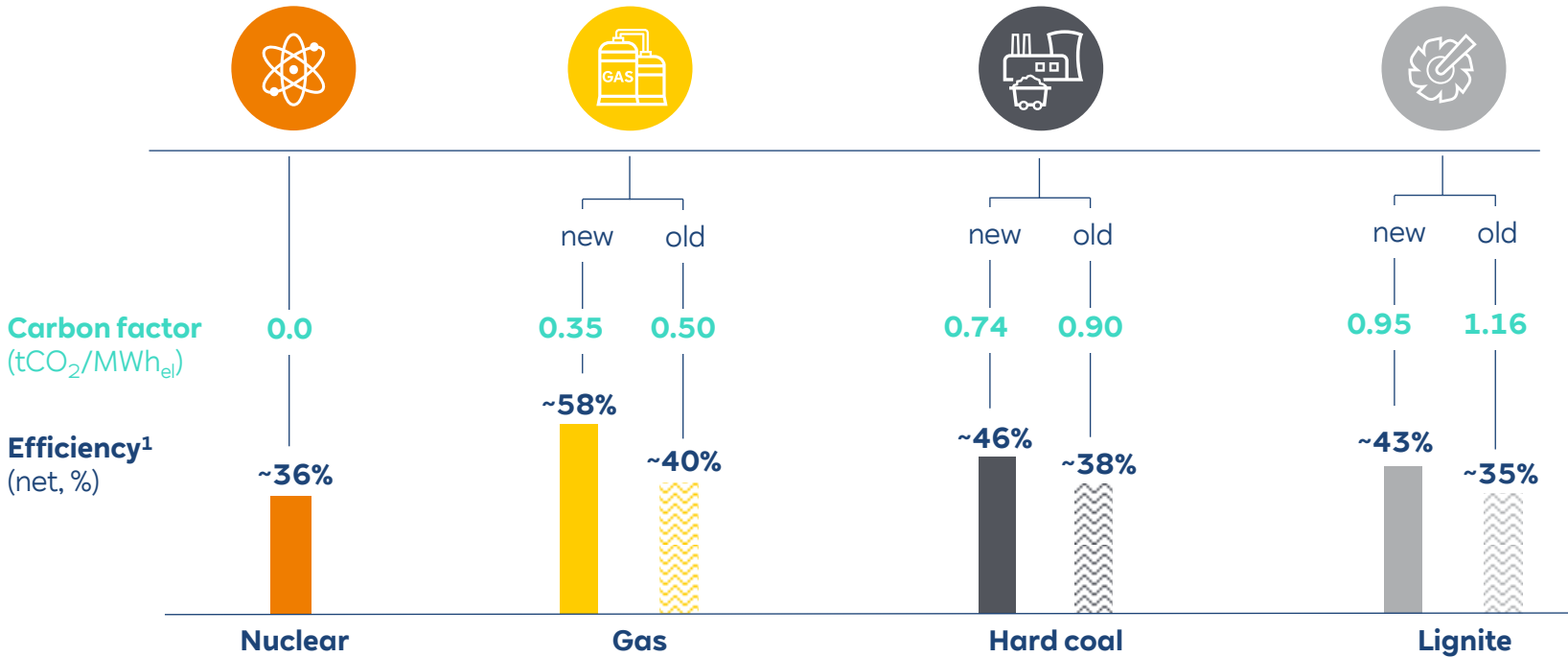
- **Commodities (coal, gas):** Fuel is the single largest variable cost item for most generators. Commodity prices therefore have the largest impact on power prices in the (near) term
- **CO<sub>2</sub> price:** The CO<sub>2</sub> price is added – depending on emission factor – to each plant's marginal costs and therefore passed through to the customer. Power plants that emit less carbon than the marginal plant would benefit from an increasing CO<sub>2</sub> price and vice versa
- **Taxes:** Taxes can be applied to specific technologies/fuels or to the electricity price. Taxes on the fuel of the marginal plant are passed through to customers. If the tax rate varies by technology, it can lead to merit order changes
- **Supply/Demand:** More supply shifts merit order to the right, while less demand results in lower prices and vice versa

- The **merit order** refers to the order of **use of power plants, determined** by the **marginal costs** of generation technology

# Merit order model



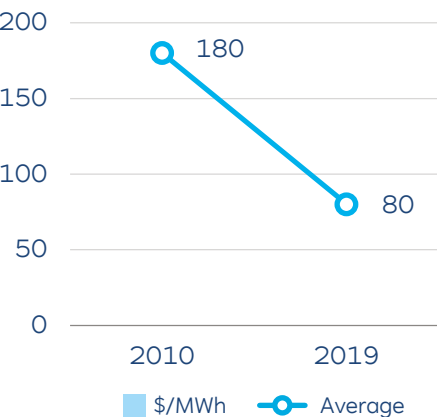
# Carbon factors and efficiencies by type of power plants



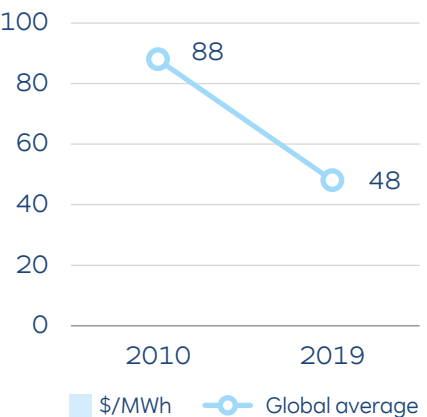
<sup>1</sup> Efficiency of converting primary energy into electricity.

# Levelised Cost of Electricity and load factors by technology

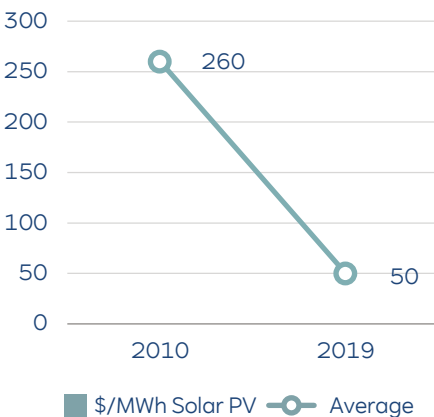
## LCOE<sup>1</sup> for offshore wind



## LCOE<sup>1</sup> for onshore wind



## LCOE<sup>1</sup> for solar



**Load factor: 35% - 50%**

**25% - 45%**

**15% - 25%**

<sup>1</sup> Historic benchmark of Levelised Cost of Electricity (\$/MWh, nominal); global scope. | Source: BNEF.

# Ancillary services<sup>1</sup>

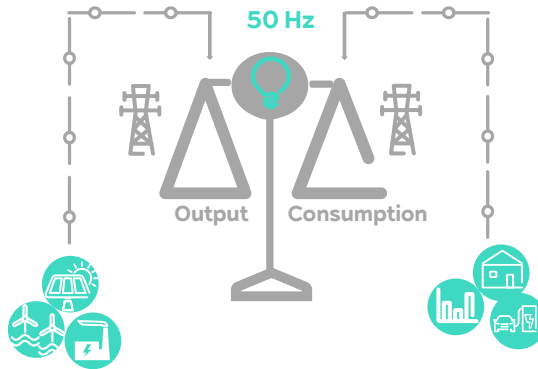
## Continuous balancing of power supply and demand

### The balancing market:

- A market operated by Transmission System Operators (TSOs) to maintain the power/frequency balance
- It is needed to ensure a continuous and stable frequency in the short term (e.g. when unexpected incidents occur - power plant outages)

### Ancillary services:

- Necessary tools/products which TSOs contract from generators in order to maintain system stability and security



### Maintains energy balance

#### Energy products

- **Frequency Control & Reserves** – to maintain system frequency at  $50\text{Hz} \pm x\%$  and to provide additional energy when needed
  - **UCTE / Germany:** primary, secondary, tertiary and time control levels (FCR, aFRR/mFRR, RR)
  - **UK:** frequency response (FFR, MFR, EFR) and reserve (Fast Reserve, STOR, BM start up)

### Maintains grid quality

#### System products

- **Reactive power** (voltage support) provides the important function of voltage regulation

#### Constraint Management

- **Countertrading** – grid operators deal on exchange or OTC (Continental)
- **(Regulated) Redispatch** – ramp-down or ramp-up power stations to relieve power flows from congested grid lines

### Dedicated to restarting the grid

#### Security products / emergency

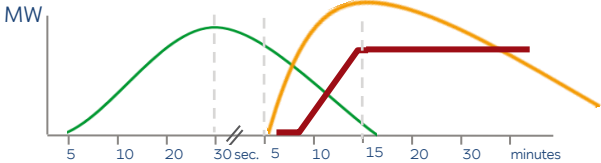
- **Blackstart** ability to restart a grid following a blackout
- **Intertrips** – automatically disconnect a generator
- **SO-SO trading** (system operator to system operator trades) – determines the direction of electricity flow

<sup>1</sup> Range of functions/products which Transmission System Operators (TSOs) contract from generators in order to maintain system stability and security.

# Overview of continental reserve category timescales

	Primary reserve	Secondary reserve	Tertiary reserve
Reaction time	<ul style="list-style-type: none"> <li>30 seconds (100%)</li> </ul>	<ul style="list-style-type: none"> <li>5 minutes (100%)</li> </ul>	<ul style="list-style-type: none"> <li>7 - 15 minutes (100%)</li> </ul>
System	<ul style="list-style-type: none"> <li>UCTE<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Control area</li> </ul>	<ul style="list-style-type: none"> <li>Control area</li> </ul>
Activation	<ul style="list-style-type: none"> <li>Automatic and decentralised activation via governor control</li> </ul>	<ul style="list-style-type: none"> <li>Centralised (TSO); active call through IT</li> </ul>	<ul style="list-style-type: none"> <li>Centralised (TSO); active call through phone/IT</li> </ul>
Reserved capacity	<ul style="list-style-type: none"> <li>3,000 MW in UCTE (600 MW in Germany)</li> </ul>	<ul style="list-style-type: none"> <li>Decided by TSO (2,500 MW in Germany)</li> </ul>	<ul style="list-style-type: none"> <li>Decided by TSO (2,500 MW in Germany)</li> </ul>
Auction	<ul style="list-style-type: none"> <li>Weekly</li> </ul>	<ul style="list-style-type: none"> <li>Weekly</li> </ul>	<ul style="list-style-type: none"> <li>Daily</li> </ul>
Remuneration	<ul style="list-style-type: none"> <li>Pay-as-bid</li> </ul>	<ul style="list-style-type: none"> <li>Pay-as-bid</li> </ul>	<ul style="list-style-type: none"> <li>Pay-as-bid</li> </ul>
Typical suppliers	<ul style="list-style-type: none"> <li>Synchronised generators:<sup>2</sup> run-of-river plants, storage and pumped storage hydro plants, large-scale battery storage systems</li> </ul>	<ul style="list-style-type: none"> <li>Storage and pumped storage hydro plants; gas turbine power plants; CHP; large-scale battery storage systems</li> </ul>	<ul style="list-style-type: none"> <li>Storage and pumped storage hydro plants; gas turbine power plants; CHP</li> </ul>

- A **sudden drop** in frequency triggers automated response to **correct the frequency**, followed by **manual interventions** by power system operators.



<sup>1</sup> The Union for the Coordination of the Transmission of Electricity. <sup>2</sup> Primary regulating units are required to reserve ~2% of their nominal power ('primary control reserve', updated every year).



# Europe

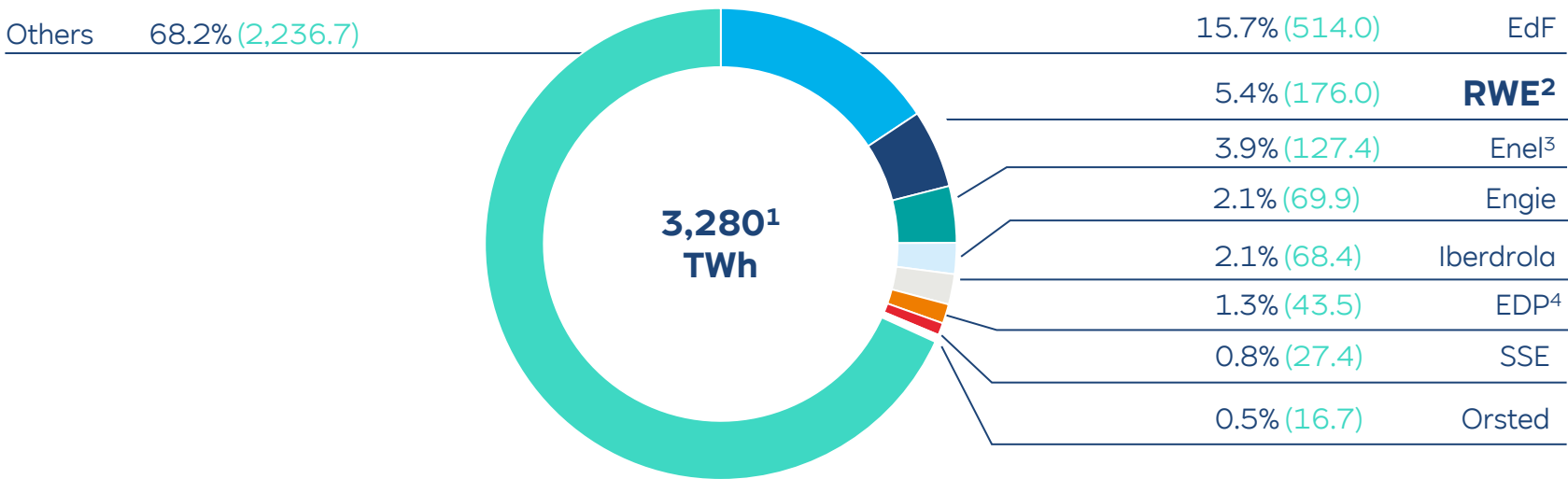




# RWE No. 2 in European power generation

## Share in EU 28 gross power generation (2018)

in % (TWh)



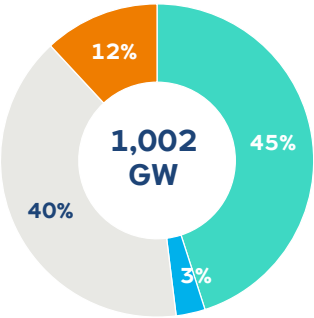
<sup>1</sup> Excl. Malta. | <sup>2</sup> Incl. innogy.- continuing operations. | <sup>3</sup> Excl. power plants in Russia. | <sup>4</sup> Incl. stake in EDPR. | Source: BP statistical review 2019; RWE Analysis.



# EU 28 power generation and capacity mix

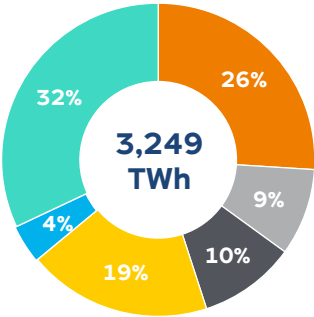
## Net installed capacity in 2018

	GW
Nuclear	119
Fossil fuels (lignite, hard coal, gas, oil, mixed fuels)	400
Other (hydro, pumped storage, waste, other non-RES)	28
Renewables	455



## Net generation in 2018

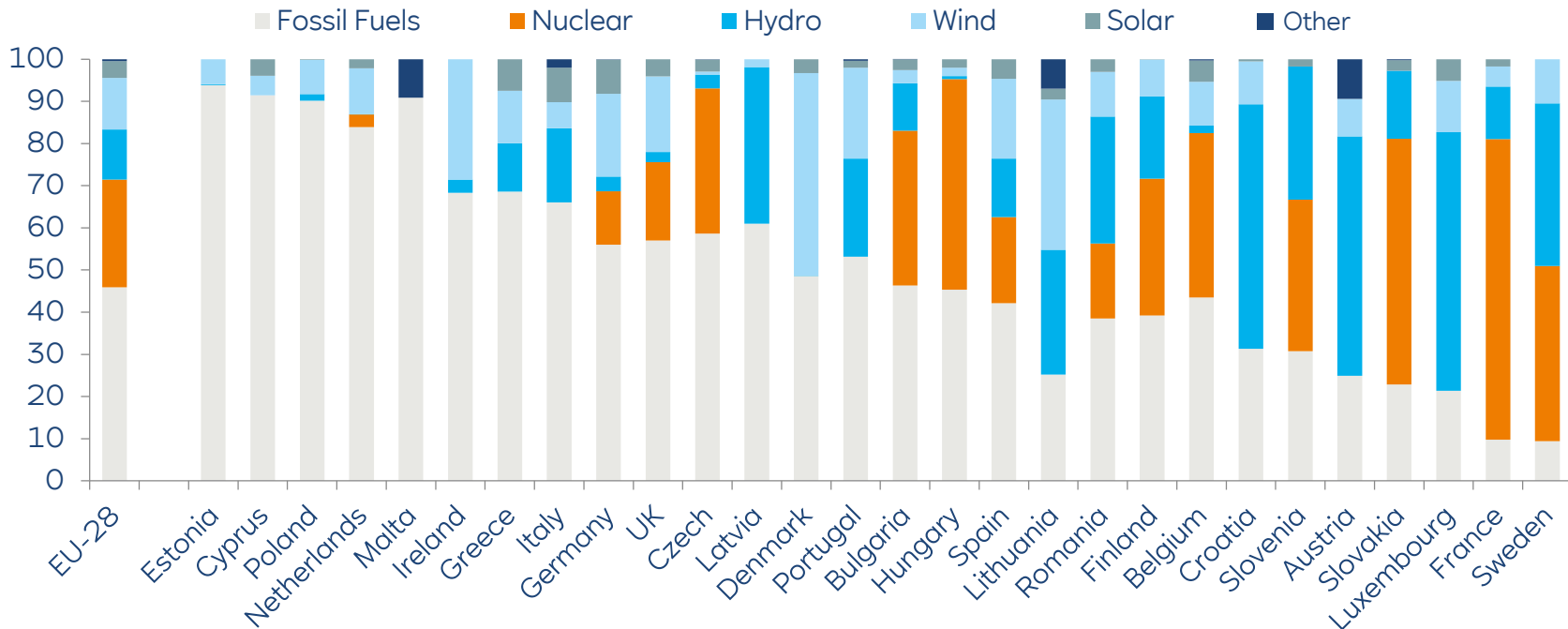
	TWh
Nuclear	829
Lignite	300
Hard coal	324
Gas	614
Other	131
Renewables	1,051



Source: Sandbag, entso-e.



# EU 28 power generation by source

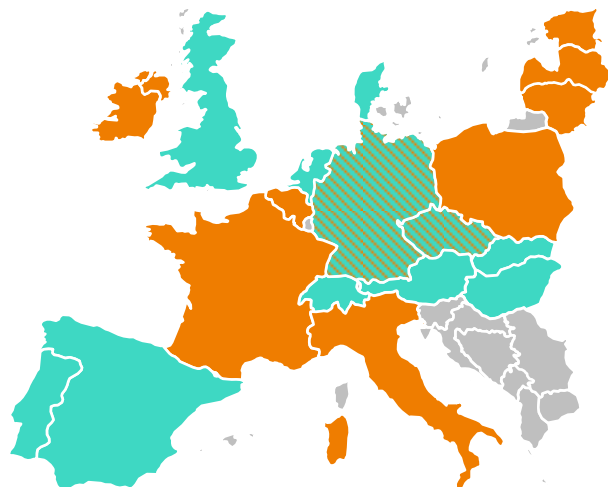


Source: eurostat, 2018.



# Controllable capacity in Europe significantly decreasing

## Loss of load expectation (LOLE)<sup>1</sup> in Europe 2025

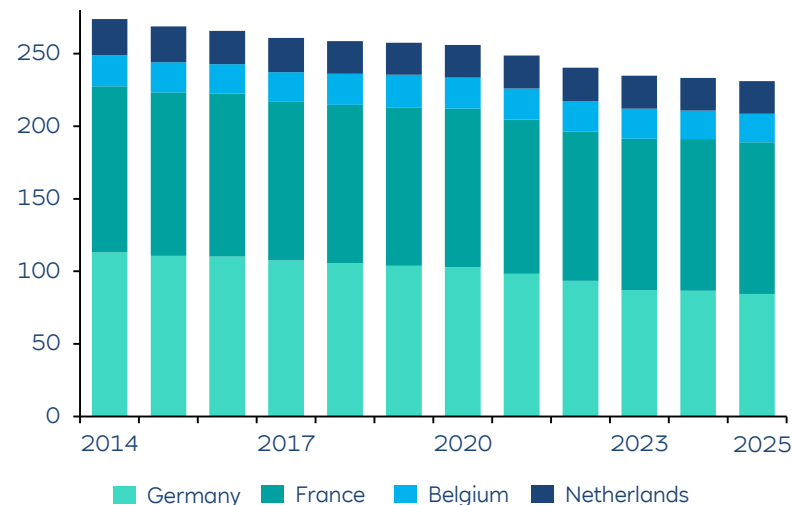


LOLE < 1h    LOLE < 0.5h    LOLE > 1h

<sup>1</sup> Expected number of hours where load cannot be supplied by local resources and imports. | <sup>2</sup> Controllable capacity only, i.e. without PV and wind energy. | Source: entso-e Mid term adequacy forecast 2019; Low-Carbon scenario in 2025.

## Installed controllable capacity in Central Western Europe<sup>2</sup>

(in GW)

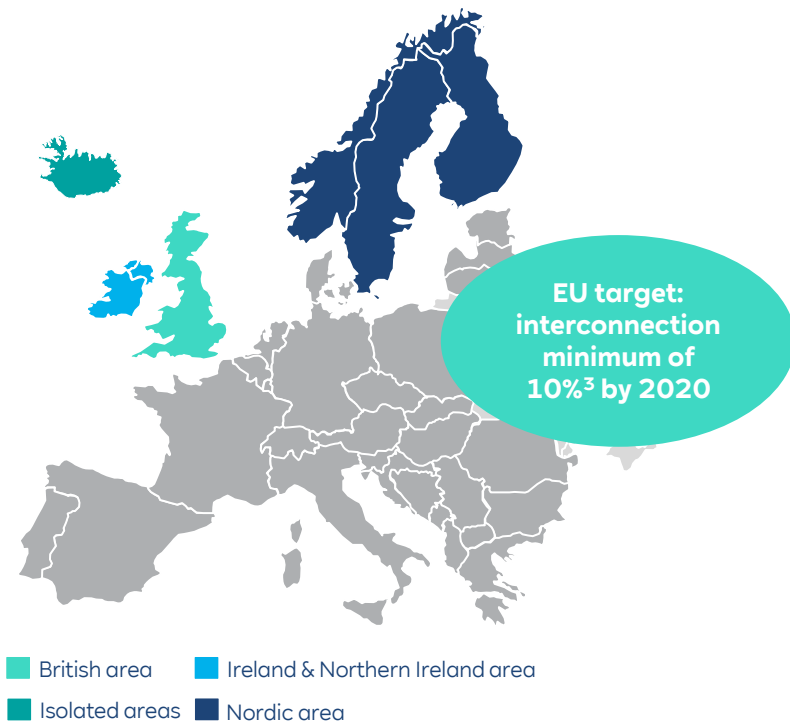




# Physical cross border flows<sup>1</sup> via interconnectors

GWh	Sum of imports	Sum of exports	Balance
AL	1,771	2,683	-912
AT	29,393	19,057	10,336
BA	3,091	7,696	-4,605
BE	21,650	4,313	17,338
BG	2,220	10,029	-7,809
CH	30,420	31,693	-1,274
CZ	11,562	25,453	-13,891
DE	31,542	82,673	-51,131
DK	15,606	10,413	5,193
EE	3,514	5,364	-1,850
ES	24,014	12,910	11,104
FI	23,397	3,459	19,938
FR	13,466	76,020	-62,554
GB <sup>2</sup>	22,662	2,189	20,473
GR	8,552	2,265	6,288
HR	12,692	6,533	6,160
HU	18,613	4,265	14,348

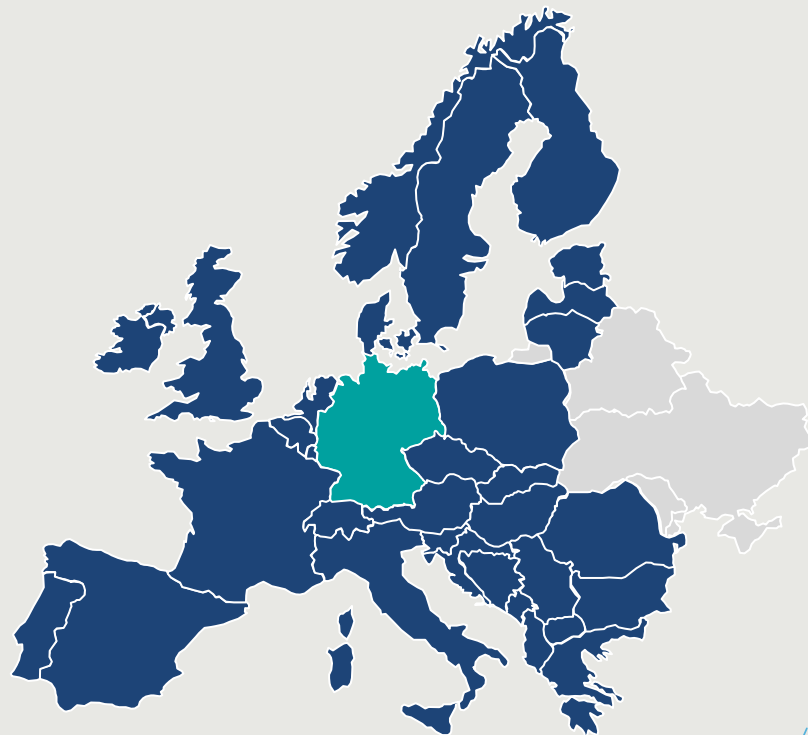
GWh	Sum of imports	Sum of exports	Balance
IE	1,614	1,643	-29
IT	47,169	3,268	43,902
LT	12,850	3,219	9,631
LU	7,514	1,349	6,166
LV	5,179	4,272	907
ME	2,760	3,011	-251
MK	4,144	2,224	1,921
NL	26,818	18,596	8,223
NO	8,085	17,954	-9,869
PL	13,839	8,121	5,718
PT	5,669	8,324	-2,655
RO	2,829	5,370	-2,541
RS	7,300	6,703	597
SE	14,234	31,561	-17,328
SI	8,928	9,320	-392
SK	12,544	8,747	3,797
TR	2,638	3,046	-408



<sup>1</sup> Consolidated yearly values might differ from detailed flow data of each country due to ex-post consolidation being taking into account. | <sup>2</sup> All data with the country code GB represents statistical data as sum of England, Northern Ireland, Scotland and Wales. | <sup>3</sup> In relation to installed capacity of each country. | Source: entso-e, Statistical Factsheet 2018.



