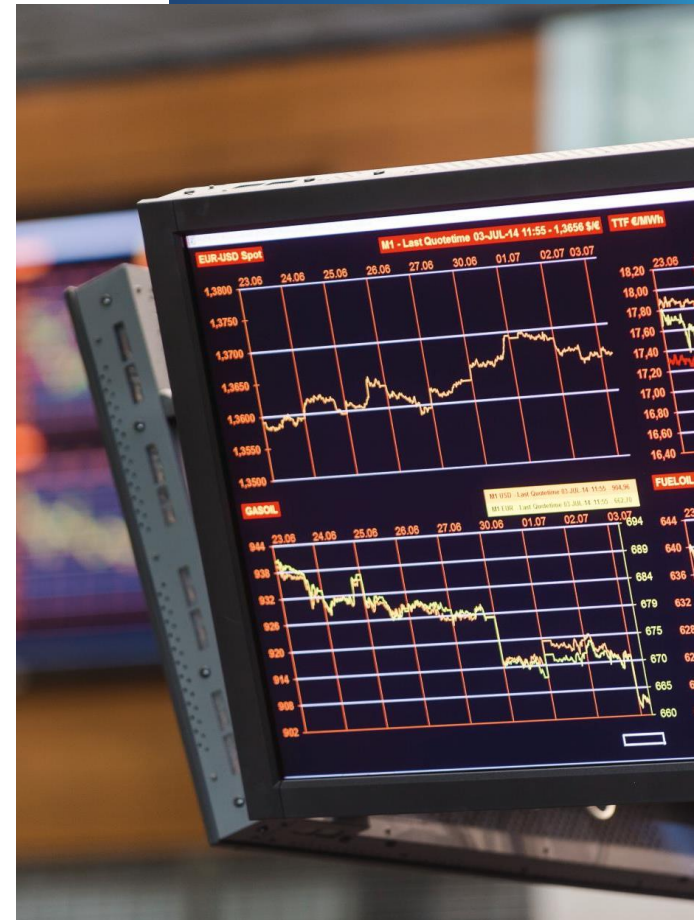


Implicit Fuel Hedge

Understanding the value of RWE's hedging approach

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Tom Glover, Chief Commercial Officer CAO
RWE Supply & Trading



Powering. Reliable. Future.

RWE

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RWE follows a risk mitigating and value enhancing hedging strategy

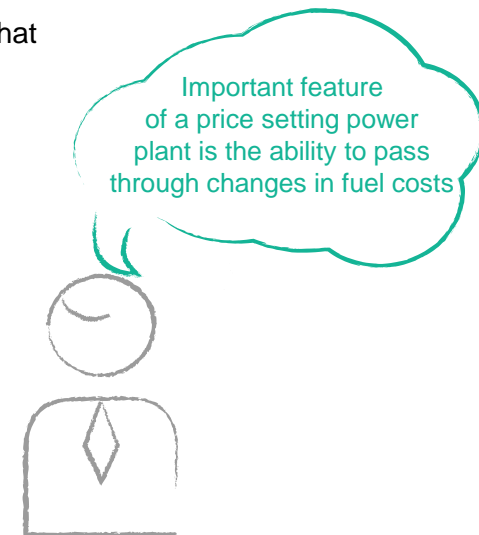
- > Risk mitigating hedging strategy focuses on reducing commodity price risks of outright generation position (Lignite & Nuclear)
- > Earnings from RWE's lignite and nuclear power plants are positively correlated to outright power prices and can be defined as "long power" and "short carbon"
- > A perfect hedge of the outright ("long") power position against commodity price risks would be to sell power (fully hedged)
- > However, liquidity in national power markets can be limited and therefore constrain hedging volumes. Further, it is sometimes forecast that the spreads are undervalued

➤ RWE generally covers outright position first by implicit fuel hedging

- > Power prices in any time period are determined by the marginal or price setting power plants during that period, which are often hard-coal or gas-fired power plant in Germany
- > Therefore, power prices correlate well with the price setting fuel complex (coal, gas and CO₂)
- > Selling the fuel complex is therefore an adequate proxy hedge to sell outright power, mitigating the majority, but not all, of the risk and allowing to retain any upside in spreads
- > The fuel complex matches the estimated ratio at time gas, coal (and other) power stations are the price setting power plant