# Germany

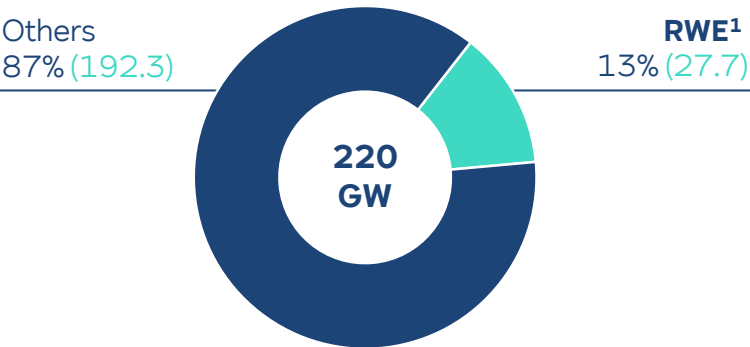




# RWE's market share for 2018 in Germany

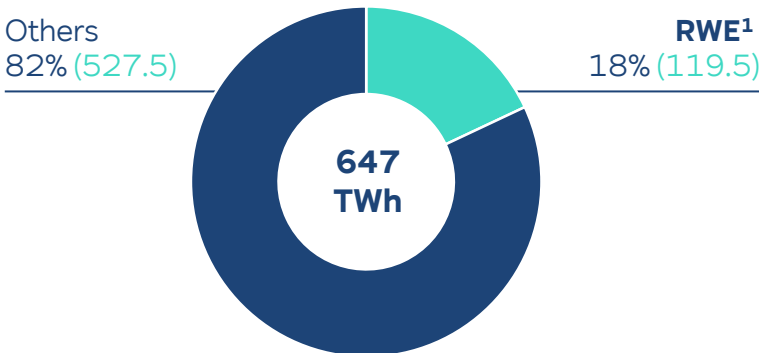
## Net installed capacity

in % (in GW)



## Total gross power generation

in % (in TWh)



- **RWE** has a **leading position** in **German power generation market**.

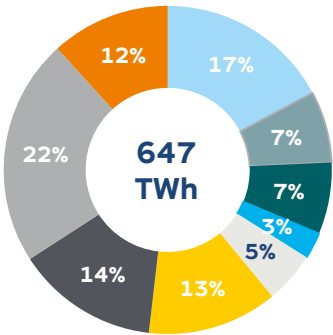
<sup>1</sup> Including innogy - continuing operations. | Source: BDEW as of March 2019; RWE analysis.



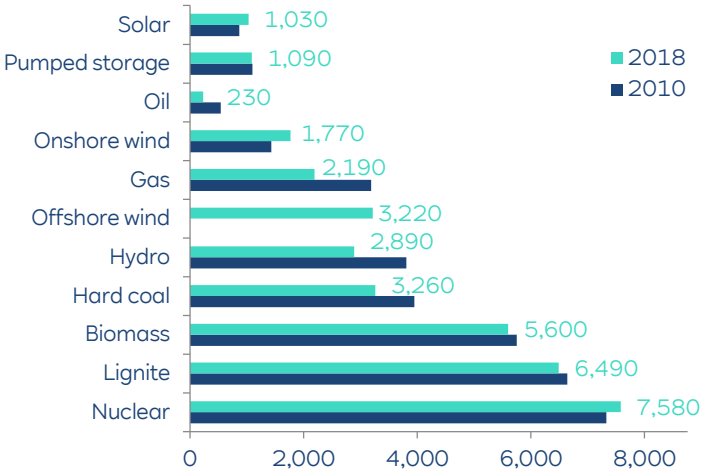
# Overview of power generation mix

## Gross power generation 2018

	TWh
Nuclear	76.3
Lignite	142.3
Hard coal	91.2
Gas	83.5
Other	33.0
Hydro	16.8
Solar	45.9
Wind	111.9
Biomass & waste	45.9



## Annual full-load hours



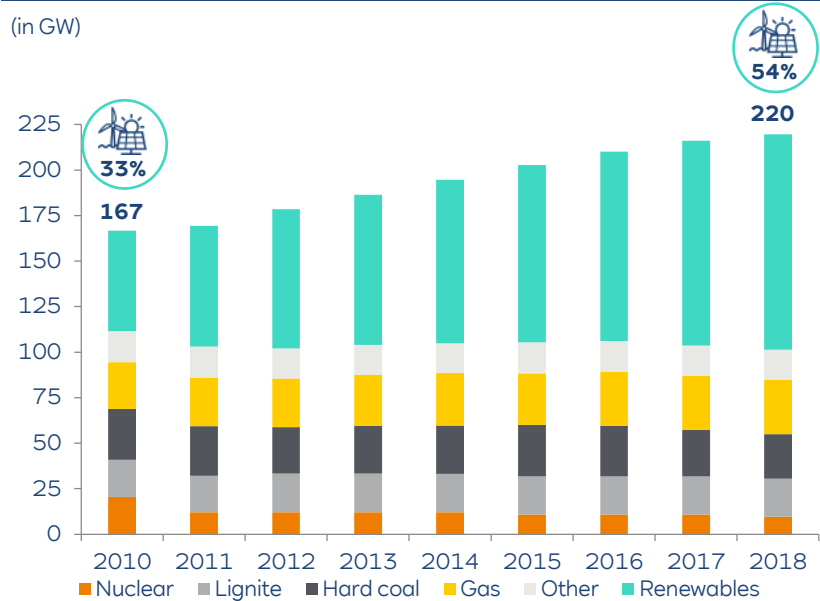
- Almost **50% of German power generation** is based on **nuclear and coal** (hard coal and lignite)
- Germany agreed on **nuclear exit by 2022**, reducing installed capacity by **~11 GW**

Note: Rounding differences may occur. | Source: BDEW as of March 2019.



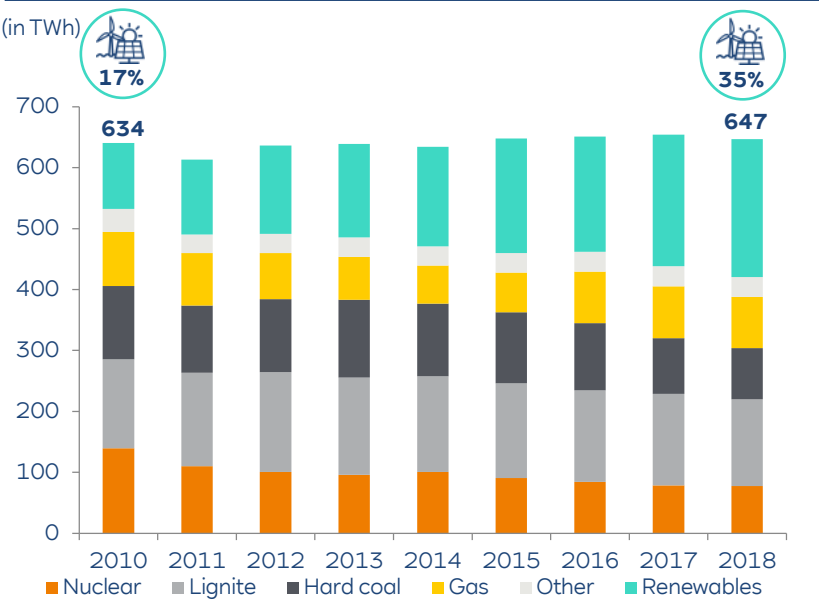
# Development of power generation mix

## Net installed capacity



Source: BDEW as of March 2019.

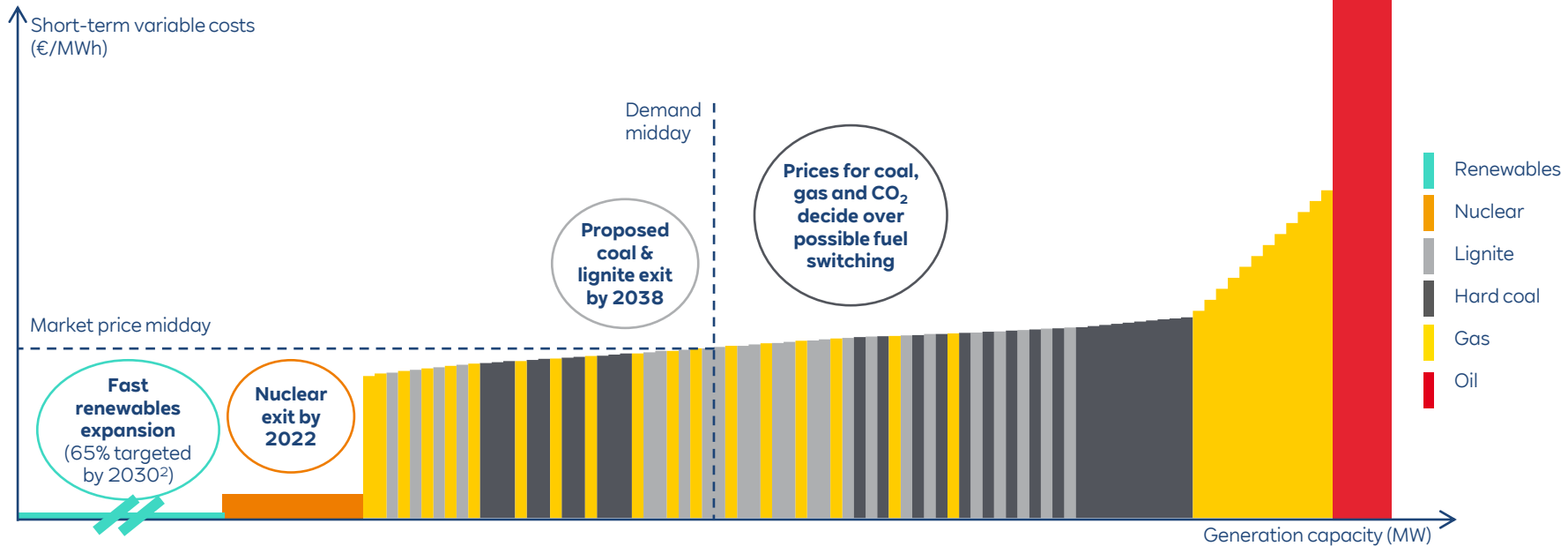
## Gross power generation





# Merit order

## The electricity supply curve in Germany<sup>1</sup>

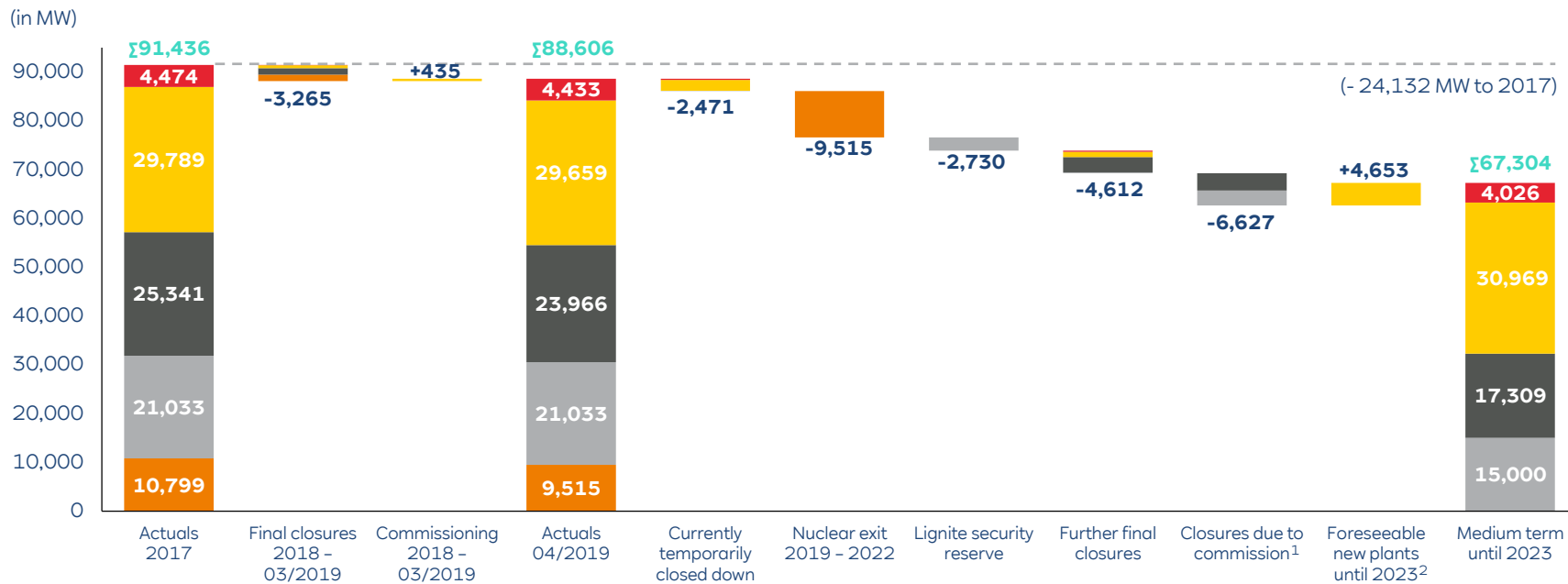


<sup>1</sup> Merit order is based on variable costs (mainly fuel and CO<sub>2</sub> costs) only. It does not include the fixed costs which have to be covered by power plant margins. Based on forwards for 2020 from 31 Jan 2020.

<sup>2</sup> Renewables share of power consumption amounted to about 38% in 2018.



# Expected development of conventional installed capacity



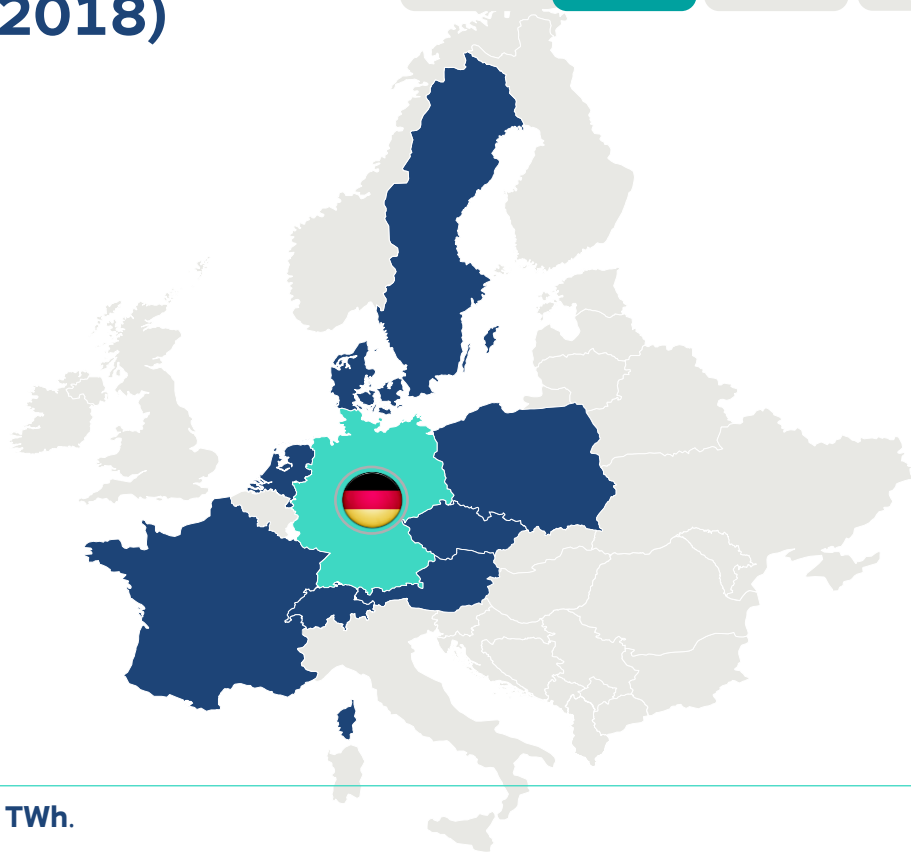
<sup>1</sup> Closures recommended by Growth, Structural Change and Employment Commission.

<sup>2</sup> Including 2,309 MW of grid reserve power plants. | Source: BDEW as of March 2019.



# Physical cross-border flows (2018)

(in GWh)	Sum of imports	Sum of exports	Balance
AT	4,079	16,336	-12,257
CH	3,864	16,092	-12,228
CZ	4,903	7,580	-2,677
DK	4,421	5,818	-1,397
FR	10,980	2,536	8,444
LUX	1,246	5,865	-4,619
NL	735	20,913	-20,178
PL	21	7,054	-7,033
SE	1,293	480	813
<b>Total</b>	<b>31,542</b>	<b>82,673</b>	<b>-51,131</b>



- In 2018, Germany had a net **export balance** of **51.1 TWh**.

Source: entso-e, Statistical Factsheet 2018. | Note: Figures may not add up due to rounding differences.

# United Kingdom



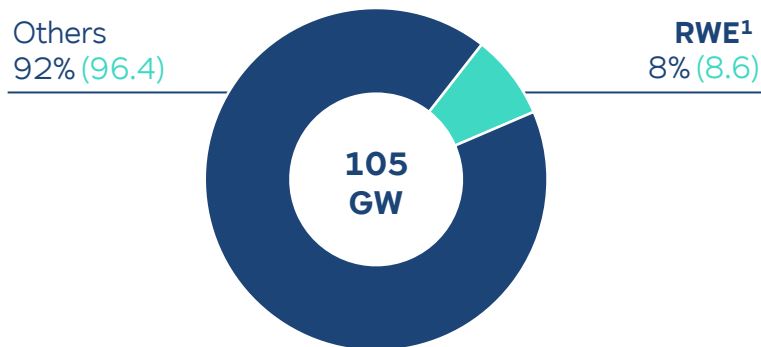




# RWE's market share for 2018 in the UK

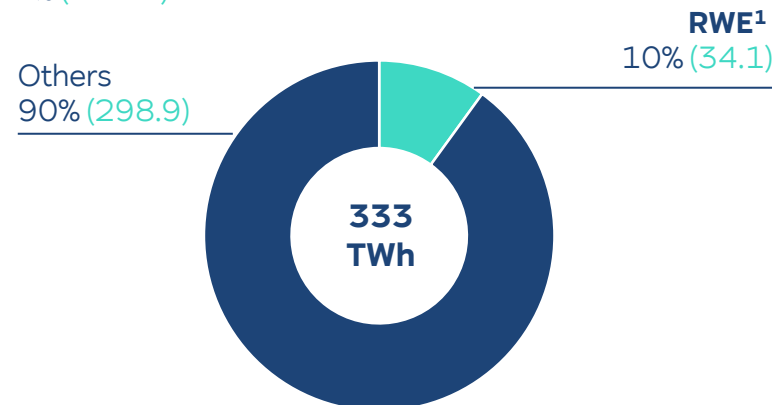
## Net installed capacity

in % (in GW)



## Total gross power generation

in % (in TWh)



- **RWE ranked second** in UK power generation market.

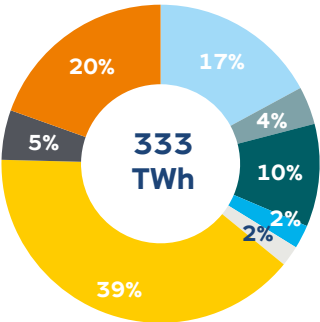
<sup>1</sup> Including innogy – continuing operations. | Source: Digest of UK Energy Statistics (Dukes) 5.6, 5.12 (gov.uk); RWE analysis.



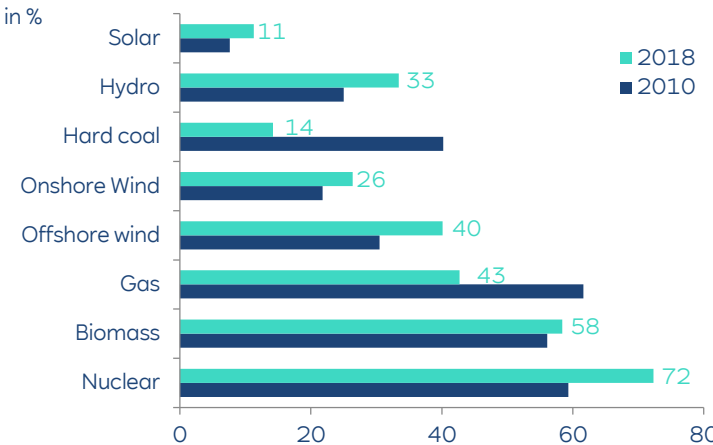
# Overview of power generation mix

## Gross power generation 2018

	TWh
Nuclear	65.1
Hard coal	16.8
Gas	131.5
Other	7.0
Hydro	8.0
Solar	12.9
Wind	56.9
Biomass	34.8



## Plant load factors



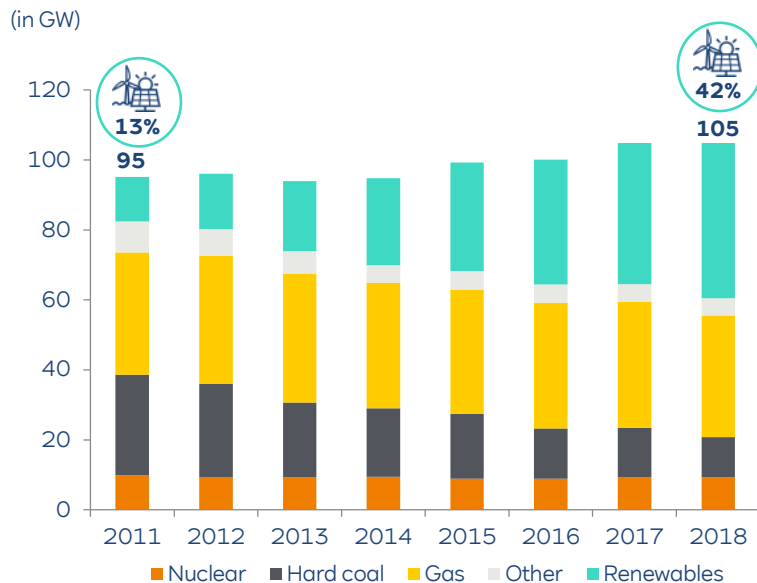
- **64%** of UK generation is based on **firm capacity** (natural gas, hard coal and nuclear).
- UK government current target to **phaseout** unabated **coal-fired** electricity generation by October **2025**, consulting on phasing out by **October 2024**.

Source: Digest of UK Energy Statistics (Dukes) 5.6, 5.10, 6.4, 6.5 (gov.uk).



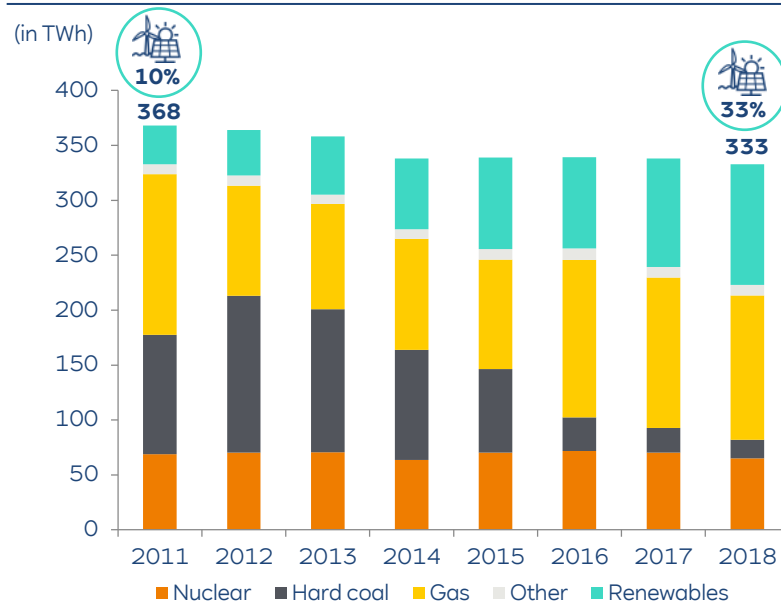
# Development of power generation mix

## Net installed capacity



Source: Digest of UK Energy Statistics (Dukes) 5.6, 5.12, (gov.uk).

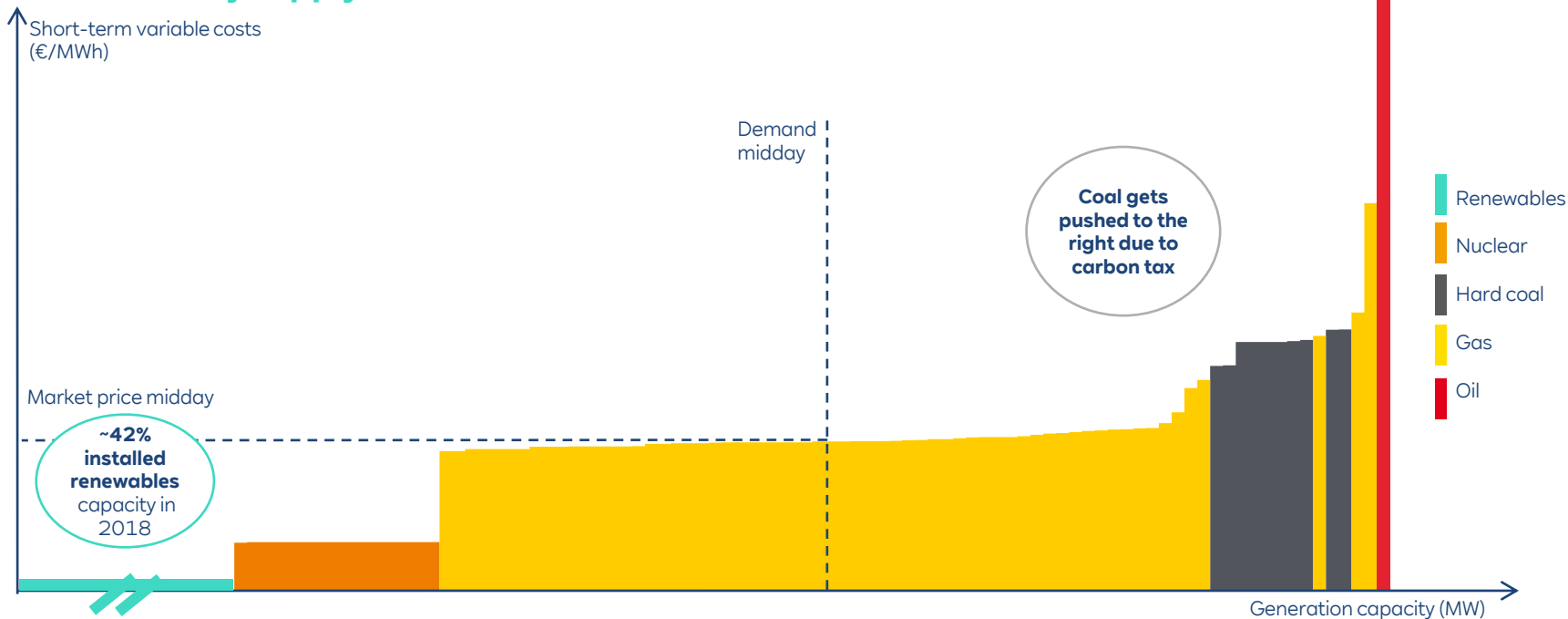
## Gross power generation





# Merit order

## The electricity supply curve in UK<sup>1</sup>

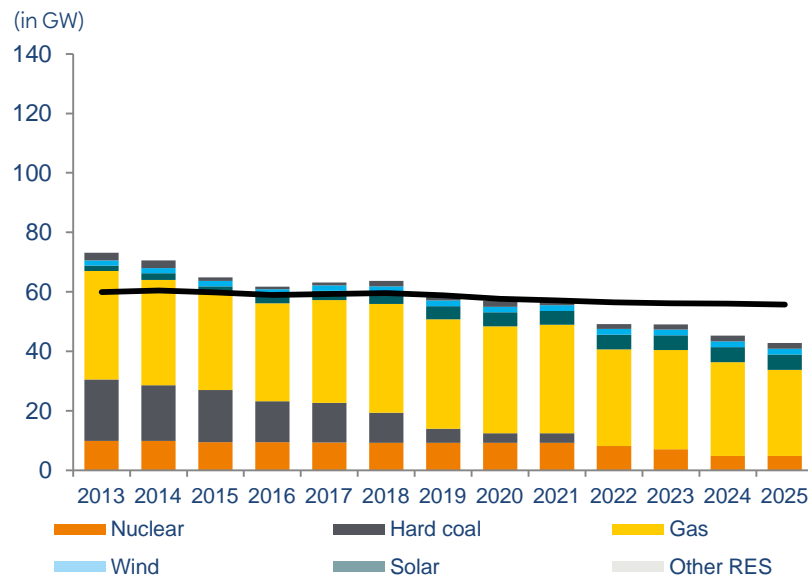


<sup>1</sup> Merit order is based on variable costs (mainly fuel and CO<sub>2</sub> costs) only. It does not include the fixed costs which have to be covered by power plant generating. Based on forwards for 2020 from 18 Feb 2020.

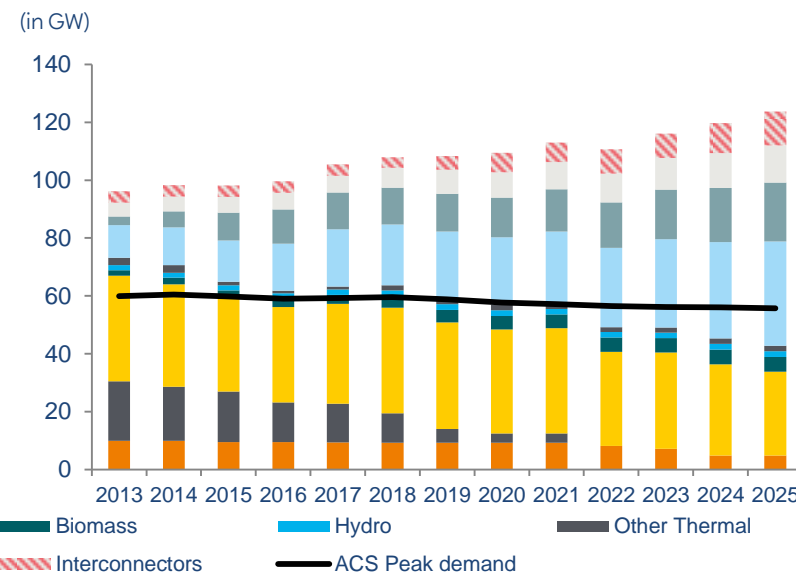


# Expected tightening due to decline of secured capacity

## Wholesale market capacity (gross) and peak demand<sup>1</sup>



## ...with intermittent renewables & interconnectors

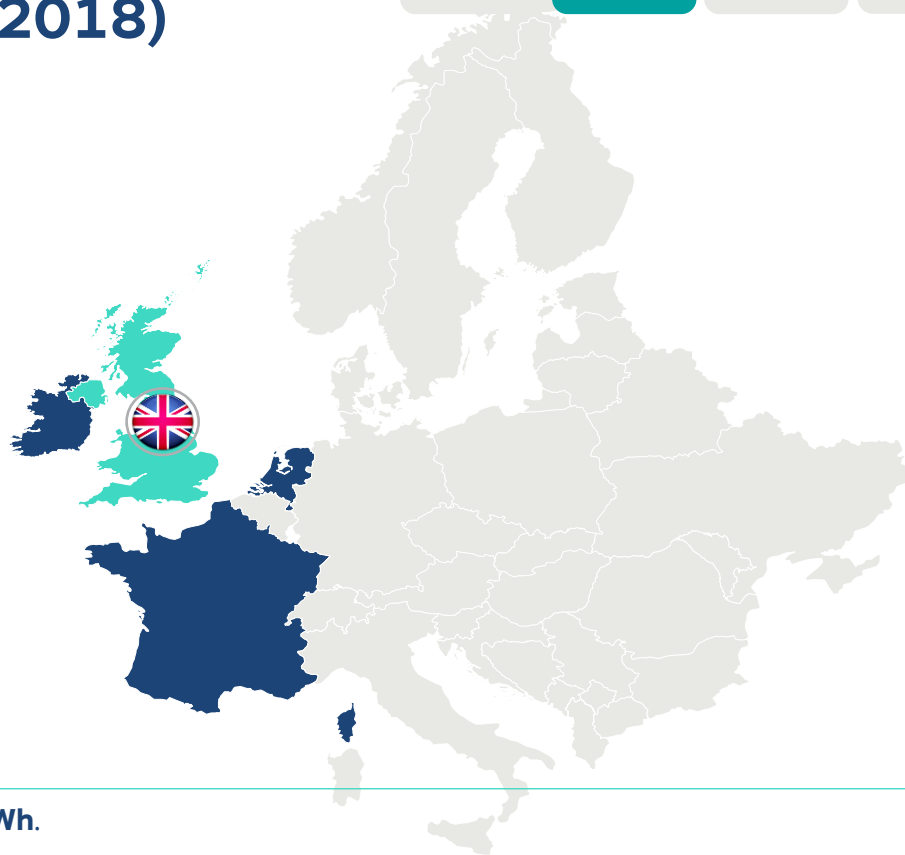


<sup>1</sup> Future capacities and average cold spell peak demand taken from National Grid's 2019 'Community Renewables' Future Energy Scenario.



# Physical cross-border flows (2018)

(in GWh)	Sum of imports	Sum of exports	Balance
FR	14,262	388	13,874
IE	1,643	1,614	29
NL	6,757	187	6,570
<b>Total</b>	<b>22,662</b>	<b>2,189</b>	<b>20,473</b>



- In 2018, United Kingdom had **net imports** of **20.5 TWh**.

Source: entso-e, Statistical Factsheet 2018.

# Netherlands

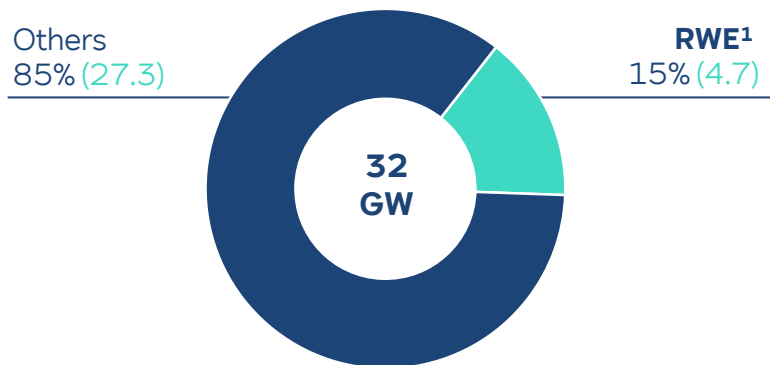




# RWE's market share for 2018 in the Netherlands

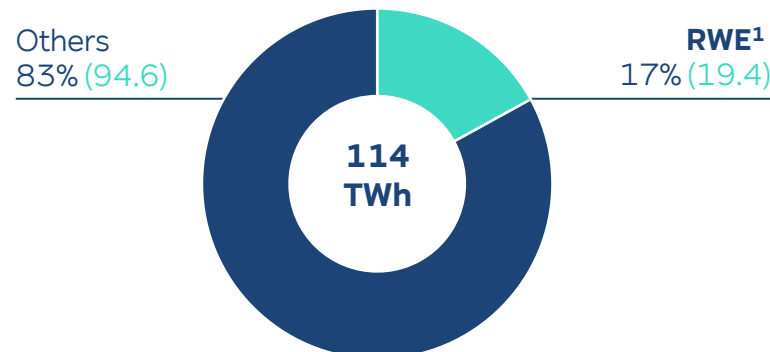
## Net installed capacity

in % (in GW)



## Total gross power generation

in % (in TWh)



- **RWE** has **leading position** in the **Dutch** power generation market.

<sup>1</sup> Including innogy – continuing operations. | Source: :Central Office for Statistics Netherlands (CBS); RWE analysis.

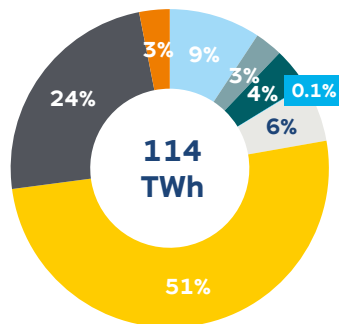




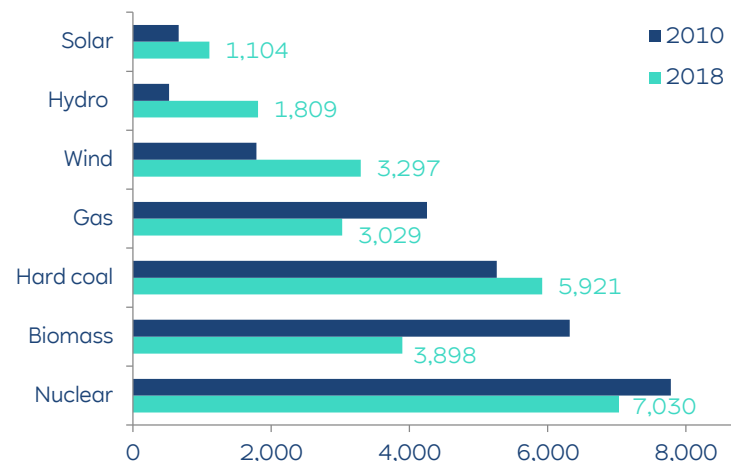
# Overview of power generation mix

## Gross power generation 2018

	TWh
Nuclear	3.5
Hard coal	27.2
Gas	57.5
Other	6.7
Hydro	0.07
Solar	3.2
Wind	10.5
Biomass	4.7



## Annual full-load hours



- **75%** of Dutch generation is based on **gas and hard coal**
- Netherlands is planning to **end** electricity generation **from coal** by **2030**

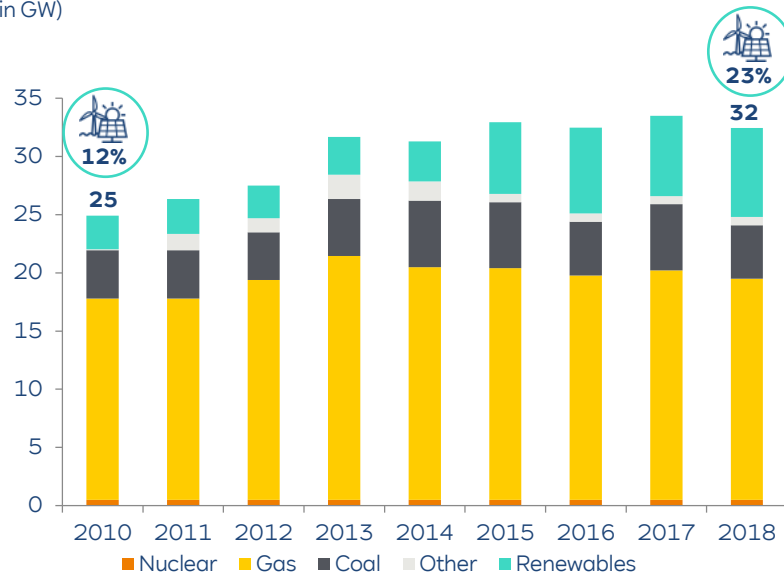
Source: Central Office for Statistics Netherlands (CBS); Tennet.



# Development of power generation mix

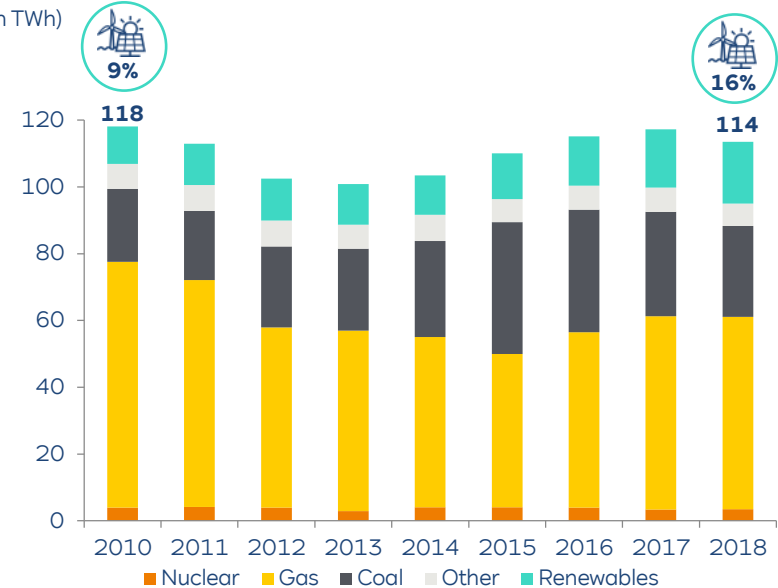
## Net installed capacity

(in GW)



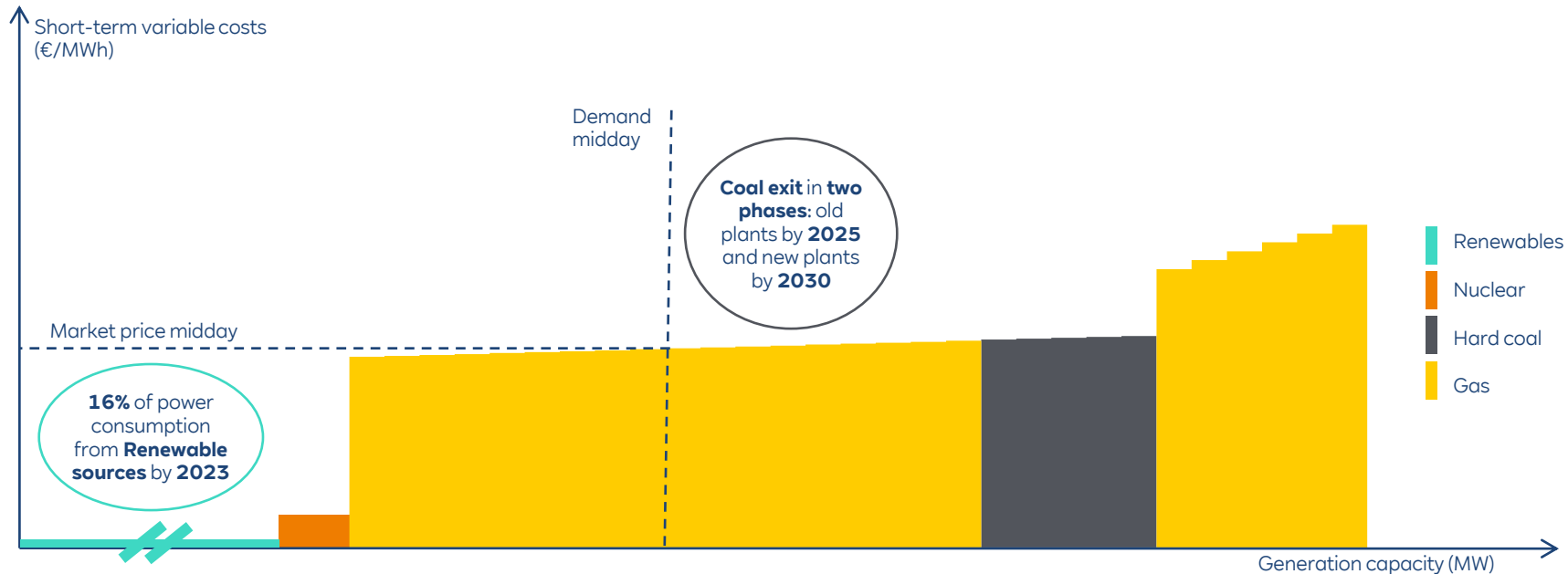
## Gross power generation

(in TWh)



Source: entso-e; Tennet; Central Office for Statistics Netherlands (CBS).

## The electricity supply curve in the Netherlands<sup>1</sup>

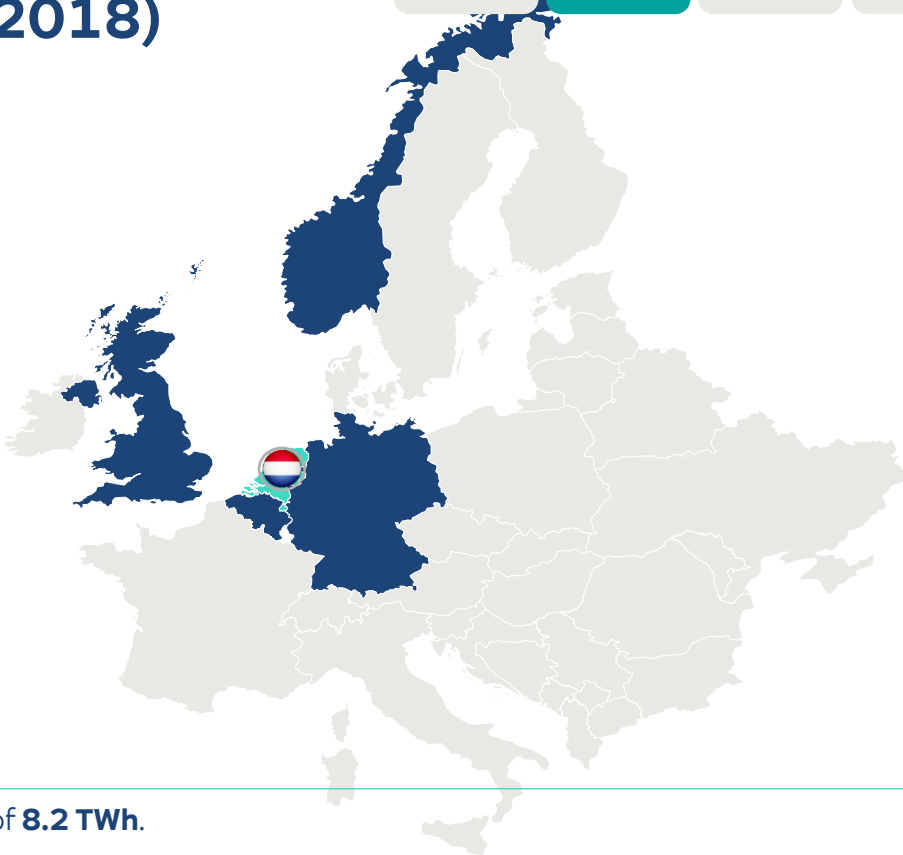


<sup>1</sup> Merit order is based on variable costs (mainly fuel and CO<sub>2</sub> costs) only. It does not include the fixed costs which have to be covered by power plant margins. Based on forwards for 2020 from 31 Jan 2020.



# Physical cross-border flows (2018)

(in GWh)	Sum of imports	Sum of exports	Balance
BE	1,776	10,783	-9,007
DE	20,913	735	20,178
GB	187	6,757	-6,570
NO	3,943	322	3,621
<b>Total</b>	<b>26,818</b>	<b>18,596</b>	<b>8,223</b>



- In 2018, the Netherlands had a **net import balance** of **8.2 TWh**.

Source: entso-e, Statistical Factsheet 2018. | Note: Figures may not add up due to rounding differences.

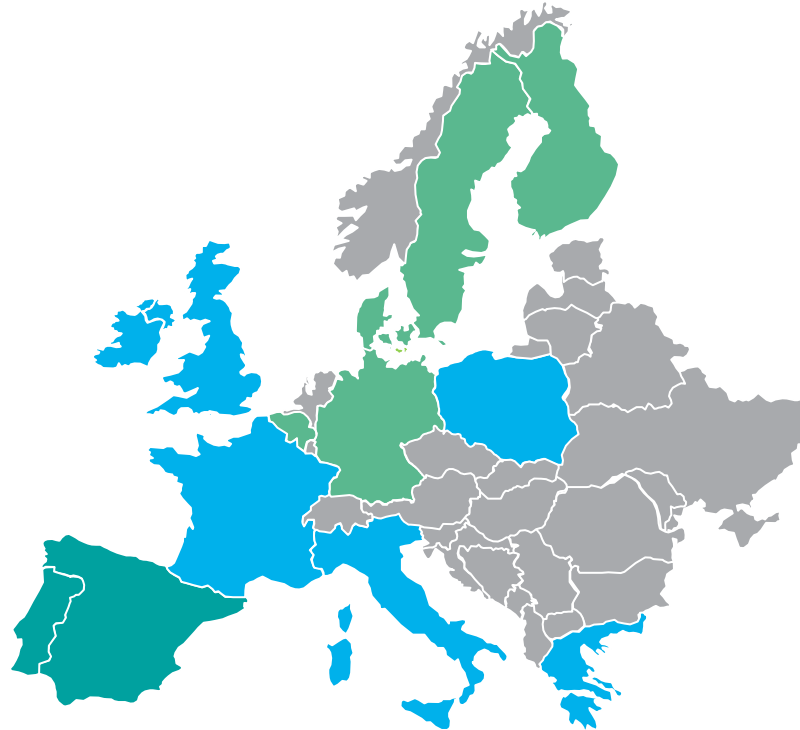


# REGULATIONS

# European Electricity Market

## Various national market designs and capacity mechanisms





- Energy-only-market
- (Strategic) reserve
- Capacity payments
- Capacity market



Different  
approaches and  
implementation  
at national level

Source: RWE Analysis.

# Major regulatory measures for the European utility markets

	Market design	CO <sub>2</sub> reduction	Renewables	Conventional generation
<b>EU</b> 	<ul style="list-style-type: none"> <li>Revised Electricity Market Regulation and Directive in force since June 2019, the latter to be transposed into national law by Member States by end of 2020</li> </ul>	<ul style="list-style-type: none"> <li>EU Emissions Trading Scheme</li> <li>EU long term (2050) GHG emissions reduction strategy; currently in development</li> <li>Green Deal: Proposal for a European Climate Law for carbon neutrality in 2050 (4 March 2020)</li> </ul>	<ul style="list-style-type: none"> <li>EU Renewable Energy Directive (RED): Proposal for revision announced for 06/2020</li> </ul>	<ul style="list-style-type: none"> <li>Regulation on emissions of air pollutants:               <ul style="list-style-type: none"> <li>IED: Finalisation of Evaluation in Spring 2020, new Impact assessment started in 02/2020</li> <li>BREF-LCP (rolling process)</li> </ul> </li> </ul>
<b>DE</b> 	<ul style="list-style-type: none"> <li>Energy-only with strategic reserve components</li> <li>Revised grid fee system</li> <li>Acceleration of grid expansion &amp; new provisions for redispatch</li> <li>Prolongation of CHP support</li> <li>Renewable Energy Act (REA)</li> </ul>	<ul style="list-style-type: none"> <li>Climate Action plan 2050</li> <li>Climate act 2019</li> <li>Climate action programme 2030</li> </ul>	<ul style="list-style-type: none"> <li>Renewable Energy Act (EEG)</li> </ul>	<ul style="list-style-type: none"> <li>Coal phaseout by 2038</li> <li>BREF-LCP implementation</li> <li>Nuclear exit &amp; final storage regulation</li> </ul>
<b>UK</b> 	<ul style="list-style-type: none"> <li>Energy Market Reform (EMR) with a Capacity Market; currently under 5 year review</li> </ul>	<ul style="list-style-type: none"> <li>Carbon Price Support (Tax)</li> <li>Climate Change Act (2050 Target Amendment: Net zero target by 2050)</li> </ul>	<ul style="list-style-type: none"> <li>CfD regime</li> </ul>	<ul style="list-style-type: none"> <li>BREF LCP implementation</li> <li>Gas charging review</li> <li>Coal phaseout (by 2025) (or even earlier Oct 2024)</li> </ul>
<b>NL</b> 	<ul style="list-style-type: none"> <li>Preparations for revision of energy law</li> <li>Execution of National Energy Agreement (current)/Climate Agreement (as of 2020)</li> </ul>	<ul style="list-style-type: none"> <li>Introduction of national CO<sub>2</sub> price floor</li> </ul>	<ul style="list-style-type: none"> <li>SDE+ regulation (Stimulation Renewable Energy) since 2011</li> </ul>	<ul style="list-style-type: none"> <li>Coal phaseout: end of 2024 for plants built in the 1990s and end of 2029 for plants built in 2000 and thereafter</li> </ul>

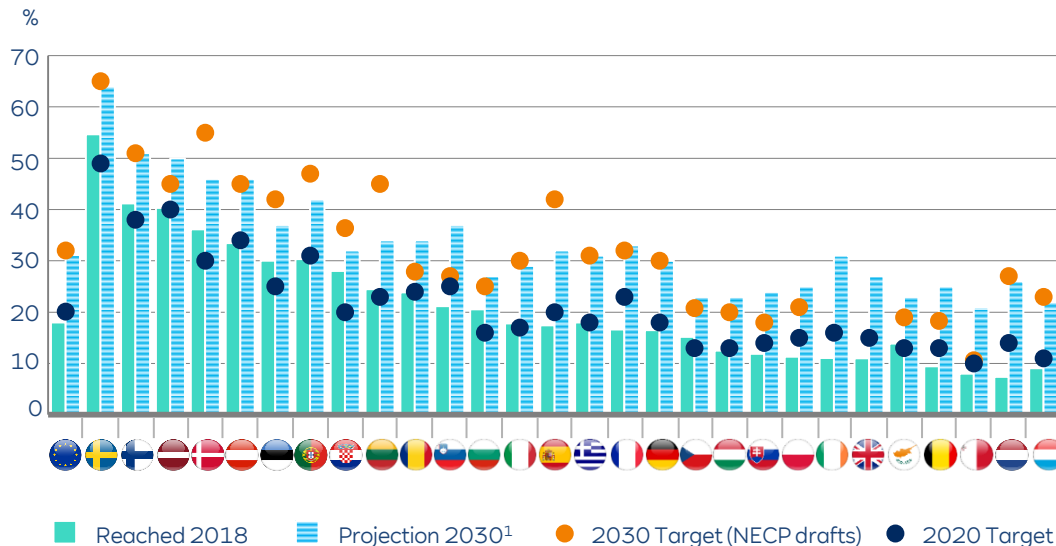
## EU: National Energy and Climate Plans

**Members of the EU currently develop their **National Energy and Climate plans (NECPs)** containing climate and energy objectives, targets, policies and measures for 2021-30**

## NECPs goals

- The NECPs ensure that **each EU member** contributes to the EU goal to be reached by **2030**
- In addition, NECPs should include a national **long term strategy** in line with the EU contribution to the Paris Agreement target to keep the global temperature increase well below 2°C
- Member States had to finalise first NECPs by end 2019, but 7 Member States overdue (02/2020)
- EU Commission announced assessment of first NECPs for June 2020, also taking into account **EU Green deal** target of **climate neutrality by 2050**
- After **finalising** its 2021-30 NECP, each country will have to develop a NECP **for every subsequent 10-year period**

## RES share in gross final energy consumption



<sup>1</sup> EU Commission calculations based on information from the NECPs. | Source: European Commission (status as of 9 March 2020); eurostat (January 2020).



# Ambitious renewables growth targets (I/II)



DE

- Target of 30% renewable energy share<sup>1</sup> by 2030 (16% achieved in 2018)
- Switch to one sided CfD (Contract for Difference) tenders started in 2017



FR

- Target of 32% renewable energy share<sup>1</sup> by 2030 (17% achieved in 2018)
- Promoted through a feed-in tariff, premium tariff and CfD tenders



NL

- Target of up to 27% renewable energy<sup>1</sup> share by 2030 (7% achieved in 2018)
- Sliding feed-in premium system based on auctioning since 2011



ES

- Target of 42% renewable energy share<sup>1</sup> by 2030 (17% achieved in 2018)
- Capacity incentives awarded through auctions since 2016



PT

- Target of 47% renewable energy share<sup>1</sup> by 2030 (30% achieved in 2018)
- Electricity market or guaranteed remuneration through public tenders



IT

- Target of 30% renewable energy share<sup>1</sup> by 2030 (18% achieved in 2018)
- New framework in place with auctions for CfD



PL

- Target of 21% - 23% renewable energy share<sup>1</sup> by 2030 (11% achieved in 2018)
- Support scheme based on CfD auctions effective since July 2016



SE

- Target of 65% renewable energy share<sup>1</sup> by 2030 (55% achieved in 2018)
- Promoted through quota system, tax regulation and green certificates



NO

- Target of 100% renewable energy share<sup>1</sup> by 2040 (73% achieved in 2018)
- Promoted through a quota system including a certificate trading scheme



FI

- Target of 51% renewable energy share<sup>1</sup> by 2030 (41% achieved in 2018)
- Promoted through a tender-based system and tax regulation



DK

- Target of 55% renewable energy share<sup>1</sup> by 2030 (36% achieved in 2018)
- Promoted through a premium tariff, net-metering and CfD auctions



IR

- Target of up to 28% renewable energy share<sup>1</sup> by 2030 (11% achieved in 2018)
- High level design of new auctioning system published for 2019 launch



UK

- Target of 27% renewable energy share<sup>1</sup> by 2030 (11% achieved in 2018)
- Contract for difference awarded through auctions
- Legislation to achieve net-zero emission target by 2050 adopted mid 2019

<sup>1</sup> Renewable energy share in gross final energy consumption; national targets and contributions foreseen in the draft National Energy and Climate Plan (NECP).

# Ambitious renewables growth targets (II/II)



US

- No Federal targets, only on state-level
- Offtake predominantly organised through PPAs (Purchasing Power Agreements)



CA

- Renewable energy sources made up 17% of total energy supply in 2017
- Policies and targets set at the provincial level



MX

- Growing power market with binding 35% clean energy power target by 2024<sup>1</sup>
- Offtake through PPAs with utilities and C&I customers



CL

- High sustained power consumption growth, expected to continue, with a mandatory 20% renewables power target by 2025.<sup>1</sup>
- Fixed payment PPA contracts signed with distribution companies via auctions



IN

- Country renewable energy target of 175 GW by the year 2022
- Promoted through feed-in-tariff, premium tariff and tenders on national and state level



KR

- Greenhouse gas emissions reduction target of 37% by 2030
- Mandated renewable quotas for energy suppliers, through Renewable Portfolio Standards



JP

- Target of 22-24% renewables power production by 2030<sup>1</sup>
- Regulated 20-year feed-in-tariff for onshore, tender offshore market in 2020



AU

- Federal renewable power target of 33 TWh by 2020, in addition to state level targets - e.g. Victoria 40% renewables power production by 2025<sup>1</sup>
- Green Certificates, CfD and fixed payments through competitive tenders

<sup>1</sup> Target on total power production, not overall gross final energy consumption (including transport & heating) such as in European markets.

# Regulatory regimes for renewables (I/VI)



US

	Support regime	Remuneration
Onshore	<ul style="list-style-type: none"> <li>• <b>Production Tax Credit</b> (PTC) annually inflation-adjusted, paying out over 10 years. Full PTC value for projects that have begun construction before 2017, and then falling to 80% in 2017, 60% in 2018, 40% in 2019, 60% in 2020 until expiring in 2021. Projects must complete construction in 4 years.</li> <li>• <b>Renewable Energy Certificates</b> (RECs)</li> <li>• Mandatory procurement via <b>Renewable Portfolio Standards</b> (RPS)/ clean energy goals</li> <li>• <b>Modified Accelerated Cost-Recover System</b> (MACRS): Accelerated depreciation for tax equity investors &amp; developers over 5 years, majority of capex can be expensed in year placed in service (bonus depreciation)</li> </ul>	<p>Various revenue streams depending on state and market:</p> <ul style="list-style-type: none"> <li>• <b>Tax credits</b> via PTC (\$25/MWh) or ITC (30% of capex)</li> <li>• <b>Energy revenues</b> via wholesale market or PPA (10-20 years)</li> <li>• <b>Capacity revenue</b> via market or part of PPA</li> <li>• <b>RECs</b> via market or part of PPA</li> </ul>
Offshore	<ul style="list-style-type: none"> <li>• <b>Investment Tax Credit</b> (ITC) amounts to 30% for projects that have begun construction before 2020 and complete construction before 31 Dec 2023, then gradually decreasing until 10% for projects completing construction after 2023.</li> <li>• <b>Offshore Renewable Energy Certificates</b> (ORECs)</li> <li>• Mandatory procurement via <b>Renewable Portfolio Standards</b> (RPS)/ clean energy goals</li> </ul>	
Solar	<ul style="list-style-type: none"> <li>• <b>Investment Tax Credit</b> (ITC)</li> <li>• <b>Renewable Energy Certificates</b> (RECs)</li> <li>• Mandatory procurement via <b>Renewable Portfolio Standards</b> (RPS)/ clean energy goals</li> <li>• <b>Modified Accelerated Cost-Recover System</b> (MACRS)</li> </ul>	

# Regulatory regimes for renewables (II/VI)



UK

	Support regime	Remuneration
Onshore	<ul style="list-style-type: none"> <li>Expired <b>Renewable Obligation Certificate (ROC)</b><sup>1</sup> scheme and the first <b>Contract for Difference (CfD)</b> allocation round in 2015</li> <li>Recent announcement that onshore projects will be eligible for CfDs</li> <li>At auctions, bidders submit a price/MWh they want to achieve. If they are successful, they will sell their power on the market, but receive the difference between market price and bid level from regulator</li> </ul>	<ul style="list-style-type: none"> <li><b>Wholesale market</b> + 0.9x ROC/MWh based on COD</li> <li>Current <b>buy-out price</b> per ROC: £48.78</li> <li><b>Term:</b> 20 years</li> </ul>
Offshore	<ul style="list-style-type: none"> <li><b>Renewable Obligation Certificates (ROCs)</b></li> <li>Replaced by pay-as-clear <b>Contract for Difference (CfD)</b> through auctions since 2017</li> </ul>	<p><b>ROCs:</b></p> <ul style="list-style-type: none"> <li><b>Wholesale market</b> + 0.9x-1x ROC/MWh based on COD</li> <li>Current <b>buy-out price</b> per ROC: £48.78</li> <li><b>Term:</b> 20 years</li> </ul> <p><b>CfD:</b></p> <ul style="list-style-type: none"> <li>2-sided indexed <b>CfD</b></li> <li><b>Term:</b> 15 years</li> </ul>

<sup>1</sup> ROCs cannot be issued on generation after March 2037, so capacity accredited after 31 March 2017 will not receive 20 years of support.

# Regulatory regimes for renewables (III/VI)



## Germany



## Denmark

	Support regime	Remuneration	Support regime	Remuneration
Onshore	<ul style="list-style-type: none"> <li><b>Feed in tariff</b> (FIT) with direct marketing obligation until 2017</li> <li>Replaced by pay-as-bid one-sided <b>Contract for Difference</b> (CfD) through auctions</li> </ul>	<ul style="list-style-type: none"> <li><b>Tariff level:</b> €80 - 85/MWh</li> <li><b>Tariff digression</b> with year of COD</li> <li><b>Term:</b> 20 years</li> <li><b>CfD price</b> determined in competitive auctions</li> </ul>	<ul style="list-style-type: none"> <li><b>Contract for difference</b> (CfD), whereby CfD strike price is derived through auction process</li> </ul>	<ul style="list-style-type: none"> <li><b>Wholesale market</b> plus CfD premium to reach CfD strike price</li> </ul>
Offshore	<ul style="list-style-type: none"> <li><b>Feed in tariff</b> (FIT) with direct marketing obligation until 2016</li> <li>Since 2017 <b>central auction system</b> in form of 20 year CfD (for projects with COD after 2026). Developers with projects in advanced stage &amp; COD in 2021 to 2025 can participate to clear the market</li> </ul>	<ul style="list-style-type: none"> <li><b>Initial tariff:</b> €139 - 154/MWh for 12 years (standard) or €184-194/MWh for 8 years (compression model) depending from the year of commissioning</li> <li><b>Base tariff:</b> €39/MWh for residual term</li> <li><b>Initial tariff</b> extended for deep waters/distance to shore</li> <li><b>CfD price</b> determined in competitive auctions</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>

# Regulatory regimes for renewables (IV/VI)



## Spain



## Italy

	Support regime	Remuneration	Support regime	Remuneration
Onshore	<ul style="list-style-type: none"> <li><b>Feed-in Premium</b>, compensation since mid 2013, aimed at achieving a 'reasonable return' based on the 10-year government bond plus a spread (set at 7.39%, reconfirmed 2019<sup>1</sup>)</li> <li>Since 2016 new installations support based on <b>reverse auctions</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Market price</b> + premium</li> <li><b>Term</b>: 25 years or as soon as the plant has reached the reasonable return</li> <li><b>Auction design</b> currently under revision (date unknown)</li> </ul>	<ul style="list-style-type: none"> <li>Assets with COD until 2013: <b>Feed-in premium</b> (FIP) to market price</li> <li>Auction system applicable since 2013</li> </ul>	<ul style="list-style-type: none"> <li><b>Wholesale market</b> + premium</li> <li><b>Premium for year t</b>: (180 - market price t-1)*78% Term: 12 years for pre-2008 COD, 15 years for post-2008 COD</li> <li>Pay-as-bid <b>CfD</b> through auctions since 2013 Term: 20 years</li> </ul>
Solar	<ul style="list-style-type: none"> <li><b>Feed-in Premium</b>, compensation since mid 2013, aimed at achieving a 'reasonable return' based on the 10-year government bond plus a spread (set at 7.39%, reconfirmed 2019<sup>1</sup>)</li> <li>Since 2016 new installations support based on <b>reverse auctions</b> (technology neutral)</li> </ul>	<ul style="list-style-type: none"> <li><b>Market price</b> + premium</li> <li><b>Term</b>: 25 years or as soon as the plant has reached the reasonable return</li> <li><b>Auction design</b> currently under revision (date unknown)</li> </ul>		

<sup>1</sup> Renewable energy facilities prior to 2013 may obtain a profitability rate of 7.398% for two regulatory periods of six years each (until 2031) if the owners agree to waive legal action against Spain during these twelve years. Open lawsuits must be withdrawn. Otherwise, the value of the reasonable profitability that will be applied to renewable facilities in the 2020-2025 period will be 7.09%.

# Regulatory regimes for renewables (V/VI)



## Netherlands



## Sweden

	Support regime	Remuneration	Support regime	Remuneration
Onshore	<ul style="list-style-type: none"> <li><b>SDE+</b>: One-way CfD awarded through reverse auctions, subsidy to cover price risk and imbalance cost</li> <li><b>SDE++</b>: Beginning in 2020, carbon abatement technologies other than renewables can apply for subsidy</li> </ul>	<ul style="list-style-type: none"> <li>Pay-as-bid <b>CfD</b></li> <li><b>Term</b>: 15 years</li> </ul>	<ul style="list-style-type: none"> <li><b>Green certificate regime</b> (ElCert)</li> <li><b>Joint green certificates</b> market with Norway</li> </ul>	<ul style="list-style-type: none"> <li><b>Wholesale market</b> + 1 ElCert/MWh</li> <li><b>Term</b>: 15 years</li> </ul>
Offshore	<ul style="list-style-type: none"> <li><b>Zero-bid beauty contests</b> based on scoring criteria e.g. bidder experience, wind farm design quality, risk mitigation</li> </ul>	<ul style="list-style-type: none"> <li>Full <b>market exposure</b></li> <li>Grid connection provided by TSO</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>

# Regulatory regimes for renewables (VI/VI)



## Poland

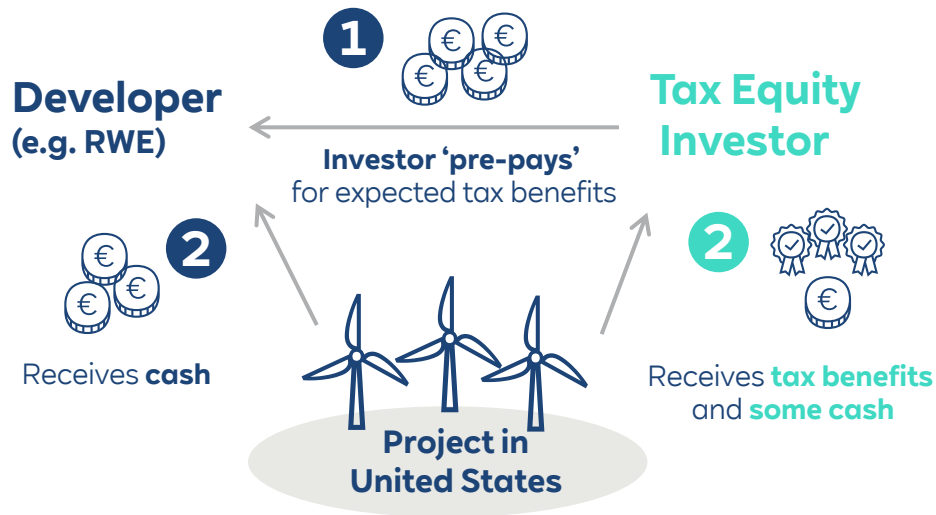


## Australia

	Support regime	Remuneration	Support regime	Remuneration
Onshore	<ul style="list-style-type: none"> <li>Quota system with <b>Green certificates</b> until 2016 that will expire in 2031 for existing assets</li> <li>Replaced by pay-as-bid <b>Contract for Difference (CfD)</b> through Solar and Wind auctions</li> </ul>	<ul style="list-style-type: none"> <li>1 <b>green certificate</b> per MWh (current market price: €35/MWh)</li> <li><b>Term:</b> 15 years</li> <li><b>CfD price</b> determined in competitive auction</li> <li><b>Annual adjustment of CfD price</b> with Polish inflation</li> <li>Dec '19 result: Ø €49/MWh</li> </ul>	<ul style="list-style-type: none"> <li><b>Green Certificate System</b> for large scale renewables introduced on federal level in 1999 to facilitate 33 TWh target by 2020, phaseout until 2030</li> <li>Additional <b>support schemes on state level</b>, so far auctions in Australian Capital Territory, Queensland and Victoria</li> </ul>	<ul style="list-style-type: none"> <li><b>Wholesale market</b> + 1 green certificate/MWh</li> <li>Current <b>certificate price:</b> 40 AUD, decreasing trend</li> <li><b>Term:</b> To be received until 2030</li> </ul>
Solar	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>



# Tax Equity in the US - financing structure



1

- Tax Equity Investor invests into project **to capture tax benefits**, based on a pre-agreed financial return
- The **developer continues to manage the project**
- Tax Equity investment accounted as Debt under IFRS



2

- The **benefits** generated by the project will be **split between the developer and the investor** until the investor has reached a **specified return** on his investment (IRR)

- The developer **repays the investor** with a **mix of tax items** (production tax credits and tax benefits from accelerated depreciation) **and cash**. In addition the Tax Equity Investor maintains a small residual interest in the project after repayment

# Coal phaseout in Europe: National autonomy on energy mix



Overwhelming **majority** of countries will **phase out coal by 2030**; exceptions are Poland, Czech Republic, Spain and Germany.

- **Austria:** Last plant will close by 2020
- **France:** Coal phaseout by 2022; Cordemais may remain in reserve for add. 1-2 years as commissioning of Flamanville 3 and Landisvieu are delayed
- **UK:** Coal phaseout target date has been moved forward by one year to 2024; coal plants will only be allowed with CCS<sup>1</sup> from 2024 onwards
- **Finland and Denmark:** Most coal plants already converted to biomass. Finland accomplishes coal exit mid 2029
- **NL:** Phaseout in two steps, with old low-efficiency plants closed by 2025, and newer plants closed by 2030
- **Italy:** announced coal phaseout by 2025; however, not binding and executive measures need to be implemented; a delay until 2030 is assumed
- **Spain:** Phaseout under discussion; after the closure of domestic mines the capacity of coal plants is reduced to 5 GW in 2021; phaseout by 2030 is assumed
- **Germany:** Coal phaseout by 2038 with reviews carried out in 2026 and 2029 to determine whether Germany can exit coal-fired electricity generation in 2035, three years before the final deadline
- **Czech Republic:** 'coal commission' in 2019 established and should conclude in 2020 with recommendations for the government
- **Poland:** No coal phaseout announced, but long-term energy plan suggests a bisection of coal capacity until 2040 (14 GW down from 28 GW in 2020)

<sup>1</sup> Carbon capture and storage. | Source: RWE Analysis.

# European Climate Action

## Key EU targets for 2020

- 20% cut in **greenhouse gas emissions** compared with 1990
- 20% of total energy from **renewables**
- 20% increase in **energy efficiency**

## Key EU targets for 2030 (to be revised by Eur. Green Deal)

- At least 40% cut in **greenhouse gas emissions** compared with 1990
- At least 27% of total energy from **renewables**
- At least 27% increase in **energy efficiency**

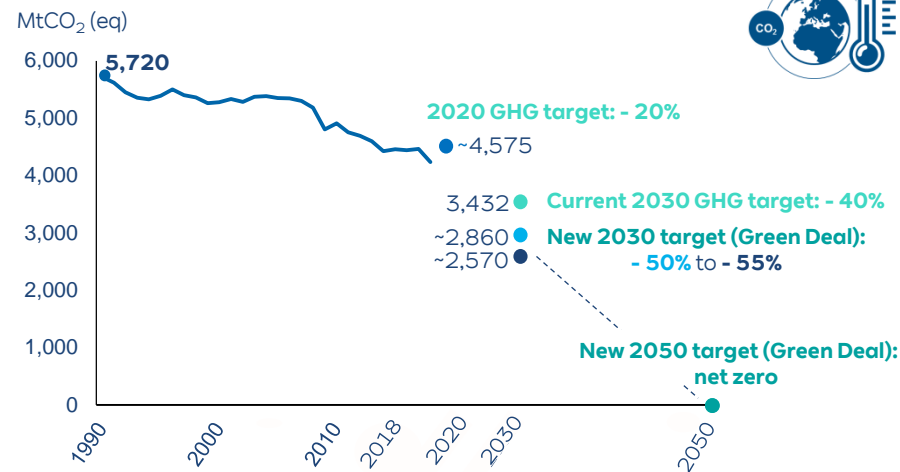
## European Green Deal<sup>1</sup> – objectives & targets

- An ambitious package of measures that sets a path for a transition to make **Europe the first climate-neutral continent**
- Supported by investments in green technologies, sustainable solutions and new businesses
- **Target for 2030:** at least 50% towards 55% cut in **greenhouse gas emissions** compared with 1990
- **Target for 2050:** CO<sub>2</sub> neutrality

- Key target is the **prevention of dangerous climate change**. All policy areas in the EU should **jointly** contribute to the goal of **transforming the EU into a climate-neutral continent by the middle of the century**.

<sup>1</sup> On 4 March, a draft law making the 2050 target legally binding was presented; a proposal to tighten 2030 is announced for September 2020 based on an impact assessment; further reforms to be presented in summer of 2021, as well as the adjustments to the directives on energy efficiency and renewables. | Source: [https://ec.europa.eu/clima/citizens/eu\\_en](https://ec.europa.eu/clima/citizens/eu_en); EEA.

## EU greenhouse gas emissions targets



# EU Emissions Trading System

## Overview

- Established by the **Emission Trading Directive**
- Entered into force on 1 January 2005**, in the context of international mitigation commitments by the EU under the Kyoto Protocol
- Currently operating in **31 countries** (all 28 EU countries plus Iceland, Liechtenstein and Norway)
- Limits emissions** from more than **11,000** energy-intensive installations (power stations & industrial plants) and airlines operating between these countries
- Covers around **45%** of the **EU's greenhouse gas emissions**
- Extends over following gases: **carbon dioxide (CO<sub>2</sub>)**, **nitrogen oxide (NO<sub>x</sub>)** & **perfluorocarbons (PFC)**

## Functioning

- Based on '**cap and trade**' system, whereby a cap is set on the total amount of greenhouse gases that can be emitted by installations covered by the system
- The **cap is reduced** over time so that total emissions fall
- Within the cap, companies receive or **buy emission allowances** which they can trade with one another as needed
- After each year a company must surrender enough **allowances to cover all its emissions**
- Emissions not covered by an allowance incur a **fine of €100 per tonne**
- If a company reduces its emissions, it can keep the spare allowances to **cover its future needs** (banking) or else sell them to another company that is short of allowances

- The **EU Emissions Trading Scheme** (EU-ETS) is the key tool for **reducing greenhouse gas emissions** from industry within the European Union.

Source: [ec.europa.eu/clima/policies/ets\\_en](https://ec.europa.eu/clima/policies/ets_en).

# EU Emissions Trading System



## Emissions reduction target of 43%

### 2005 – 2012

#### Phase 1: 2005-07

- Established as pilot to prepare for phase 2
- Allocation of allowances exceeded overall actual emissions
- No banking of excess allowances into phase 2

#### Phase 2: 2008-2012

- Coincided with first commitment period of Kyoto Protocol
- Individual national allocation plans to meet specific reduction targets

### 2013 – 2020

#### Phase 3 (changes compared to Phase 1&2)

- Emissions reduction target: 21% by 2020 compared to 2005
- Single EU cap applies instead of the previous system of national ceilings; linear reduction factor of 1.74% per annum
- Auctioning as standard method for issuing emission allowances (in power sector), and harmonised allocation rules for allowances that continue to be issued free of charge
- More industries and gases are included
- Promotion of innovative renewable energy technologies, carbon capture and storage under the NER 300 programme, 300 Mt allowances have been auctioned to receive the funds with which projects were supported
- Revision of legal framework in 2018 to strengthen Market Stability Reserve (MSR) to reduce total number of allowances in circulation (refer to following pages for details)

### 2021 – 2031

#### Phase 4 (main points of revision)

- Emissions reduction target: 43% by 2030 compared to 2005
- Increase of annual reduction of emission allowances to 2.2% per annum from 2021
- Strengthening of MSR to reduce total number of allowances in circulation
- Free allocation of allowances to ensure international competitiveness of industries affected by the risk of carbon leakage is to be pursued while ensuring that rules governing the determination of free allocation are focused on technological progress

Source: [ec.europa.eu/clima/policies/ets\\_en](https://ec.europa.eu/clima/policies/ets_en).

# EU Emissions Trading System – Market Stability Reserve (MSR)

## Introduction

- In 2015, the Council and the European Parliament took the decision to establish a Market Stability Reserve (MSR) under the EU Emissions Trading System
- The MSR began operating in January 2019
- Purpose of the MSR is to avoid the EU carbon market operating with a large structural surplus of allowances, with the associated risk that this prevents the EU ETS from delivering the necessary investment signal to deliver on the EU's emission reduction target in a cost-efficient manner
- The decision states that, by 15 May each year and starting in 2017, the Commission shall publish the Total Number of Allowances in Circulation (TNAC). This figure determines whether allowances intended to be auctioned in the subsequent year should be placed into the reserve

## Functioning

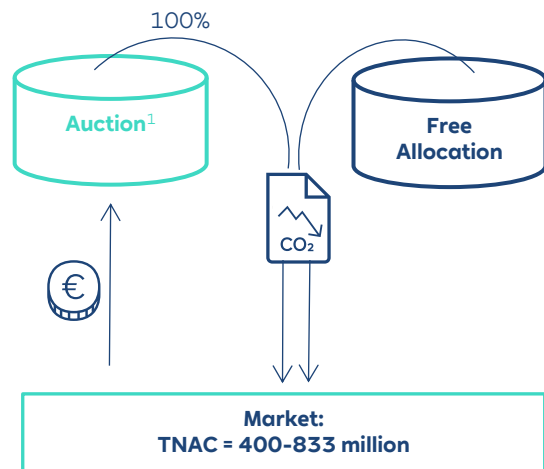
- Operational since January 2019; first review in 2021
- Functions automatically when total number of allowances in circulation is outside of a predefined range
- Allowances are added to the reserve, if the total number of allowances in circulation exceeds the threshold of 833 million allowances, by 24%<sup>1</sup> of the TNAC (applicable 2019-2023<sup>2</sup>)
- Allowances are released from the reserve, if the total number of allowances in circulation is lower than 400 million allowances
- Allowances are added to the reserve by auctioning less, and released from the reserve by auctioning 100 million more allowances in future
- From 2023, allowances held in the MSR above the previous year's auction volume will be cancelled

- **Publication** of the **total number of allowances** in circulation, on the basis of which allowances will be added to or released from the reserve, is a **key element** for the operation of the reserve.

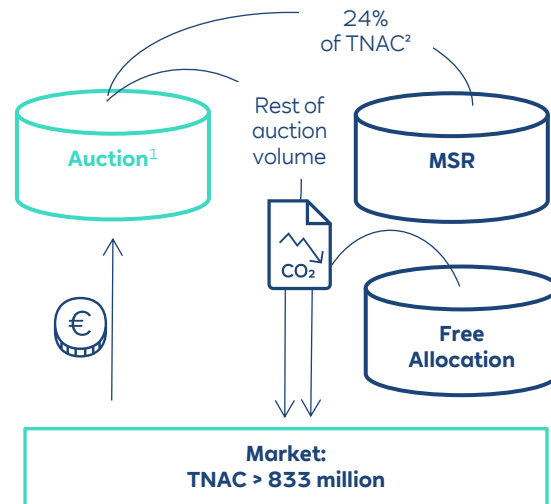
<sup>1</sup> For January to August 2019 only 16% of TNAC will be placed into MSR. | <sup>2</sup> Will change to 12% after 2023 except future revision decides otherwise. | Source: [ec.europa.eu/clima/policies/ets\\_en](https://ec.europa.eu/clima/policies/ets_en).

# EU Emissions Trading System – Functioning of Market Stability Reserve (MSR)

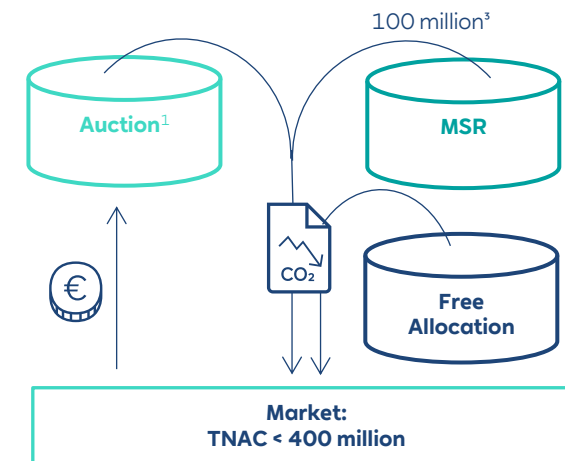
## No action needed



## Addition to reserve



## Release from reserve



<sup>1</sup> 57% of total number of allowances to be auctioned (2013-2020); volumes were reduced accordingly by 264 million allowances beginning Jan 2019.

<sup>2</sup> 16% Jan-Aug 2019/24% Aug 2019-Dec 2023. | <sup>3</sup> To be added on future auction. | Source: ec.europa.eu/clima/policies/ets\_en.

# EU Emissions Trading System – Total number of allowances in circulation (TNAC)

There are three different elements that determine the total number of allowances in circulation (TNAC):

- 1 Supply of allowances since 1 January 2008
- 2 Verified emissions and cancelled allowances (demand)
- 3 Holdings of the MSR

$$\text{TNAC} = \text{Supply} - (\text{Demand} + \text{allowances in MSR})$$

$$1,654,909,824 = 12,286,821,940 - (10,631,912,116 + 0)$$

Total number of allowances  
in circulation<sup>1</sup>

Supply<sup>1</sup>

Demand<sup>1</sup>

MSR holdings<sup>1</sup>

**MSR to reduce** auction volume  
by ~300 m allowances in 2019<sup>2</sup>

<sup>1</sup> As of 31 Dec 2018. | <sup>2</sup> In line with the agreed MSR rules; between 1 January and 31 August 2019 around 265 million allowances were placed in the MSR. From September 2019 to August 2020 another 397 million allowances to be placed in the reserve. | Source: ec.europa.eu/clima/policies/ets\_en.



# Climate Protection in Germany

## Measures defined by Climate Protection Programme

- Concrete measures to reach targets of Climate Protection Law determined by Climate Protection Programme 2030
- Focus on Non-ETS-sectors
- Introduction of National Emissions Trading System from 2021 onwards

### Overview of different measures specified in the programme

<div>CO<sub>2</sub> price</div> <div></div>	<ul style="list-style-type: none"><li>Starting <b>2021</b>, a <b>national CO<sub>2</sub> price</b> will be implemented on emissions of the heating and transport sector</li><li>CO<sub>2</sub> price <b>starts with a fixed annual price</b> to enable industries to <b>adapt</b> to the development</li><li>Starting <b>2026</b>, companies have to <b>buy certificates</b> via <b>auction system</b> in which the price is set market-based within a <b>range of 55 and 65 EUR/t CO<sub>2</sub></b></li><li>Amount of certificates available in the market decreases annually</li></ul>	<div>Annual CO<sub>2</sub> price<sup>1</sup> (EUR/t emitted CO<sub>2</sub>)</div> <div></div> <table><tr><th>Year</th><th>Annual CO<sub>2</sub> price (EUR/t emitted CO<sub>2</sub>)</th></tr><tr><td>2021</td><td>25</td></tr><tr><td>22</td><td>30</td></tr><tr><td>23</td><td>35</td></tr><tr><td>24</td><td>45</td></tr><tr><td>25</td><td>55</td></tr><tr><td>2026-30</td><td>65</td></tr></table>	Year	Annual CO <sub>2</sub> price (EUR/t emitted CO <sub>2</sub> )	2021	25	22	30	23	35	24	45	25	55	2026-30	65
Year	Annual CO <sub>2</sub> price (EUR/t emitted CO <sub>2</sub> )															
2021	25															
22	30															
23	35															
24	45															
25	55															
2026-30	65															
<div>Measures</div> <div></div>	<ul style="list-style-type: none"><li><b>Research and innovation</b> needs to be intensified, e.g. develop national strategy for <b>hydrogen within the energy transition</b>, production of <b>battery storage</b>, as well as <b>carbon capture, storage and usage</b></li><li>Develop and implement a <b>sustainable finance strategy</b>, including issuing <b>green/sustainability bonds</b></li><li><b>Sector-specific measures</b> for the sectors building, transport, agriculture and forestry, industry, energy and waste to make sure each sector reaches <b>its individual emission reduction target</b></li></ul>															
<div>Energy</div> <div></div>	<ul style="list-style-type: none"><li><b>Coal phaseout</b> by <b>2038</b></li><li><b>Energy storage</b> gets gradually <b>relieved</b> from existing <b>levies</b></li><li>Fostering <b>onshore wind</b> projects in political discussions (main issue: minimum distance to buildings)</li><li><b>Accelerated expansion of offshore wind</b>: target increased from 15 GW to <b>20 GW in 2030</b></li><li>State <b>support for solar PV plants</b> will <b>continue</b> after reaching a cumulated installed capacity of <b>52 GW</b></li></ul>	<div>Installed offshore wind capacity (GW)</div> <div></div> <table><tr><th>Year</th><th>Installed offshore wind capacity (GW)</th></tr><tr><td>2019</td><td>7.5</td></tr><tr><td>2030</td><td>20</td></tr></table>	Year	Installed offshore wind capacity (GW)	2019	7.5	2030	20								
Year	Installed offshore wind capacity (GW)															
2019	7.5															
2030	20															

<sup>1</sup> Price path still to be implemented in the relevant act, but already agreed by the two German legislative chambers in Dec 2019.

# Road Map of German Coal Exit

## Different approaches for lignite and hard coal

At the end of January 2019 **Commission on Growth, Structural Change and Employment** presented their recommendations on the coal exit in Germany:

- **By 2022 reduction** to a total remaining capacity of **15 GW lignite** and **15 GW hard coal**
- **By 2030 reduction** to a total remaining capacity of **9 GW lignite** and **8 GW hard coal**
- **End of coal-fired power production by end of 2038**
- Steady reduction path until 2030
- Financial support for the coal regions

**Implementation of the recommendations differs between lignite and hard coal:**

### Lignite:

- Decision on **which lignite** power plants will be shut down at what point based on **negotiations** with operators
- **Compensation** for shutdowns of power plants including costs for open cast mines
- Preservation of the Hambach Forest

### Hard Coal:

- Decision on **which hard coal** power plants will be shut down at what point based on decommissioning **auctions** (basically voluntary)
- From 2027 onwards and in case of missing coal capacity to achieve auction targets as of 2024: **administrative shut down** mainly based on age **without any compensation**
- Datteln 4 will be brought online

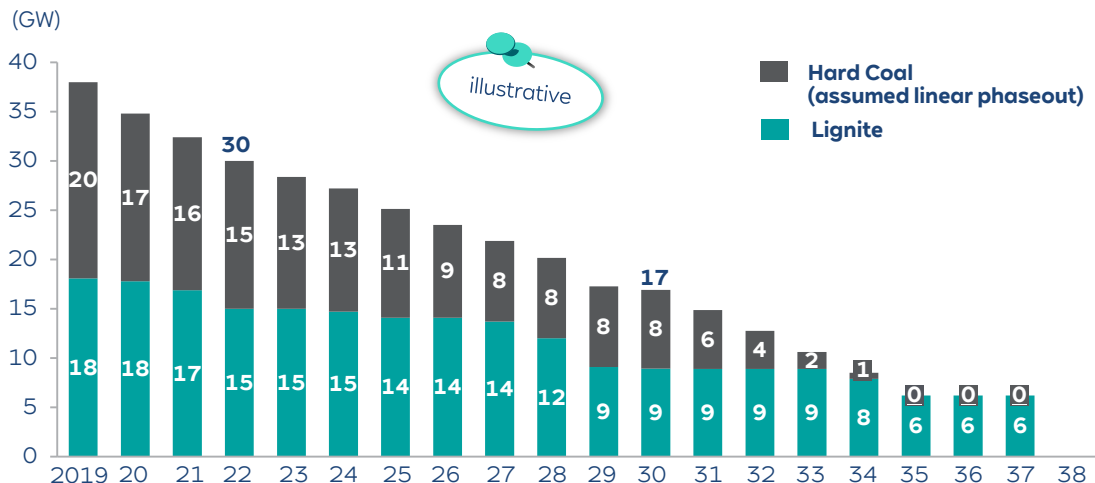
### Overall:

- **Reviews in 2023, 2026 and 2029** (climate protection, security of supply, power prices, regional development and employment)
- **Cancellation of CO<sub>2</sub> certificates** corresponding to emission reduction resulting from coal closures
- Mostly **linear reduction path** for coal in total
- **Next Steps:** Enacting a **coal phaseout** law (planned by May 2020) and a **contract** under public law between the government and the lignite power plant operators, subject to state-aid approval by EU Commission

# Road Map of German Coal Exit

## Coal reduction path according to draft coal exit law

### Lignite and hard coal capacity at the end of the year



#### Lignite

- according to negotiated reduction path

#### Hard coal

- 2020-2022: according to announced auction volumes, incl. commissioning of Datteln IV
- 2023 et seqq: gap filler for a mostly steady coal reduction path (final outcome depending on auctions and CHP system retrofitting), therefore for 2023-2025 additional auction volume of 1 GW (according to draft law, Sec., Para. 4) neglected

#### Agreed shut down of RWE lignite power plants

Unit	Capacity (MW)	Date of decommission
Niederaußem D	297	31.12.2020
Niederaußem C	295	31.12.2021
Neurath B	294	31.12.2021
Weisweiler E or F	321	31.12.2021
Neurath A	294	01.04.2022
Frechen	120	31.12.2022
Neurath D	607	31.12.2022
Neurath E	604	31.12.2022
Weisweiler E or F	321	01.01.2025
Weisweiler G or H	663 / 656	01.04.2028
Weisweiler G or H	663 / 656	01.04.2029
Niederaußem G or H	628 / 648	31.12.2029
Niederaußem G or H <sup>1</sup>	628 / 648	31.12.2029
Niederaußem K	944	31.12.2038
Neurath F	1,060	31.12.2038
Neurath G	1,060	31.12.2038

<sup>1</sup> Security Stand By.

# UK is first major economy to pass net zero emissions law

UK is **first G7 country** to legislate a **net zero**<sup>1</sup> greenhouse gas emission target by **2050**.

## Implications of the target

- UK Committee on Climate Change recommends **all new cars** should be **electric** ideally **by 2030** and significant **increase to renewable energy capacity**
- Full decarbonisation** of the power sector **by 2050** is necessary, through a combination of renewables, nuclear, gas with CCS<sup>2</sup> and low carbon hydrogen

### Electricity demand

- Demand** expected to **double** by 2050, requiring new generation capacity of 9-12 GW p.a. with up to 75 GW of offshore wind by 2050
- Also needs development of CCS & hydrogen infrastructure

### Hydrogen use

- Use** of low carbon hydrogen expected to be **270 TWh in 2050**
- Implies 30 GW steam methane reformation with CCS and 2-7 GW electrolyzers

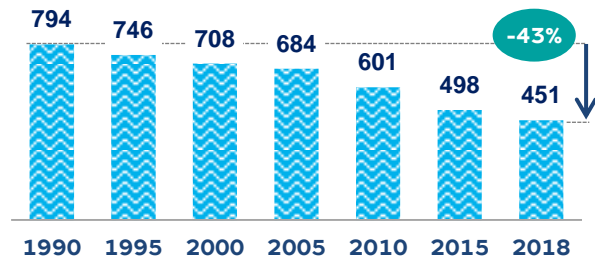
### CCS<sup>2</sup>

- Annual **CO<sub>2</sub> captured and stored** estimated to be **176 million t in 2050** compared to **0 today**

## The UK has been a leader in cutting emissions whilst growing the economy

- By **2018**, UK reduced its final **GHG emissions** by **43%** vs 1990, whilst growing its economy by more than two-thirds
- Coal 3%** of power generation **compared with 70%** in 1990; Government wants to phase it out completely by Oct **2024**
- UK's **target** for installed **offshore** wind energy has been raised to **40 GW by 2030** (~8.4 GW installed in 2018)

## Final annual greenhouse gas emissions in the UK (Mt CO<sub>2</sub>e)



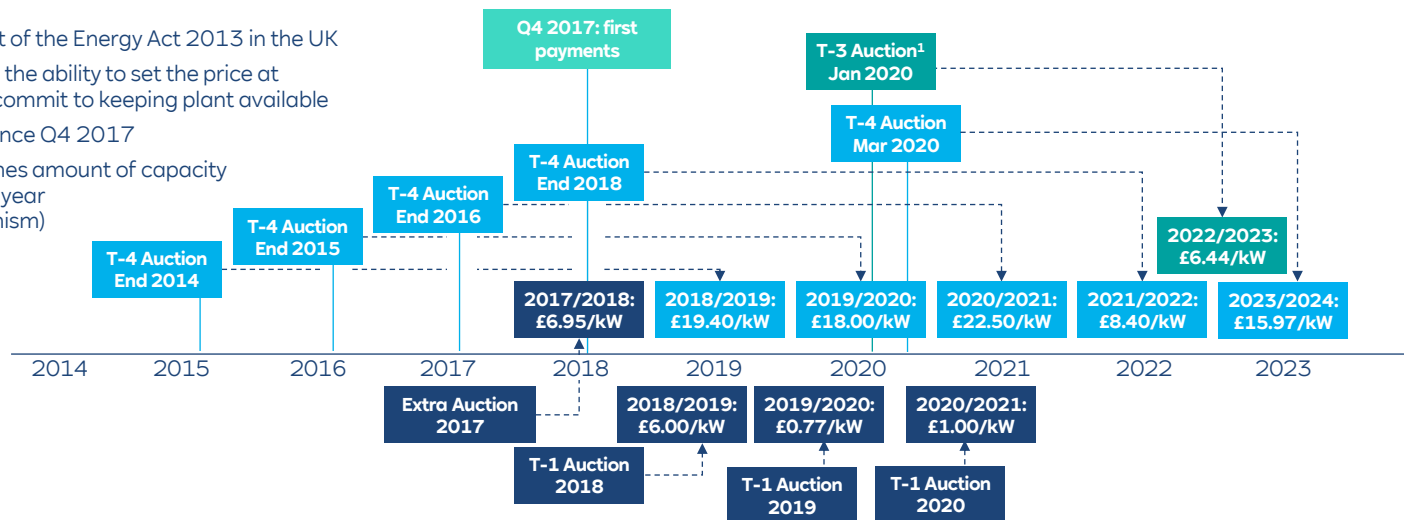
<sup>1</sup> Net zero means any emissions would be balanced by schemes to offset an equivalent amount of greenhouse gases from the atmosphere, such as planting trees or using technology like carbon capture and storage.

<sup>2</sup> Carbon capture and storage. | Source: UK Department for Business, Energy & Industrial Strategy; UK Committee on Climate Change.

# GB capacity market

## Establishment

- **Adopted in 2013** as part of the Energy Act 2013 in the UK
- Provides generators with the ability to set the price at which they are willing to commit to keeping plant available
- **Used to secure supply** since Q4 2017
- UK government determines amount of capacity needed for each delivery year (quantity-based-mechanism)



## Price

- Auction price can be between £0 – 75/kW
- Auction price is **determined by the marginal capacity**. All units receive the price of the highest successful unit ('descending clock' format)
- Units which leave the auction before it closes will not be offered a Capacity Market Agreement

## Capacity quantities

- The largest part of the capacity is awarded in the first auction (T-4); a small part follows in another auction one year before the respective delivery year (T-1 auction)
- The 'agreement' terms are between 1 and 15 years – depending on whether it is existing plants or new plants

<sup>1</sup> The T-3 auction replaces the T-4 auction, which was unable to take place last year given the standstill in the GB Capacity Market following the legal challenge by Tempus Energy. | Source: RWE Analysis.

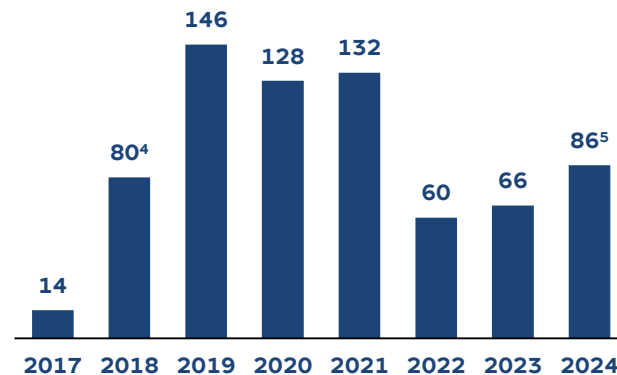
# GB capacity market - RWE plants

## RWE plants in GB Capacity Market

Derated capacity in MW	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Aberthaw <sup>1</sup>	1,475	1,486	1,490	1,475	1,486	0	0
Didcot B (excl. OCGT)	1,358	1,364	1,380	1,395	1,395	1,395	1,395
Little Barford	681	683	691	699	699	699	699
Great Yarmouth	359	361	365	369	369	369	369
Staythorpe	1,626	1,633	1,652	1,670	1,670	1,670	1,670
Pembroke	2,081	2,090	2,114	2,138	2,138	2,138	2,138
King's Lynn			329	333	333	333	333
Other <sup>2</sup>	322	375	382	386	467	427	427
<b>Total (qualified)</b>	<b>7,901</b>	<b>8,044</b>	<b>8,403</b>	<b>8,465</b>	<b>8,556</b>	<b>7,031</b>	<b>7,031</b>
<b>Total (successful capacity)</b>	<b>7,901</b>	<b>7,991</b>	<b>6,913</b>	<b>6,897</b>	<b>6,988</b>	<b>6,895</b>	<b>6,895</b>

## Revenue from capacity market<sup>3</sup>

(in £ million, pre inflation)



<sup>1</sup> Due to the closure of Aberthaw in March 2020 the Power Station's existing Capacity Market agreements for the years 2019/2020 and 2020/2021 were transferred to third parties and a small proportion to other units within RWE's fleet. <sup>2</sup> Includes Cowes OCGT, Didcot OCGT, Cheshire GT, Conoco Phillips, Hythe, Grimsby A. <sup>3</sup> Based on cleared capacity prices (nominal) and capacity contracts secured by RWE.

<sup>4</sup> This includes approximately £42m that was received in 2019 due to the suspension of payments in 2018. <sup>5</sup> This includes full year for King's Lynn and Grimsby A due to award of 15 year CM agreements and to September 2024 for other units.



# RWE OPERATIONAL DATA

# RWE

## Offshore Wind



## Onshore Wind/ Solar



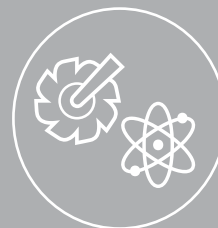
## Hydro/Biomass/ Gas



## Supply & Trading

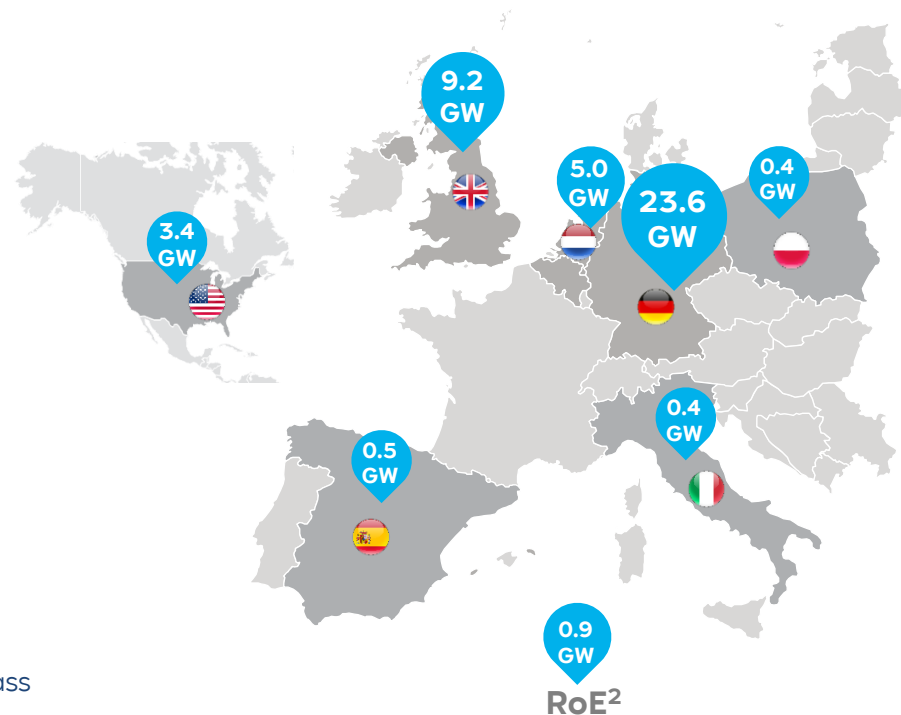
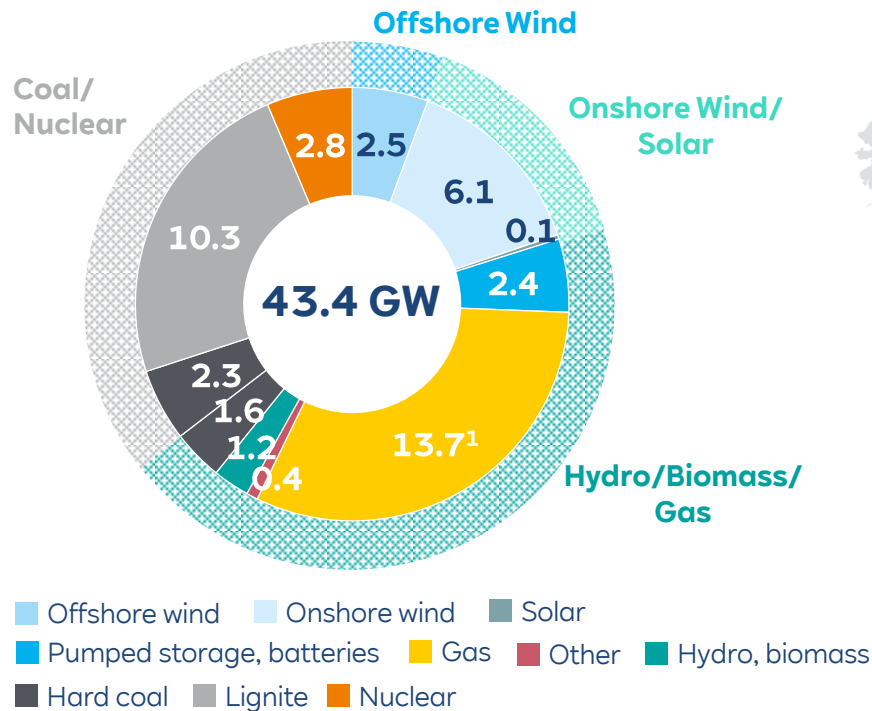


## Coal/Nuclear





# RWE's power generation portfolio



Note: Pro rata. As of 31 Dec 2019; Figures may not add up due to rounding differences. | <sup>1</sup> Includes 0.4 GW gas capacity belonging to Coal/ Nuclear. | <sup>2</sup> Rest of Europe; including Denizli CCGT (551 MW) in Turkey.

# RWE's R&D projects: Promoting technological progress

## Thermal storage (StoreToPower)

- **Adding thermal storage** to a coal-fired power plant
- Replacing the steam production **with heat from liquid salt storage**
- Storage charged with heat **generated by sun and wind**
- Located in the Rhineland (Germany)

## Geothermal

- Deep **geothermal utilisation**: long-term **transformation** of the district **heating network**
- Using **hot water from deep rock layers**
- **EU project** overseen by **Geologischer Dienst NRW** at Weisweiler power station (Germany)

## Battery (Panta.rhei)

- **Simulation** of requirements of potentially **larger projects** with **Redox-Flow batteries**
- **Installation** of 30 Modules with **120 kW/390 kWh** in total located at RWE Campus

## Hydrogen (GET H<sub>2</sub>)

- Hydrogen produced **from renewables** sources
- Research into the **possible uses for decarbonisation** in other industries
- Project development for a **105 MW power-to-gas electrolysis facility** in Lingen (Germany)

## Power to X

- Production of **synthetic fuels** ('e-fuels'), e.g. methanol, **from green hydrogen and CO<sub>2</sub>** produced in power stations and industrial plants

## Recycling (FUREC)

- **Conversion** of several kinds of **waste into base chemicals** including hydrogen
- Located in the Netherlands

Note: All projects are joint projects.

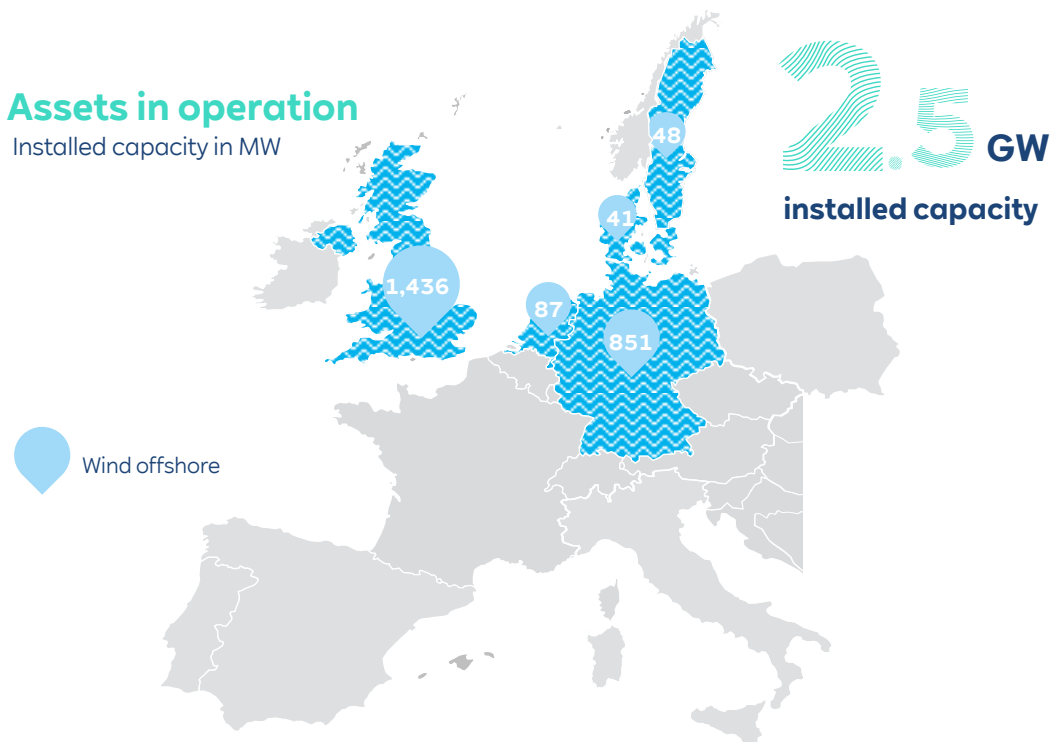


# Offshore Wind

# Strong market position

## Assets in operation

Installed capacity in MW



## Leading market position

global No. 2

8.3 TWh power generation

## Experience in technology



27 assets in Europe

## Pro forma adj. EBITDA 2019

€1.0 bn

Note: Pro forma combined renewables as of 31 Dec 2019; All figures in pro rata view.

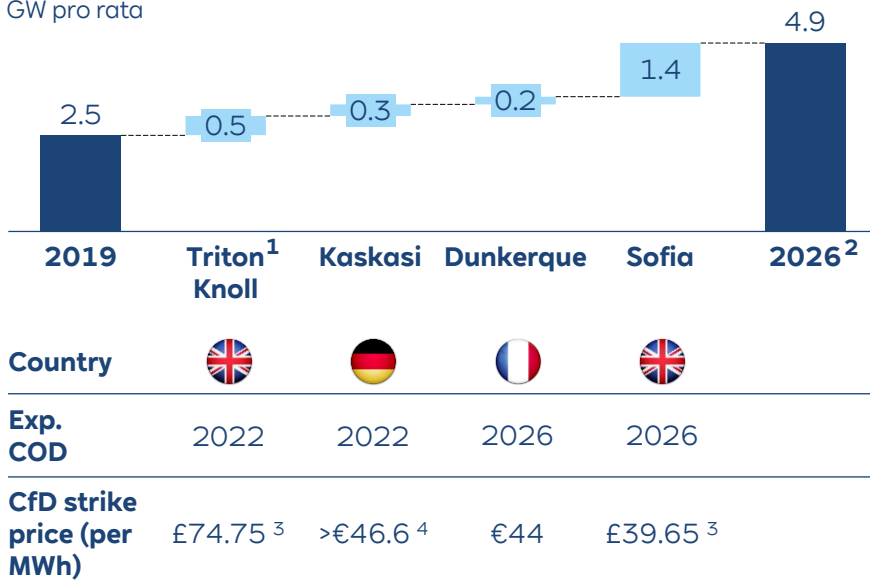


# Offshore Wind:

## Attractive near-term build-out coupled with long-term development options

### Secured near-term capacity build-out

GW pro rata



### Further projects in development, GW pro rata

Delta Nordsee		Pre-emption right	0.5 GW
Nordsee Two&Three		Pre-emption right	0.1 GW
Rampion		Extension option	0.4 GW
Gwynt y Môr		Extension option	0.3 GW
Greater Gabbard		Extension option	0.3 GW
Galloper		Extension option	0.1 GW
Dublin Array		Development project	0.3 GW
Sharco II, IV & V		Development project	1.5 GW
Baltic II		Development project	0.3 GW
Södra Midsjöbanken		Development project	1.6 GW
			<b>5.4 GW</b>

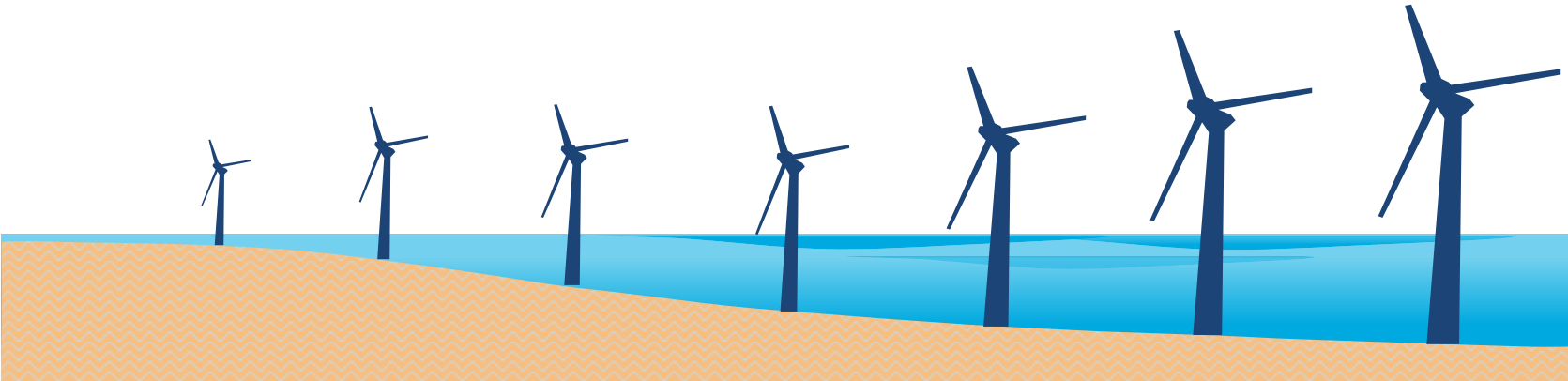
<sup>1</sup> Under construction. | <sup>2</sup> Before asset rotation. | <sup>3</sup> 2012 prices. | <sup>4</sup> €46.6 per MWh was the average strike price achieved in the auction.



# Offshore Wind:

## Evolution of RWE's offshore wind farms

<b>Project</b> Go Live <b>Capacity</b> Turbines Water depth Distance to shore	<b>Scroby Sands</b> 2004 <b>60 MW</b> 30 × 2.0 MW 1 – 11 m 2 – 3 km	<b>Rhyl Flats</b> 2010 <b>90 MW</b> 25 × 3.6 MW 10 – 15 m 8 km	<b>Amrumbank</b> 2015 <b>288 MW</b> 80 × 3.6 MW 19 – 24 m 35 km (to Heligoland)	<b>Galloper</b> 2018 <b>353 MW</b> 56 × 6.3 MW 27 – 36 m 30 km	<b>Arkona</b> 2018 <b>385 MW</b> 60 × 6.4 MW 21 – 27 m 35 km	<b>Triton Knoll</b> 2021/22 (expected) <b>855 MW</b> 90 × 9.5 MW 15 – 24 m 32 km	<b>Sofia</b> 2025/26 (expected) <b>~1400 MW</b> Up to 200 x TBC 21 – 36 m 195 km
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# Offshore Wind:

## RWE is participating in two floating demo projects for next level offshore wind

- Floating offshore wind has great potential and opens attractive market opportunities not accessible via fixed bottom installations
- Focus of demo projects: performance and load behaviour of platform under all possible conditions, operational experience, maintenance process
- Deliverable: Optimise design, manufacturing and installation process

### Demo project TetraSpar

- Location: Norwegian coast
- Sea depth: 200 metres
- Capacity: 3.6 MW
- Platform type: steel-based
- Deployment: 2020

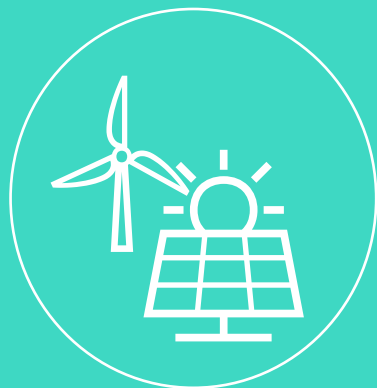


Source: innogy factbook 2019 on demo project TetraSpar.

### Demo project with SATH technology

- Location: Bay of Biscay, Spain
- Sea depth: 85 metres
- Capacity: 2 MW
- Platform size: 30 x 64 metres
- Platform type: concrete-based
- COD: Q3/2021
- Test phase: 2 years





# Onshore Wind/Solar



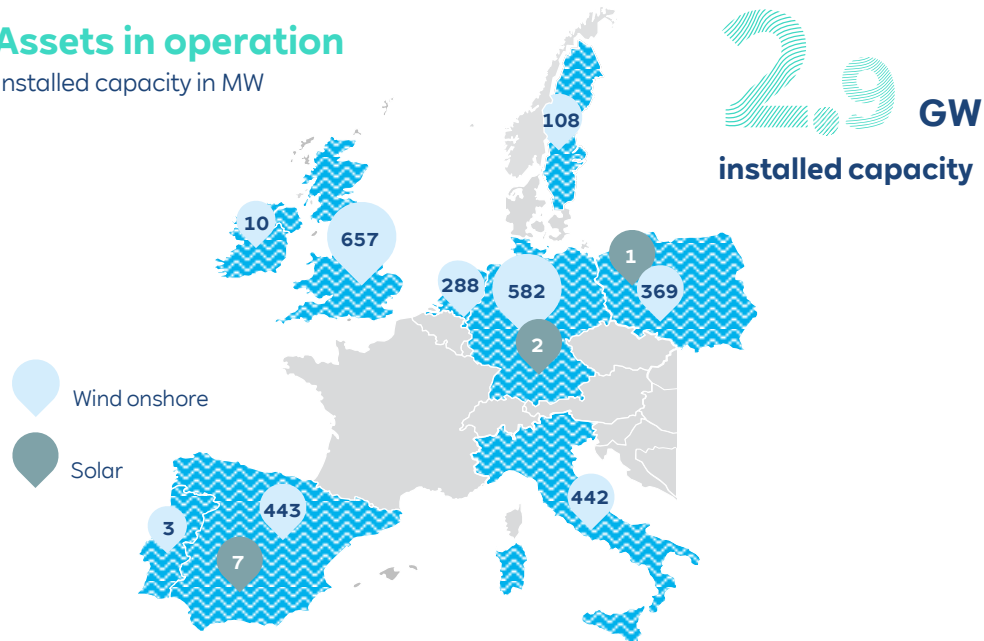


# Onshore Wind/Solar Europe:

## Experienced operator with strong competitive position

### Assets in operation

Installed capacity in MW



Regionally well **diversified portfolio**

More than **6.4 TWh** power generation

### Experience in technology



More than **200** assets  
in operation in Europe

**Pro forma adj. EBITDA 2019**

**€0.3 bn**

Note: Pro forma combined renewables as of 31 Dec 2019; All figures in pro rata view; Rounding differences may occur.

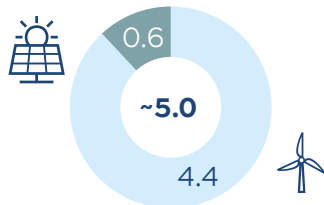


# Onshore Wind/Solar Europe & APAC:

## Well diversified pipeline providing opportunities for profitable growth

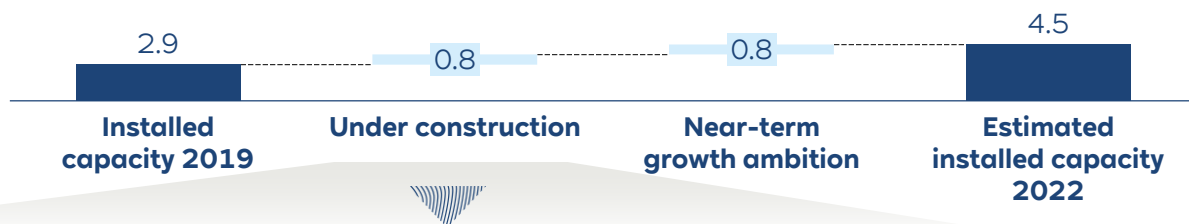
### Development pipeline

GW pro rata



### Near-term capacity build-out and development by the end of 2022

GW pro rata



Selected projects	Capacity	COD	Support scheme	Support expiry	Offtake partner
Clocaenog Forest	96 MW	Q1 2020	Two-sided CfD <sup>1</sup>	2035	n.a.
Alarcos	45 MW	Q2 2020	PPA	n.a.	Audax Renovables
Limondale	249 MW	Q3 2020	LGC <sup>2</sup>	2030	n.a.
Eekerpolder	63 MW	Q4 2020	One-sided CfD <sup>1</sup>	2035	Market/Government
Zukowice	33 MW	Q4 2020	Two-sided CfD <sup>1</sup>	2035	n.a.
Nysäter	95 MW	Q4 2021	Firm hedge + Green certificates	2036	Energy company

<sup>1</sup> CfD: Contract for Difference. | <sup>2</sup> LGC: Large Scale Generation Certificates (Green certificates for large producers in Australia). | Note: Installed capacity excluding storage.

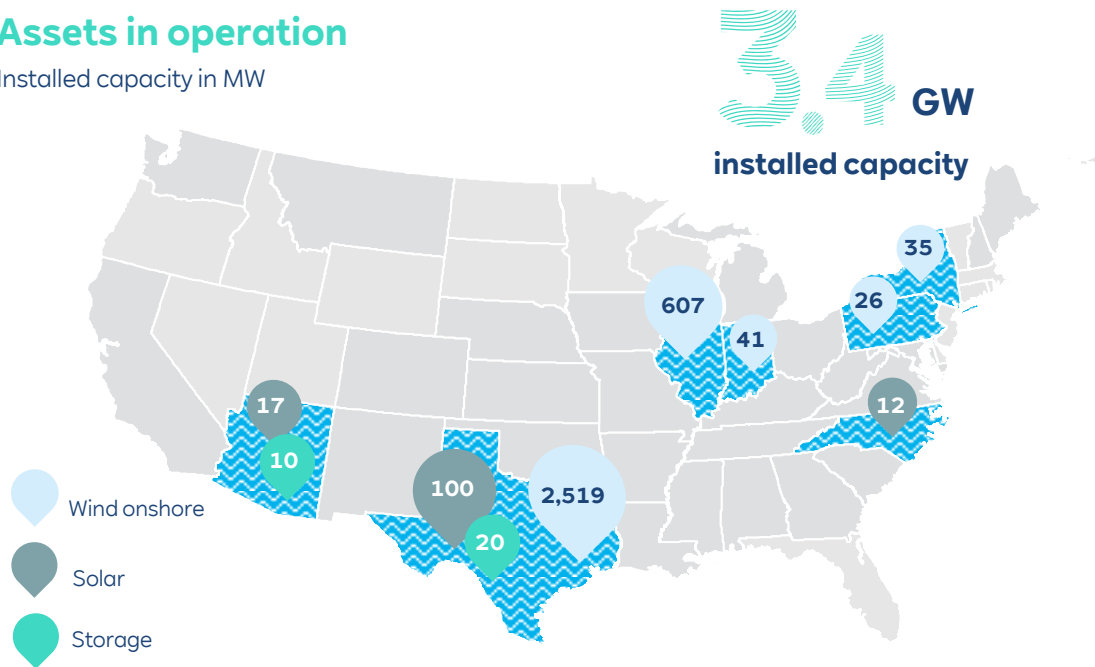


# Onshore Wind/Solar Americas:

## Strong and diversified footprint across the US

### Assets in operation

Installed capacity in MW



**Well established** wind, solar & battery storage **operator**

**~10 TWh** power generation

**Experience in technology**



**32** assets in operation in the US

**Pro forma adj. EBITDA 2019**

**€0.1 bn**

Note: Pro forma combined renewables as of 31 Dec 2019; All figures in pro rata view; Rounding differences may occur.



RWE Group



Market Data



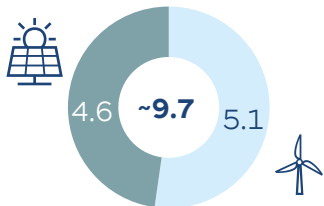
Regulations

RWE operational  
data

# Onshore Wind/Solar Americas: Substantial 2020 wind construction programme, with good optionality during PTC ramp-down

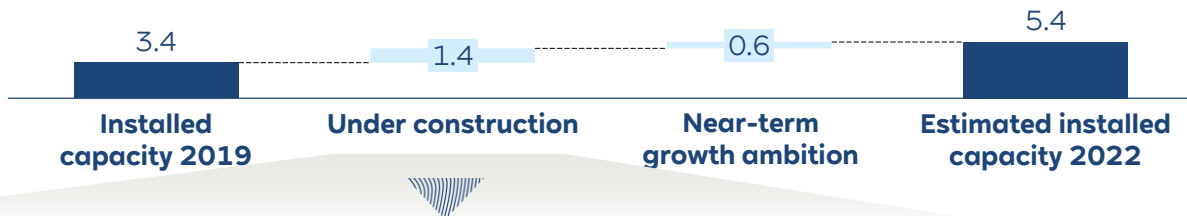
## Development pipeline








GW pro rata



## Near-term capacity build-out and development by the end of 2022

GW pro rata



Major projects	Capacity	COD	ISO	Offtake product	Offtake tenor	Offtake partner
 Cranell	220 MW	Q2 2020	ERCOT	Firm hedge hub	12 years	Undisclosed LSE <sup>1</sup>
 Peyton Creek	151 MW	Q1 2020	ERCOT	Self-structured hedge	10 years	Multiple trading counterparties
 Vauxhall & Hull	47 MW	Q2 2020	AESO	UC <sup>2</sup> PPA node	Mid-term <sup>3</sup>	Consumer staples
 Big Raymond	440 MW	Q4 2020	ERCOT	UC <sup>2</sup> PPA + Firm hedge	12 years	Austin Energy + Banking sector
 Scioto Ridge	250 MW	Q4 2020	PJM	Firm hedge hub	Long-term <sup>4</sup>	Service sector
 Boiling Springs	148 MW	Q4 2020	SPP	UC <sup>2</sup> PPA hub	15 years	Honda
 Cassadaga	126 MW	Q4 2020	NYISO	Firm hedge node	Long-term <sup>4</sup>	Utility

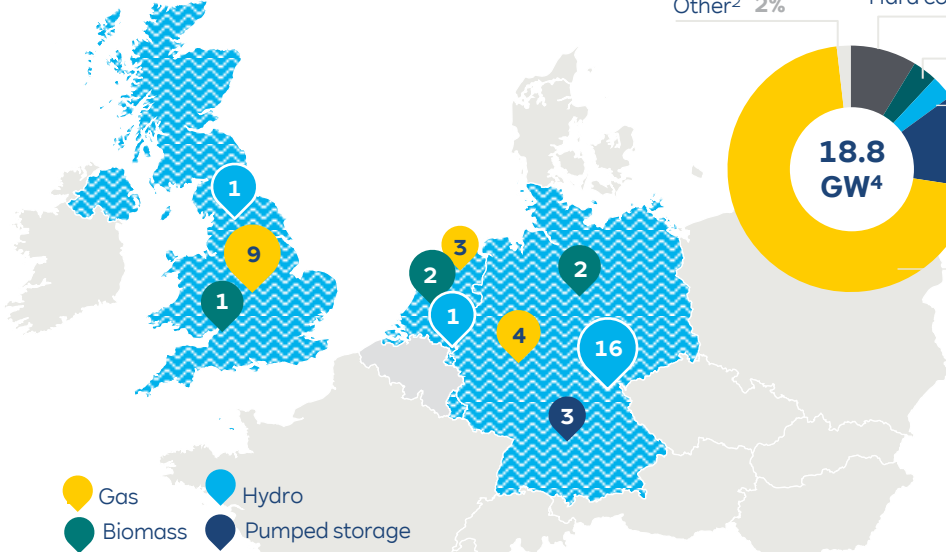
<sup>1</sup> LSE: Load serving entity. | <sup>2</sup> UC: Unit contingent. | <sup>3</sup> Mid-term: 6-10 years. | <sup>4</sup> Long-term: 11-20 years. | Note: PTC: Production Tax Credits.



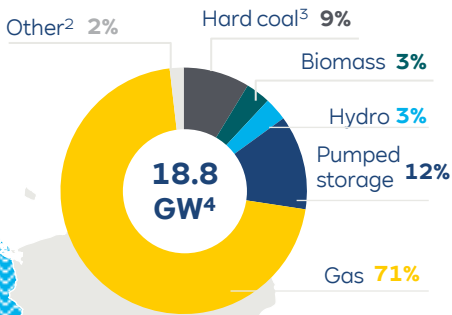
# Hydro/Biomass/Gas

# Well positioned portfolio across regions and technologies

## Major power plant sites in core markets<sup>1</sup>



## Installed capacity by technology



**Leading market position**  
in Germany, UK and Benelux

**Experience in technologies**

**Pro forma adj. EBITDA 2019**  
**€0.7 bn**

Note: Pro forma combined renewables as of 31 Dec 2019; All figures in pro rata view; Rounding differences may occur. | <sup>1</sup> Excluding power plants in Spain, Portugal, France and Turkey and assets with an installed capacity less than 10 MW. | <sup>2</sup> Including batteries, waste assets and oil assets. | <sup>3</sup> Biomass co-fired power plants in the Netherlands. | <sup>4</sup> Including generation capacity not owned by RWE that we can deploy at our discretion on the basis of long-term use agreements.

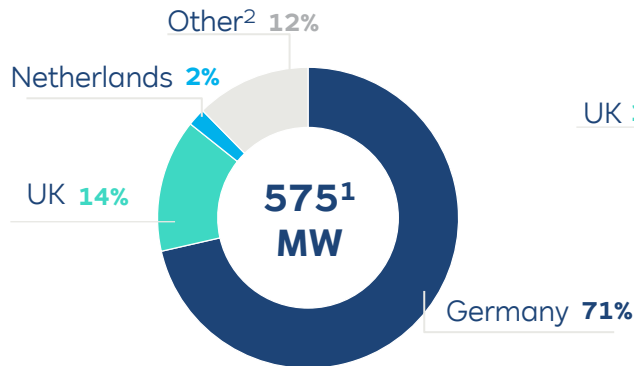


# Hydro & pumped storage: Attractive portfolio with high flexibility

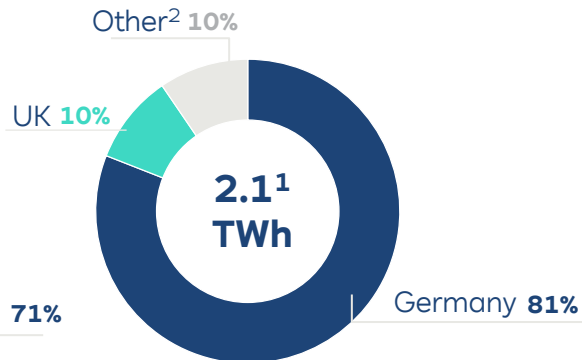


## Hydro

### Installed capacity



### Power generation



## Pumped storage



Own operated power plant

- Koepchenwerk (165 MW)

Contractually secured plants

- SEO Vianden (1,294 MW)
- Schluchsee (870 MW<sup>3</sup>)

Installed capacity<sup>1</sup> in Germany

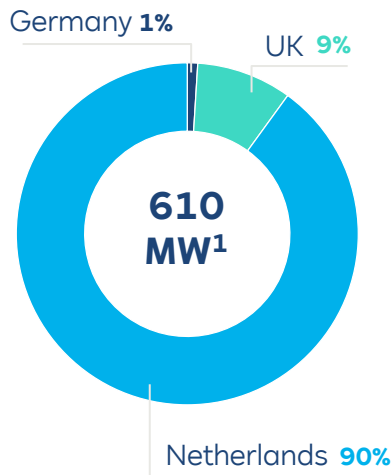
**2,329 MW**

Note: Pro forma combined renewables as of 31 Dec 2019; All figures in pro rata view; Rounding differences may occur. | <sup>1</sup> Including generation capacity not owned by RWE that we can deploy at our discretion on the basis of long-term use agreements. | <sup>2</sup> Including assets in Spain, Portugal and France. | <sup>3</sup> RWE pro rata stake 50%.

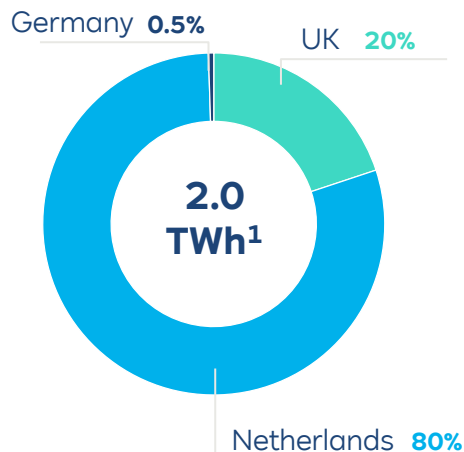


# Biomass: Focused on biomass co-firing

## Installed capacity per country



## Power generation per country



**3 power plants** in  
UK and Netherlands



## Biomass co-fired power plants

Biomass net capacity:

- Amer (315 MW)
- Eemshaven (233 MW)

## Certificated biomass



Note: Pro forma combined renewables as of 31 Dec 2019; All figures in pro rata view; Rounding differences may occur. | <sup>1</sup> Including biogas and CHP assets in Germany.





RWE Group



Market Data

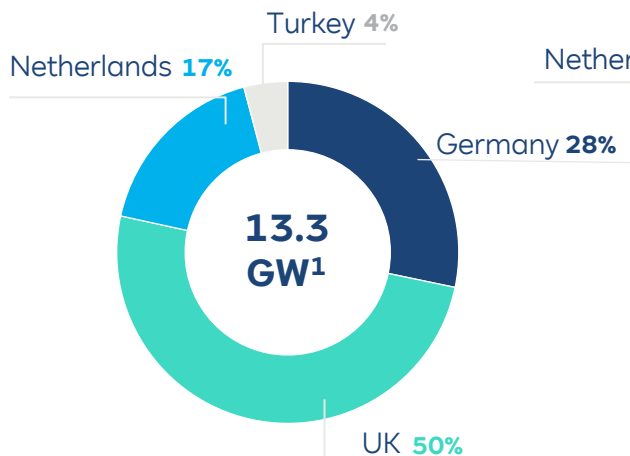


Regulations

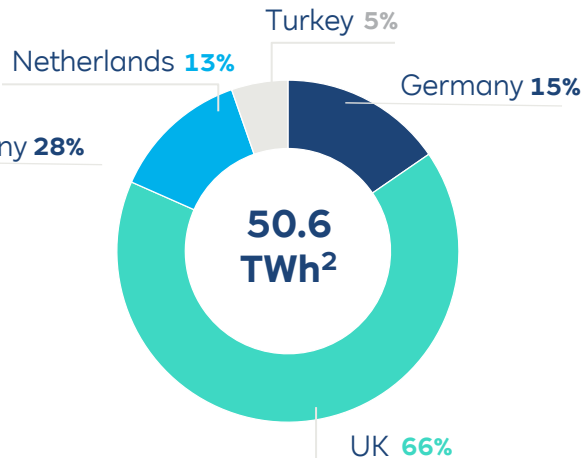
RWE operational  
data

# Gas: Highly efficient and flexible gas assets

## Installed capacity per country



## Power generation per country



No. **3** gas fleet in Europe



**17** power plants

in Germany, UK, Netherlands  
and Turkey



<sup>1</sup> Pro rata view as of 31 Dec 2019. | <sup>2</sup> Accounting view as of fiscal year 2019. | Note: Rounding differences may occur.

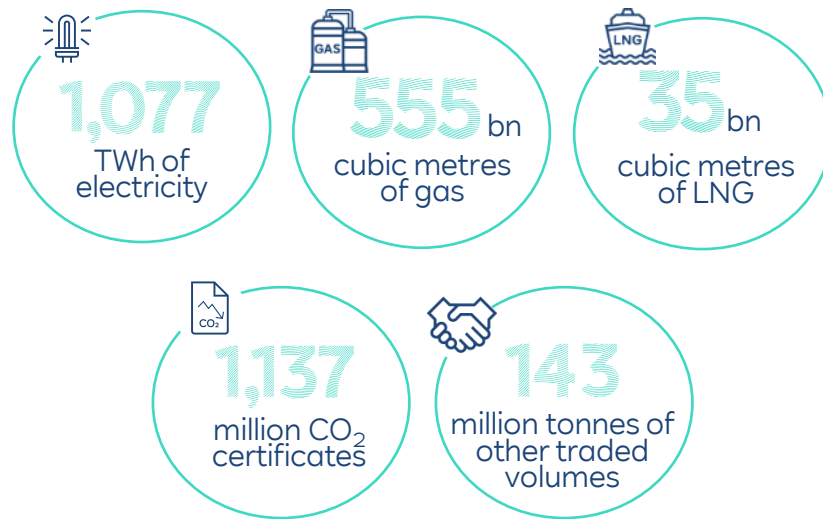


# Supply & Trading

# Supply & Trading:

Value creation through fundamental understanding of markets

## Trading volumes in 2019



Note: As of 31 Dec 2019.

**Leading energy trading house** and **significant gas portfolio** player

**Interface** between the **Group and global wholesale markets** for energy and energy-related raw materials and services

**Europe's largest energy trading floor** at RWE's headquarters (Essen, Germany);

**10** trading offices worldwide

**Pro forma adj. EBITDA 2019**

**€0.7 bn**

# Supply & Trading:

## Energy experts organised in 5 core business areas

### Trading & Origination

Interface wholesale energy markets all over the world – physical and financial products



### Principal Investments (PI)

Investments in commodity-driven assets and companies where we can deliver value from strong trading capability and deep understanding of energy commodity markets



### Commercial Asset Optimisation (CAO)

Optimising physical and contractual power assets – from long-term hedging to dispatch decision



### Gas & LNG Supply

Management and optimisation of the Group's Pan-European gas portfolio, gas supply, storage and transport contracts as well as the global LNG portfolio



### Commodity Solutions

Fully-fledged service provider for industrial customers and aggregators





# Trading:

## Understanding of fundamentals drives trading approach & PI strategy

### Fundamental analysis (examples)

- **Power:** demand, conventional power plants, renewable feed-in, cross border flows, weather
- **Gas:** demand, pipeline flows, LNG deliveries, storage levels

### Quantitative modelling

- Outright fundamental fair value
- Fuel spreads, time spreads, location spreads and product spreads

- Deep understanding of physical assets
- Fundamental modelling of supply/demand balances

- Monitoring of misvaluations in markets
- Assessment of risk/reward of trading opportunities

Diversified  
trading  
exposure

### Trading strategies

**Fundamental:** assessment of fundamental fair value

**Relative value:** detection of spread opportunities

**Systematic:** algorithmic trading, monitor money flows

**Origination:** negotiated contracts in illiquid markets

### Principal Investments

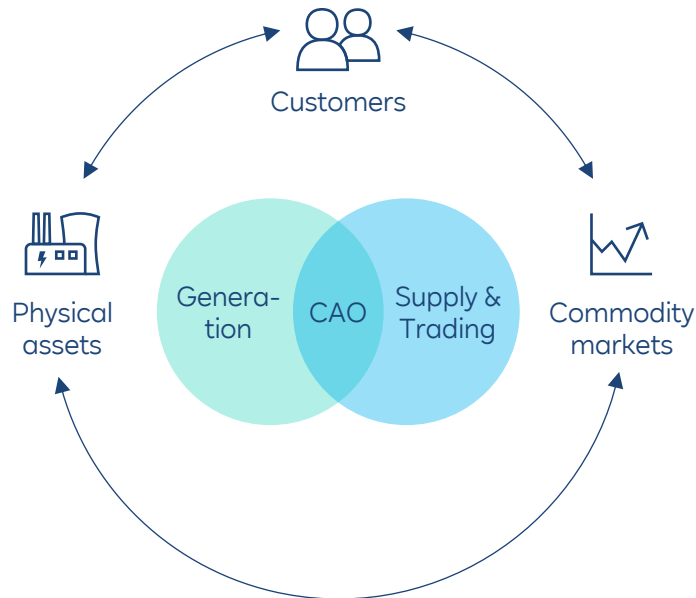
- **Focus** on **private equity-like investments** where RWE Supply & Trading can extract value from **strong trading capability** and asset **know-how**
- Target **holding period** 3 to 5 years



# Commercial Asset Optimisation:

## The interface between generation & markets

### Business interaction



### Commercial Asset Optimisation



Commercial asset management



Hedging



Dispatch and portfolio optimisation



Capacity markets, reserve & ancillary services



Fuel, subfuel, waste procurement & logistics



Sales portfolio management



RWE Group



Market Data



Regulations



RWE operational  
data

# Gas & LNG Supply:

## Major asset backed gas player in Europe

 Countries where we are active  
(up and running in 20 European countries)

 Not active

 Target markets

 OTC

 Exchanges

**35 BCMA<sup>1</sup>**  
**Total Gas Sales  
Portfolio**

<sup>1</sup> Billion cubic metres per annum.

### Large gas portfolio across Europe

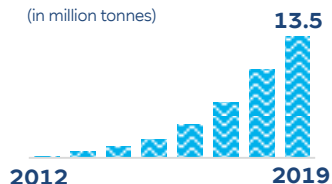
- Diversified **physical European gas portfolio of ~ 350 TWh/a** across 20 countries centred around North Western and Central European markets
- Sourced from major international producers, smaller independents and from traded markets
- Booked working gas volume in **gas storages** of about 60 TWh
- ~ 55 GW gas **transportation capacity** at more than 70 European border points and storage connections

### Global LNG activities

- Sizeable global LNG portfolio with a strong customer base in Europe, Asia and the Middle East
- Tailor-made solutions for LNG customers & Supply across all major markets

#### Global LNG portfolio

(in million tonnes)



#### 2019 in figures

- **13.5** mt of **physical LNG** traded
- **4.5** mt **delivered to end customers**
- **12** mt equivalent of **financial LNG** traded



# Commodity Solutions:

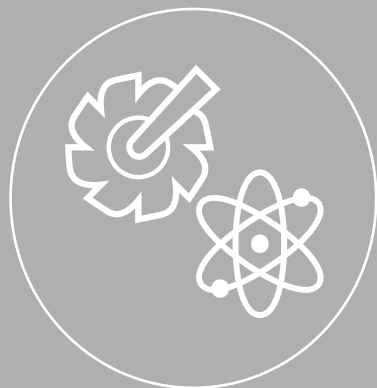
## Reliable partner

- **Commodity Solutions** supplies large industrial customers and municipalities/aggregators in Europe with energy and energy-related services. The portfolio comprises standard as well as structured products and individual solutions by creating win-wins based on our best in class asset and portfolio management.



<sup>1</sup> Virtual Power Plant. | <sup>2</sup> A real-time platform for electricity and gas trading.

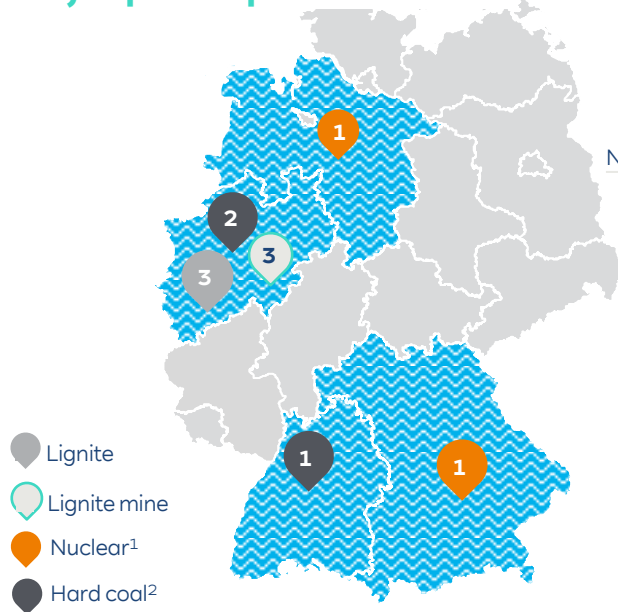




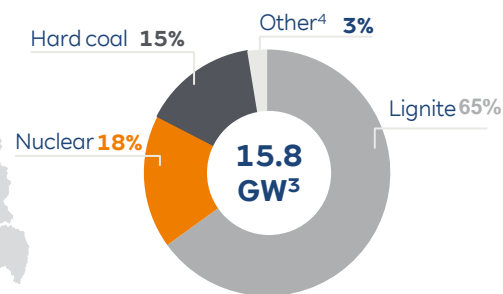
# Coal/Nuclear

# Overview of coal and nuclear portfolio

## Major power plant sites



## Installed capacity by technology



**Businesses with closure plans**  
in Germany

**Experience in technologies**



**Pro forma adj. EBITDA 2019**

**€0.3 bn**

Note: As of 31 Dec 2019. Pro rata view. | <sup>1</sup> Nuclear power plants which are still operating in Germany. | <sup>2</sup> Including contractually secured plant GKM. | <sup>3</sup> Including installed capacity (pro rata) of nuclear power plant EPZ in the Netherlands and hard coal power plant GKM not owned by RWE that we can deploy at our discretion on the basis of long-term use agreements. | <sup>4</sup> Including onshore wind asset at EPZ and two topping gas turbines at the Weisweiler site.



# Lignite:

Integrated system including mining, refining and power plants

---

**48.3 TWh** power generation 

---

**10.3 GW** installed capacity 

---

**5** power units in security reserve (total: **1.5 GW**) 

---

## Closures by 2038

Responsible and socially acceptable phaseout of coal 

---

**3** major power plant sites in Germany<sup>1</sup> 

---

**3** lignite opencast mines 

---

**3** refining sites 

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## Recultivation

Concept for lignite mines 

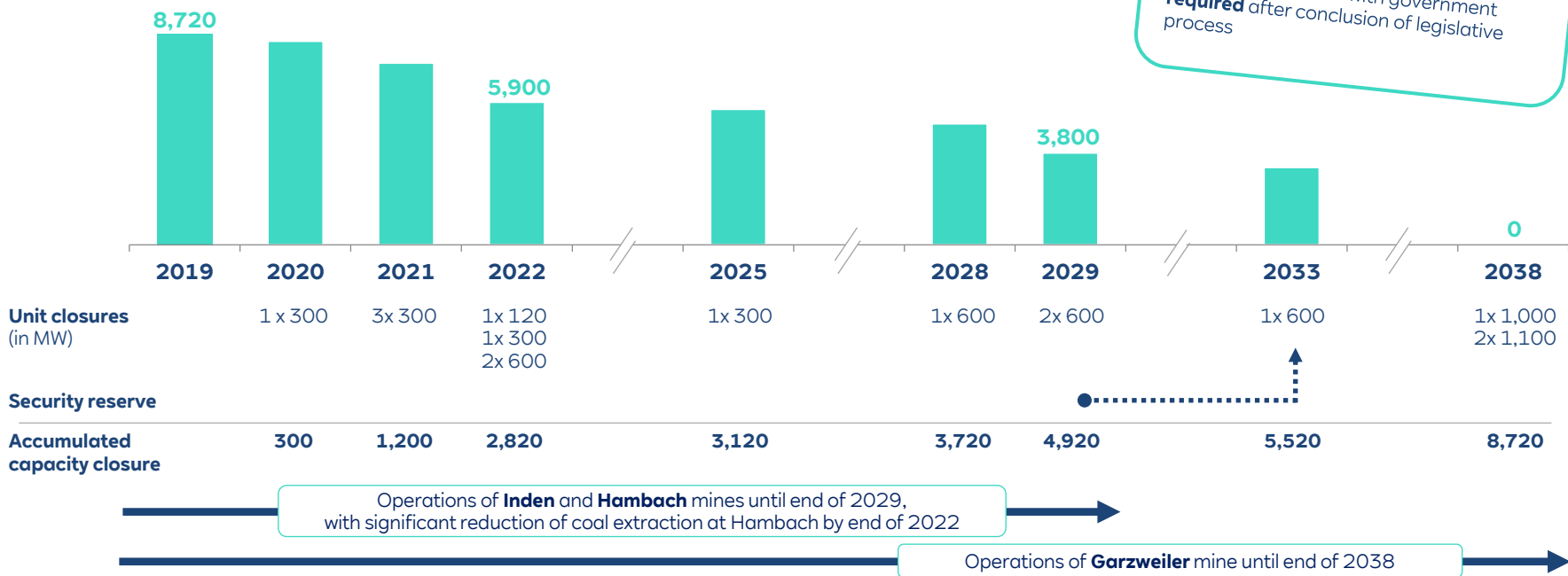
Note: As of 31 Dec 2019. | <sup>1</sup> Excluding power plants in security reserve and refining power plants.



# Lignite:

## Agreed closure plan for RWE's lignite operations

### Year-end installed capacity (MW)<sup>1</sup>

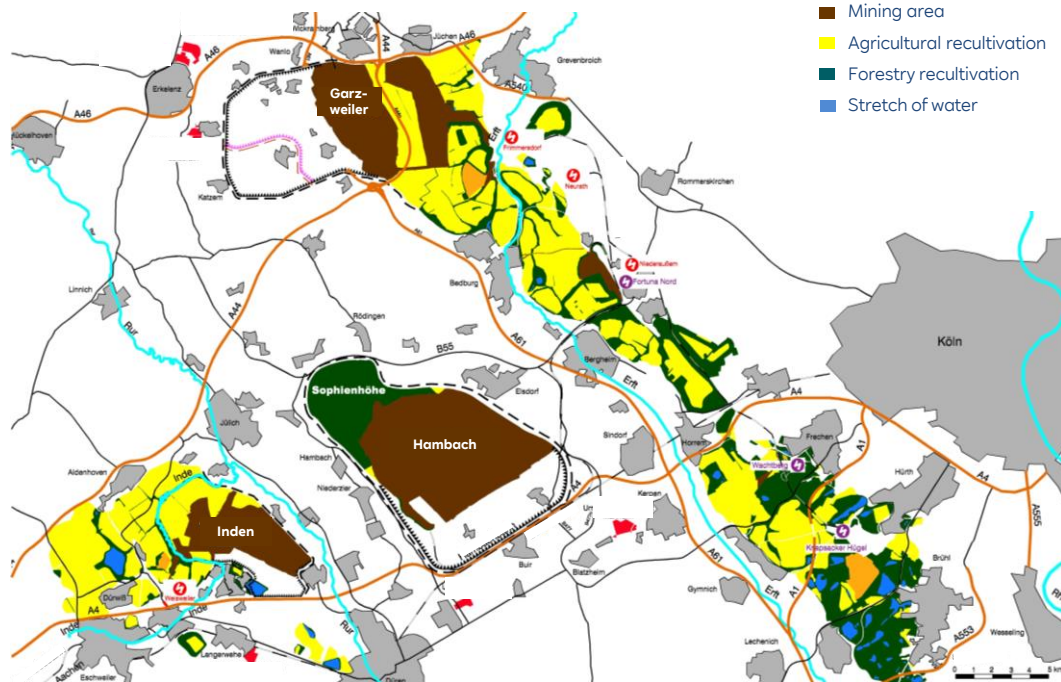


<sup>1</sup>Excludes 1.5 GW already placed in security reserve.



# Lignite:

## Longstanding experience in recultivation



### Agricultural recultivation:

7 years biological activation of fields by RWE  
Afterwards farmer take over the fields for planting

**Quality of land guaranteed by RWE for 25 years**



### Forestry recultivation:

Near-natural forest management:  
Plants from tree nurseries and tree seeds from the territory of the mining areas are cultivated

**By mid of the century 1,900<sup>1</sup> more hectares of forest will be reforested than were cleared**



### Stretch of water:

RWE creates large shallow waters for more biodiversity

**More than 650 hectares of lakes, marshlands and ponds have been completed**



### Biodiversity

Resettlement of animals and protection of species in accordance with RWE's biodiversity strategy (BioDiS)

**About 3,000 animal species and over 1,500 plant species have been identified**

Note: As of January 2020. | <sup>1</sup> Current approval status.



# Hard coal:

## Two plants remaining in Germany

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**4.7 TWh** power generation<sup>1</sup>



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**2.3 GW** installed capacity<sup>2</sup>



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Own operated power plants

- Ibbenbüren (794 MW)
- Westfalen E (764 MW)

Contractually secured plant

- GKM<sup>3</sup> (783 MW<sup>2</sup>)



### Hard coal closure plan

Responsible and socially acceptable phaseout of coal in accordance with the recommendations of the Growth, Structural Change and Employment Commission expected.

<sup>1</sup> Accounting view as of fiscal year 2019. | <sup>2</sup> Pro rata view as of 31 Dec 2019. | <sup>3</sup> RWE pro rata stake 35%.



# Nuclear:

## Experience across entire nuclear plant lifecycle

**20.1 TWh**  
power generation



**2.6 GW**  
installed capacity



**Phaseout** of nuclear  
by 2022



Secure and efficient  
**dismantling**



Nuclear units in Germany	Net capacity (GW)	End of operations	Status			
			Spent fuel removal	Decomm. licence	Decomm. progress	
Emsland	1.3	2022	2027	Pending	-	Operational (2.6 GW)
Gundremmingen C	1.3	2021	2026	Pending	-	
Gundremmingen B	1.3	2017	2022	✓		Post-operation (1.3 GW)
Biblis A	1.2	2011	✓	✓		In decom- missioning (4.1 GW)
Biblis B	1.2	2011	✓	✓		
Mülheim-Kärlich	1.2	1988	✓	✓		
Lingen KWL	0.3	1979	✓	✓		
Gundremmingen A	0.2	1977	✓	✓		
Kahl <sup>1</sup>	0.01	1985	✓	✓		Decommissioned

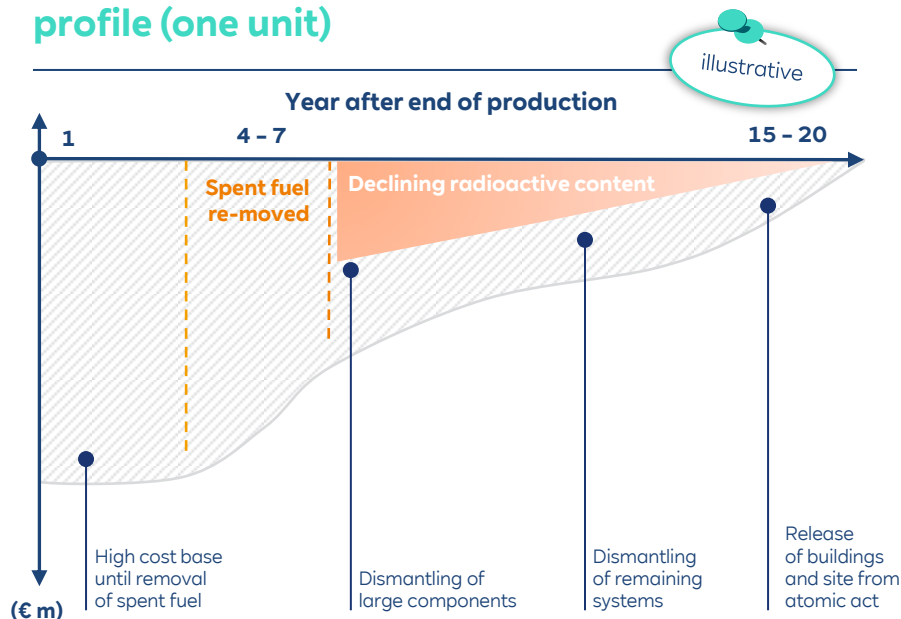
Note: As of 31 Dec 2019; excluding EPZ. <sup>1</sup> 20% owned by PreussenElektra (E.ON).



# Nuclear:

## Cash flow profile of provisions driven by timing of individual shutdowns

### Example: Decommissioning cash flow profile (one unit)



### Accounting of provisions

Nuclear provisions (31.12.2019)	€6.7 bn
Discount rate	0.0 %
Escalation rate	1.5 %
Sensitivity (+/-10 bps change in real discount rate)	c. -/+€50 m

### Utilisation of provisions

- Stable utilisation of provisions (€300 m – €450 m p.a.) until ~2021
- Increased utilisation of provisions due to further shutdowns (€400 m – €600 m p.a.) from 2021 onwards
- Clear reduction in utilisation of provisions from ~2030 onwards





# Nuclear:

## Decommissioning steps

### Basic site management

Periodic inspection, ongoing supervision and maintenance of systems and buildings

Downsizing/replacement of infrastructure

Final shutdown of systems

Operation and maintenance of adjusted infrastructure systems



### Dismantling

Dismantling of systems and components

Decontamination of buildings

Release of buildings and site

### Materials & waste treatment

Decontamination of materials

Release of materials

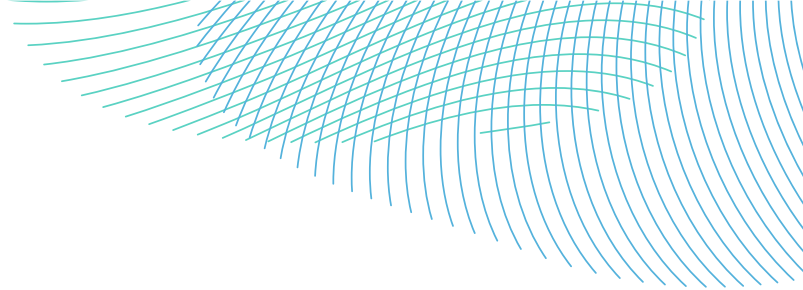
Sorting of materials

Treatment<sup>1</sup> of radioactive waste

### Responsibility of State

Interim storage & final disposal

<sup>1</sup> For example melting, incineration, compaction, packaging and documentation.




# Appendix

# Accounting treatment<sup>1</sup> of renewable assets

	Model 1	Model 2	Model 3a	Model 3b	Model 4
	Included in the consolidated financial statements		Equity method	Joint operations	Other investments
RWE share of project <sup>2</sup>	100%	>50%, <100%	>20%, =<50%	>20%, =<50%	>0% - 20%
<b>Capacity view</b>					
Pro rata MW	100%	pro rata	pro rata	pro rata	pro rata
Accounting MW	100%	100%	n/a	pro rata	n/a
<b>Profit and loss statement</b>					
Contribution to EBITDA	100%	100%	0%	pro rata	0%
Contribution to depreciation	100%	100%	0%	pro rata	0%
Contribution to EBIT	100%	100%	0%	pro rata	0%
Contribution to at equity income in EBIT/DA	n/a	n/a	pro rata	n/a	n/a
Contribution to income other investments in EBIT/DA	n/a	n/a	n/a	n/a	pro rata
Minorities	n/a	(100% - RWE share)	n/a	n/a	n/a
<b>Cash flow statement</b>					
Consideration in operating cash flow	100%	100%	pro rata <sup>3</sup>	pro rata	pro rata <sup>3</sup>
Consideration in investing cash flow	100%	100%	pro rata <sup>4</sup>	pro rata	pro rata <sup>4</sup>
Consideration in financing cash flow <sup>5</sup>	n/a	(100% - RWE share)	n/a	n/a	n/a
<b>Balance sheet assets</b>					
Consolidated assets	100%	100%	n/a	pro rata	n/a
Equity investments	n/a	n/a	pro rata	n/a	n/a
Other investments	n/a	n/a	n/a	n/a	pro rata



<sup>1</sup> Accounting treatment refers to list of shareholding tables in RWE's annual report. | <sup>2</sup> RWE's share of project corresponds to the voting rights and no adverse provisions in shareholders agreement are agreed, which would influence RWE's ability to control that company. | <sup>3</sup> Dividend. | <sup>4</sup> Capital and shareholder loan increase/decrease. | <sup>5</sup> Disregarding any financing structure (e.g. tax equity, project financing etc.).

# RWE power plant portfolio (I/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Offshore wind</b>											
Alpha Ventus 1	Germany	2010	30	0%	0	26%	8	3a	31%	FiT <sup>1</sup>	2030
Alpha Ventus 2	Germany	2009	30	0%	0	26%	8	3a	16%	FiT <sup>1</sup>	2029
Amrumbank West	Germany	2015	302	100%	302	100%	302	1	45%	FiT <sup>2</sup>	2035
Arkona-Becken Südost	Germany	2018	385	0%	0	50%	193	3a	45%	FiT <sup>3</sup>	2039
Nordsee One	Germany	2017	332	0%	0	14%	45	4	n.a.	FiT <sup>2</sup>	2037
Nordsee Ost	Germany	2015	295	100%	295	100%	295	1	34%	FiT <sup>2</sup>	2034
Galloper	UK	2018	353	0%	0	25%	88	3a	46%	ROC	2037
Greater Gabbard	UK	2012	504	50%	252	50%	252	3b	38%	ROC	2032
Gwynt y Mor	UK	2015	576	50%	288	50%	288	3b	35%	ROC	2035
Humber 1	UK	2015	108	100%	108	100%	108	1	45%	ROC	2035
Humber 2	UK	2015	111	100%	111	100%	111	1	43%	ROC	2035
London Array LARYW-1	UK	2013	155	30%	46	30%	46	3b	31%	ROC	2032
London Array LARYW-2	UK	2013	158	30%	48	30%	48	3b	32%	ROC	2032
London Array LARYW-3	UK	2013	158	30%	48	30%	48	3b	41%	ROC	2032
London Array LARYW-4	UK	2013	158	30%	48	30%	48	3b	41%	ROC	2032
North Hoyle	UK	2004	60	0%	0	0%	0	4	n.a.	n.a.	2027
Rampion 1	UK	2018	200	0%	0	30%	60	3a	29%	ROC	2037
Rampion 2	UK	2018	200	0%	0	30%	60	3a	30%	ROC	2037
Rhyl Flats	UK	2009	90	100%	90	50%	45	2	35%	ROC	2029


<sup>1</sup> EEG compression model: €154/MWh for first 12 years + 1.5 year on average (by turbine) depending on water depth and distance to shore, thereafter €39/MWh. | <sup>2</sup> EEG compression model: €194/MWh for first 8 years, then €154/MWh for 1 to 2 years on average depending on water depth and distance to shore, thereafter €39/MWh. | <sup>3</sup> EEG compression model: €184/MWh for first 8 years, then €149/MWh for further 2 years, thereafter €39/MWh. | Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (II/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Offshore wind</b>											
Robin Rigg East	UK	2010	84	100%	84	100%	84	1	34%	ROC	2030
Robin Rigg West	UK	2009	90	100%	90	100%	90	1	36%	ROC	2029
Scroby Sands	UK	2004	60	100%	60	100%	60	1	33%	ROC	2027
Thornton Bank 1	Belgium	2009	30	0%	0	27%	8	3a	28%	Other	2029
Thornton Bank 2	Belgium	2012	185	0%	0	27%	49	3a	26%	Other	2032
Thornton Bank 3	Belgium	2013	111	0%	0	27%	30	3a	47%	Other	2033
Rødsand 2	Denmark	2010	207	0%	0	20%	41	3a	45%	CfD	2022
Karehamn	Sweden	2013	48	100%	48	100%	48	1	47%	Green Certificate	2028
<b>Total offshore wind</b>			<b>5,022</b>		<b>1,918</b>		<b>2,463</b>				
 <b>Onshore wind</b>											
Barbecke	Germany	2002	14	100%	14	100%	14	1	16%	FiT	2022
Bartelsdorf	Germany	2009	32	100%	32	100%	32	1	23%	FiT	2029
Bedburg Königshovener Höhe A	Germany	2014	38	100%	38	51%	19	2	60%	FiT	2034
Bedburg Königshovener Höhe A	Germany	2015	29	100%	29	51%	15	2	60%	FiT	2034
Dargelütz	Germany	2006	22	100%	22	100%	22	1	18%	FiT	2026
Düshorner Heide	Germany	2014	26	100%	26	51%	13	2	20%	FiT	2034
Eschweiler-Fronhoven A	Germany	2017	29	100%	29	51%	15	2	27%	FiT	2037
Krusemark B	Germany	2001	11	100%	11	100%	11	1	10%	FiT	2021


Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (III/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 Onshore wind											
Lasbek	Germany	2004	11	100%	11	100%	11	1	15%	FiT	2024
Lesse A	Germany	2002	20	100%	20	100%	20	1	17%	FiT	2023
Lesse B	Germany	2002	21	100%	21	100%	21	1	22%	FiT	2030
Lichtenau	Germany	1997	11	100%	11	100%	11	1	16%	FiT	2020
Malterhausen	Germany	2002	29	100%	29	100%	29	1	10%	FiT	2022
Putlitz	Germany	2004	62	100%	62	100%	62	1	22%	FiT	2024
Schmarloh	Germany	2008	28	100%	28	100%	28	1	21%	FiT	2030
Titz-Nord	Germany	2012	21	100%	21	51%	10	2	27%	FiT	2032
Twistringen	Germany	2008	12	100%	12	100%	12	1	13%	FiT	2029
Wiedenfelder Höhe A+B	Germany	2017	13	100%	13	100%	13	1	26%	FiT	2037
Various (RWE Economic Stake < 10 MW)	Germany	various	267	various	238	various	224	various	various	various	various
Acampo Armijo	Spain	2002	18	100%	18	100%	18	1	33%	Merchant	n.a.
Aldehuelas	Spain	2005	47	100%	47	95%	45	2	32%	Other	2024
Bancal	Spain	2007	21	100%	21	100%	21	1	16%	Other	2027
Bosque Alto	Spain	2002	22	100%	22	100%	22	1	30%	Merchant	n.a.
Grisel I	Spain	2001	14	100%	14	100%	14	1	23%	Merchant (82%)	n.a.
Juno	Spain	2004	50	100%	50	99%	49	2	27%	Other	2024
Lanternoso	Spain	2005	24	100%	24	100%	24	1	32%	Other	2024
Los Labrados	Spain	2002	24	100%	24	100%	24	1	26%	Merchant	n.a.
Luna	Spain	2004	50	100%	50	99%	49	2	29%	Other	2024


Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (IV/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Onshore wind continued</b>											
Muel	Spain	1998	16	100%	16	100%	16	1	27%	Merchant	n.a.
Plana de la Balsa	Spain	2002	24	100%	24	100%	24	1	23%	Merchant	n.a.
Plana de Maria	Spain	2002	24	100%	24	100%	24	1	24%	Merchant	n.a.
Plana de Zaragoza	Spain	2002	24	100%	24	100%	24	1	28%	Merchant	n.a.
Rio Gallego I	Spain	2003	36	100%	36	100%	36	1	27%	Merchant (93%)	n.a.
Siglos	Spain	2007	18	100%	18	100%	18	1	18%	Other	2027
Urano	Spain	2004	30	100%	30	99%	30	2	23%	Other	2024
Various (RWE Economic Stake < 10 MW)	Spain	various	6	various	6	various	6	various	various	various	various
Alcamo	Italy	2011	32	100%	32	100%	32	1	28%	FIP	2026
Deliceto	Italy	2012	23	100%	23	100%	23	1	22%	FiT	2027
Florinas	Italy	2004	20	100%	20	100%	20	1	19%	expired	2016
Iardino	Italy	2005	14	100%	14	100%	14	1	17%	expired	2017
Marco A. Severino	Italy	2007	32	100%	32	100%	32	1	21%	expired	2019
Marco A. Severino II	Italy	2007	12	100%	12	100%	12	1	21%	expired	2019
Montecute	Italy	2006	42	100%	42	100%	42	1	22%	expired	2019
Morcone	Italy	2019	57	100%	57	100%	57	1	10%	CfD	2039
Piano di Corda I	Italy	2007	38	100%	38	100%	38	1	22%	FIP	2021
Poggi Alti	Italy	2006	20	100%	20	100%	20	1	20%	expired	2019
San Basilio	Italy	2010	25	100%	25	51%	13	2	22%	FiT	2025
Santa Ninfa (Trapani) (G58 part)	Italy	2007	24	100%	24	100%	24	1	24%	expired	2019

Note: As of 31 Dec 2019; Rounding differences may occur.


# RWE power plant portfolio (V/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Onshore wind continued</b>											
Serra Pelata I	Italy	2007	42	100%	42	100%	42	1	27%	expired	2019
Serra Pelata II	Italy	2010	12	100%	12	100%	12	1	27%	expired	2019
Ururi	Italy	2011	26	100%	26	51%	13	2	23%	FiT	2025
Vizzini	Italy	2006	24	100%	24	100%	24	1	21%	expired	2018
Various (RWE Economic Stake < 10 MW)	Italy	various	33	various	33	various	25	various	various	various	various
Westereems I	Netherlands	2009	150	100%	150	100%	150	1	26%	Merchant	n.a.
Westereems II	Netherlands	2012	12	100%	12	100%	12	1	26%	FiT	2027
Zuidwester	Netherlands	2016	90	100%	90	100%	90	1	32%	FiT	2031
Various (RWE Economic Stake < 10 MW)	Netherlands	various	36	various	36	various	36	various	various	various	various
Barzowice	Poland	2011	21	100%	21	100%	21	1	37%	Green Certificate	2026
Krzęcin	Poland	2012	14	100%	14	100%	14	1	32%	Certificate	2027
Nowy Staw A	Poland	2013	45	100%	45	100%	45	1	35%	Certificate	2028
Nowy Staw A	Poland	2015	28	100%	28	100%	28	1	35%	Certificate	2028
Opalenica	Poland	2015	17	100%	17	100%	17	1	31%	Certificate	2030
Piecki	Poland	2010	32	100%	32	51%	16	2	24%	Certificate	2025
Suwalki	Poland	2009	41	100%	41	100%	41	1	28%	Certificate	2024
Taciewo	Poland	2012	30	100%	30	100%	30	1	25%	Certificate	2026
Tychowo	Poland	2011	35	100%	35	100%	35	1	25%	Certificate	2025
Wielkopolska	Poland	2010	53	100%	53	100%	53	1	29%	Green Certificate	2025
Wielkopolska 2a	Poland	2014	15	100%	15	100%	15	1	27%	Green Certificate	2029

Note: As of 31 Dec 2019; Rounding differences may occur.




# RWE power plant portfolio (VI/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Onshore wind continued</b>											
Wysoka II	Poland	2014	48	100%	48	100%	48	1	23%	Green Certificate	2029
Various (RWE Economic Stake < 10 MW)	Poland	various	8	various	8	various	8	various	various	various	various
Knäred	Sweden	2012	20	100%	20	100%	20	1	30%	Green Certificate	2027
Nybro	Sweden	2011	20	100%	20	90%	18	2	35%	Green Certificate	2026
Örken	Sweden	2012	18	100%	18	100%	18	1	30%	Green Certificate	2027
Villköl	Sweden	2013	21	100%	21	100%	21	1	32%	Green Certificate	2027
Various (RWE Economic Stake < 10 MW)	Sweden	various	37	various	37	various	31	various	various	various	various
Bad A Cheo	UK	2019	27	100%	27	100%	27	1	26%	CfD	2034
Bowbeat (Emly Bank)	UK	2002	16	100%	16	100%	16	1	24%	ROC	2027
Bowbeat (Roughside)	UK	2002	16	100%	16	100%	16	1	24%	ROC	2027
Bradwell	UK	2013	21	100%	21	100%	21	1	27%	ROC	2033
Brechfa Forest West	UK	2018	57	100%	57	100%	57	1	33%	ROC	2038
Camster	UK	2013	50	100%	50	100%	50	1	37%	ROC	2033
Deucheran Hill	UK	2002	16	100%	16	100%	16	1	18%	ROC	2026
Goole Fields A	UK	2013	33	100%	33	100%	33	1	26%	ROC	2033
Goole Fields B	UK	2016	35	100%	35	100%	35	1	27%	ROC	2036
Kiln Pit Hill	UK	2012	14	100%	14	100%	14	1	22%	ROC	2032
Knabs Ridge	UK	2007	16	100%	16	100%	16	1	18%	ROC	2027
Little Cheyne Court	UK	2008	60	100%	60	59%	35	2	25%	ROC	2028
Middlemoor	UK	2013	54	100%	54	51%	28	2	29%	ROC	2033



Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (VII/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Onshore wind continued</b>											
Mynydd Y Gwair	UK	2019	33	100%	33	100%	33	1	23%	CfD	2034
Novar 2	UK	2012	37	100%	37	100%	37	1	20%	ROC	2033
Rosehall	UK	2013	25	100%	25	100%	25	1	24%	ROC	2032
Stags Holt	UK	2007	20	100%	20	100%	20	1	21%	ROC	2027
Tween Bridge	UK	2012	44	100%	44	100%	44	1	26%	ROC	2032
Various (RWE Economic Stake < 10 MW)	UK	various	166	various	135	various	137	various	various	various	various
Dromadda Beg	Ireland	2018	10	100%	10	100%	10	1	34%	FiT	2032
Various (RWE Economic Stake < 10 MW)	Portugal	various	8	various	0	various	3	various	various	various	various
Anacacho	US	2012	100	100%	100	100%	100	1	38%	REC/PTC	2022
Bruenning's Breeze	US	2017	228	100%	228	100%	228	1	34%	REC/PTC	2027
Champion	US	2008	127	100%	127	100%	127	1	33%	REC	n.a.
Colbeck's Corner	US	2016	200	100%	200	100%	200	1	49%	REC/PTC	2026
Forest Creek	US	2007	124	100%	124	100%	124	1	32%	REC	n.a.
Grand View I	US	2014	211	0%	0	50%	106	3a	49%	REC/PTC	2024
Inadale	US	2009	197	100%	197	100%	197	1	32%	REC	n.a.
Magic Valley I	US	2012	203	0%	0	20%	41	3a	38%	REC/PTC	2022
Munnsville	US	2007	35	100%	35	100%	35	1	11%	REC	n.a.
Panther Creek - Phase I	US	2008	143	100%	143	100%	143	1	26%	REC	n.a.
Panther Creek - Phase II	US	2008	116	100%	116	100%	116	1	23%	REC	n.a.
Panther Creek - Phase III	US	2009	200	100%	200	100%	200	1	33%	REC	n.a.


Note: As of 31 Dec 2019; Rounding differences may occur.


# RWE power plant portfolio (VIII/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW		%		
 <b>Onshore wind continued</b>											
Papalote Creek I	US	2009	180	0%	0	50%	90	3a	33%	REC	n.a.
Papalote Creek II	US	2010	200	0%	0	50%	100	3a	32%	REC	n.a.
Pioneer Trail	US	2012	150	100%	150	100%	150	1	37%	REC/PTC	2021
Pyron	US	2009	249	100%	249	100%	249	1	35%	REC	n.a.
Radford's Run	US	2017	306	100%	306	100%	306	1	42%	REC/PTC	2027
Roscoe	US	2008	209	100%	209	100%	209	1	30%	REC	n.a.
Sand Bluff	US	2008	90	100%	90	100%	90	1	29%	REC	n.a.
Settlers Trail	US	2011	150	100%	150	100%	150	1	31%	REC/PTC	2021
Stella	US	2018	201	100%	201	100%	201	1	38%	REC/PTC	2028
Stony Creek	US	2009	53	0%	0	50%	26	3a	31%	REC	n.a.
Wildcat I	US	2012	203	0%	0	20%	41	3a	27%	REC/PTC	2022
<b>Total onshore wind</b>			<b>7,034</b>		<b>5,916</b>		<b>6,128</b>				
 <b>Solar</b>											
West of the Pecos	US	2019	100	100%	100	100%	100	1	12%	ITC	2024
Various (RWE Economic Stake < 10 MW)	US	various	27	various	25	various	27	various	various	various	various
Stawiec	Poland	2019	1	100%	1	100%	1	1	13%	CfD	2034
Various (RWE Economic Stake < 10 MW)	Germany	various	2	various	2	various	2	various	various	various	various
Various (RWE Economic Stake < 10 MW)	Spain	various	51	various	0	various	7	various	various	various	various
<b>Total solar</b>			<b>181</b>		<b>128</b>		<b>137</b>				

Note: As of 31 Dec 2019; Rounding differences may occur.


# RWE power plant portfolio (IX/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Accounting treatment	Load factor 2019	Support regime	Support expiry
			MW	%	MW	%	MW				
 <b>Storage</b>											
Iron Horse (ES)	US	2017	10	0%	0	100%	10	4	0%	ITC	2047
Texas Waves - Inadale	US	2018	10	100%	10	100%	10	1	0%	ITC	2033
Texas Waves - Pyron	US	2018	10	100%	10	100%	10	1	0%	ITC	2033
<b>Total storage</b>			<b>30</b>		<b>20</b>		<b>30</b>				

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 <b>Hydro</b>								
Detzem	Germany	1962	24	100%	24	100%	24	
Enkirch	Germany	1966	18	100%	18	100%	18	
Fankel	Germany	1963	16	100%	16	100%	16	
Heimbach	Germany	1905	16	100%	16	100%	16	
Koblenz	Germany	1951	16	100%	16	100%	16	
Lehmen	Germany	1962	20	100%	20	100%	20	
Müden	Germany	1965	16	100%	16	100%	16	
Neckar	Germany		29	100%	29	100%	29	Deploy at our discretion on basis of long-term agreements.


Note: As of 31 Dec 2019; Rounding differences may occur.


# RWE power plant portfolio (X/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 Hydro								
Neef	Germany	1966	16	100%	16	100%	16	
RADAG Wehrkraftwerk	Germany	1933	84	100%	84	77%	65	
RADAG Wehrkraftwerk	Germany	2009	24	100%	24	77%	18	
Rhein-Main-Donau	Germany		10	100%	10	100%	10	Deploy at our discretion on basis of long-term agreements.
Schwammenauel	Germany	1938	14	100%	14	100%	14	
Serrig	Germany	1985	12	100%	12	100%	12	
Trier	Germany	1962	19	100%	19	100%	19	
Wintrich	Germany	1965	20	100%	20	100%	20	
Zeltingen	Germany	1964	14	100%	14	100%	14	
Various (RWE Economic Stake < 10 MW)	Germany	various	66	various	66	various	66	
Linne HH 1-4	Netherlands	1989	11	100%	11	100%	11	
Dolgarrog High Head	UK	1907	18	100%	18	100%	18	
Dolgarrog Low Head	UK	1907	15	100%	15	100%	15	
Various (RWE Economic Stake < 10 MW)	UK	various	49	various	49	various	49	
Various (RWE Economic Stake < 10 MW)	Spain	various	12	100%	12	various	10	
Various (RWE Economic Stake < 10 MW)	France	various	45	various	45	various	45	
Various (RWE Economic Stake < 10 MW)	Portugal	various	28	various	16	various	17	
<b>Total hydro</b>			<b>613</b>		<b>601</b>		<b>575</b>	

Note: As of 31 Dec 2019; Rounding differences may occur.


# RWE power plant portfolio (XI/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 <b>Biomass</b>								
Neurath	Germany	2007	1	100%	1	100%	1	Biogas power plant.
Siegen-Wittgenstein	Germany	2009	5	100%	5	100%	5	Sold as of end of January 2020.
Amercentrale ST 9	Netherlands	1993	315	100%	315	100%	315	50% biomass co-firing.
Eemshaven A	Netherlands	2014	117	100%	117	100%	117	15% biomass co-firing.
Eemshaven B	Netherlands	2014	117	100%	117	100%	117	15% biomass co-firing.
Markinch	UK	2014	55	100%	55	100%	55	
<b>Total biomass</b>			<b>610</b>		<b>610</b>		<b>610</b>	

 <b>Gas</b>								
Dortmund	Germany	2004	26	100%	26	100%	26	
Emsland B	Germany	1973	475	100%	475	100%	475	
Emsland C	Germany	1974	475	100%	475	100%	475	
Emsland D	Germany	2010	887	100%	887	100%	887	
Gersteinwerk F	Germany	1973	401	100%	401	100%	401	
Gersteinwerk G	Germany	1973	400	100%	400	100%	400	
Gersteinwerk I	Germany	1973	405	100%	405	100%	405	
Gersteinwerk Werne Kv1	Germany	1984	112	100%	112	100%	112	
GuD Dormagen	Germany	2000	326	100%	326	100%	326	
GuD Dormagen	Germany	2000	260	100%	260	100%	260	Capacity due to economic stake 0 MW.



Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (XII/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 <b>Gas continued</b>								
Weisweiler VGT G, H	Germany	2006	400	100%	400	100%	400	Two topping gas turbines at the Weisweiler site.
Clauscentrale C	Netherlands	2012	1,304	100%	1,304	100%	1,304	
Moerdijk	Netherlands	1996	348	100%	348	100%	348	
Moerdijk 2	Netherlands	2012	426	100%	426	100%	426	
Swentibold CC	Netherlands	1999	245	100%	245	100%	245	
Cheshire	UK	2000	40	100%	40	100%	40	
Cheshire East & West	UK	2016-18	19	30%	19	30%	19	
Didcot B	UK	1996-1997	1,440	100%	1,440	100%	1,440	
Great Yarmouth	UK	2001	411	100%	398	100%	398	
Grimsby	UK	2018	20	100%	20	100%	20	
Hythe	UK	2005	56	100%	56	100%	56	
Little Barford	UK	1994	727	100%	727	100%	727	
Pembroke	UK	2012	2,181	100%	2,181	100%	2,181	
Phillips Petroleum	UK	1999	55	100%	55	100%	55	
Staythorpe	UK	2010	1,740	100%	1,740	100%	1,740	
Denizli	Turkey	2013	787	100%	787	70%	551	
<b>Total gas</b>			<b>13,966</b>		<b>13,953</b>		<b>13,717</b>	

Note: As of 31 Dec 2019; Rounding differences may occur.


# RWE power plant portfolio (XIII/XVI)


Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 <b>Pumped storage and batteries</b>								
Koepchenwerk	Germany	1989	165	100%	165	100%	165	
SEO Vianden	Germany		1,294	100%	1,294	100%	1,294	Deploy at our discretion on basis of long-term agreements.
Schluchsee	Germany		1,740	50%	870	50%	870	Deploy at our discretion on basis of long-term agreements.
Battery storage Allgäuspeicher	Germany	2018	1	100%	1	100%	1	
Battery storage Herdecke	Germany	2018	7	100%	7	100%	7	
Battery storage Hoppecke	Germany	2018	1	100%	1	100%	1	
<b>Total pumped storage and batteries</b>			<b>3,208</b>		<b>2,338</b>		<b>2,338</b>	
 <b>Oil</b>								
Aberthaw OCGT	UK	1971-79	51	100%	51	100%	51	To be closed as of 31 March 2020.
Cowes OCGT	UK	1982	140	100%	140	100%	140	
Didcot OCGT	UK	1972-1975	96	100%	96	100%	96	
Little Barford OCGT	UK	2006	17	100%	17	100%	17	
<b>Total oil</b>			<b>304</b>		<b>304</b>		<b>304</b>	

Note: As of 31 Dec 2019; Rounding differences may occur.




# RWE power plant portfolio (XIV/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 <b>Hard coal</b>								
GKM	Germany		1,958	40%	783	35%	783	Deploy at our discretion on basis of long-term agreements.
Ibbenbüren	Germany	1985	794	100%	794	100%	794	
Westfalen E	Germany	2014	764	100%	764	100%	764	
Amercentrale ST 9	Netherlands	1993	316	100%	316	100%	316	
Eemshaven A	Netherlands	2014	660	100%	660	100%	660	
Eemshaven B	Netherlands	2014	660	100%	660	100%	660	
<b>Total hard coal</b>			<b>5,152</b>		<b>3,977</b>		<b>3,977</b>	

 <b>Lignite</b>								
Frimmersdorf P	Germany	1966	284	100%	284	100%	284	In security reserve.
Frimmersdorf Q	Germany	1970	278	100%	278	100%	278	In security reserve.
Goldenberg	Germany	1993	40	100%	40	100%	40	
Neurath A	Germany	1972	294	100%	294	100%	294	
Neurath B	Germany	1972	294	100%	294	100%	294	
Neurath C	Germany	1973	292	100%	292	100%	292	In security reserve.
Neurath D	Germany	1975	607	100%	607	100%	607	
Neurath E	Germany	1976	604	100%	604	100%	604	
Neurath F (BoA 3)	Germany	2012	1,060	100%	1,060	100%	1,060	
Neurath G (BoA 2)	Germany	2012	1,060	100%	1,060	100%	1,060	



Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (XV/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 Lignite								
Niederaussem C	Germany	1965	295	100%	295	100%	295	
Niederaussem D	Germany	1968	297	100%	297	100%	297	
Niederaussem E	Germany	1970	295	100%	295	100%	295	In security reserve.
Niederaussem F	Germany	1971	299	100%	299	100%	299	In security reserve.
Niederaussem G	Germany	1974	628	100%	628	100%	628	
Niederaussem H	Germany	1974	632	100%	632	100%	632	
Niederaussem K (BoA1)	Germany	2002	944	100%	944	100%	944	
Weisweiler E	Germany	1965	321	100%	321	100%	321	
Weisweiler F	Germany	1967	321	100%	321	100%	321	
Weisweiler G	Germany	1974	660	100%	660	100%	660	
Weisweiler H	Germany	1975	660	100%	660	100%	660	
Refining plants (Berrenrath, Fortuna, Wachtberg)	Germany	various	90	100%	90	100%	90	
<b>Total lignite</b>			<b>10,255</b>		<b>10,255</b>		<b>10,255</b>	

Note: As of 31 Dec 2019; Rounding differences may occur.

# RWE power plant portfolio (XVI/XVI)

Power plant	Country	Commissioned	Net capacity	RWE's legal consolidation stake		Pro rata view		Comment
			MW	%	MW	%	MW	
 <b>Nuclear</b>								
Gundremmingen C	Germany	1984	1,288	100%	1,288	100%	1,288	
KKW Emsland	Germany	1988	1,336	100%	1,336	100%	1,336	
EPZ	Netherlands	1973	485	30%	146	30%	146	
<b>Total nuclear</b>			<b>3,109</b>		<b>2,770</b>		<b>2,770</b>	
<b>Other</b>								
MHKW Karnap (waste)	Germany	1987	38	100%	38	100%	38	
MVA Weisweiler (waste)	Germany	1996	27	100%	27	100%	27	
SRS Ecotherm (waste)	Germany	2003	1	100%	1	100%	1	
EPZ (wind)	Netherlands	2004/2012	24	30%	7	30%	7	At EPZ nuclear power plant.
<b>Total other</b>			<b>90</b>		<b>73</b>		<b>73</b>	
 <b>Total generation capacity</b>			<b>49,574</b>		<b>42,863</b>		<b>43,377</b>	

Note: As of 31 Dec 2019; Rounding differences may occur.

# Glossary

## A

APAC Asia Pacific

## B

bcm Billion cubic metre  
bcma Billion cubic metres per annum  
bps basis point  
BREF-LCP Best Available Techniques Reference – Large Combustion Plants

## C

C&I Customers Commercial and Industrial Customers  
CAO Commercial Asset Optimisation  
CCGT Combined Cycle Gas Turbine  
CCS Carbon Capture and Storage  
CfD Contract for Difference  
CHO Chief Human Resource Officer  
COO Chief Operational Officer  
CHP Combined Heat and Power  
CO<sub>2</sub>e Carbon dioxide equivalent  
COD Cash on Delivery  
CTO Chief Technology Officer

## E

ECT Easy Commodity Trader  
EMR Energy Market Reform  
ETS Emission Trading System

## F

FIT Feed-in tariff  
FIP Feed-in premium

## G

GHG Greenhouse gas

## I

IED Industrial Emissions Directive  
IRR Internal Rate of Return  
ITC Investment Tax Credit

## L

LCOE Levelised Cost of Electricity  
LGC Large Scale Generation Certificate  
LOLE Loss of load expectation  
LSE Load serving entity

## M

MACRS Modified Accelerated Cost Recovery System  
MWh<sub>el</sub> Megawatt hour electrical energy  
MWp Megawatt peak  
MSR Market Stability Reserve  
Mt Metric tonnes

## N

NECP National Energy and Climate Plan  
NOx Nitrogen oxide

## O

OCGT Open Cycle Gas Turbine  
OREC Offshore Renewable Energy Certificate  
OTC Over-the-counter  
PFC Perfluoro carbon  
PPA Purchasing Power Agreements  
PSA Power Supply Agreement  
PTC Production Tax Credit

## R

REA Renewable Energy Act  
RED Renewable Energy Directive  
RES Renewables  
REC Renewable Energy Certificate  
ROC Renewable Obligation Certificate  
RoE Rest of Europe  
PRS Renewable Portfolio Standard

## S

SDE Stimulation Renewable Energy  
SDGs Sustainable Development Goals

## T

tCO<sub>2</sub> Total carbon dioxide  
TNAC Total number of allowances in circulation

TSO Transmission System Operator

## U

UC Unit Contingent  
UCTE Union for the Coordination of the Transmission of Electricity

## V

VaR Value at Risk  
VPP Virtual Power Plant

## Country Codes

AL	Albania	BG	Bulgaria	DE	Germany	FR	France	IE	Ireland	LT	Lithuania	MX	Mexico	RO	Romania	TR	Turkey
AT	Austria	CA	Canada	DK	Denmark	GB	Great Britain	IN	India	LU	Luxembourg	NL	Netherlands	RS	Serbia	US	United States of America
AU	Australia	CH	Switzerland	EE	Estonia	GR	Greece	IT	Italy	LV	Latvia	NO	Norway	SE	Sweden		
BA	Bosnia Herzegovina	CL	Chile	ES	Spain	HR	Croatia	JP	Japan	ME	Montenegro	PL	Poland	SI	Slovenia		
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## Financial Calendar

- **14 May 2020**  
Interim statement on the first quarter of 2020
- **26 June 2020**  
Annual General Meeting (fully virtual event)
- **13 August 2020**  
Interim report on the first half of 2020
- **12 November 2020**  
Interim statement on the first three quarters of 2020
- **16 March 2021**  
Annual Report for fiscal 2020



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# RWE

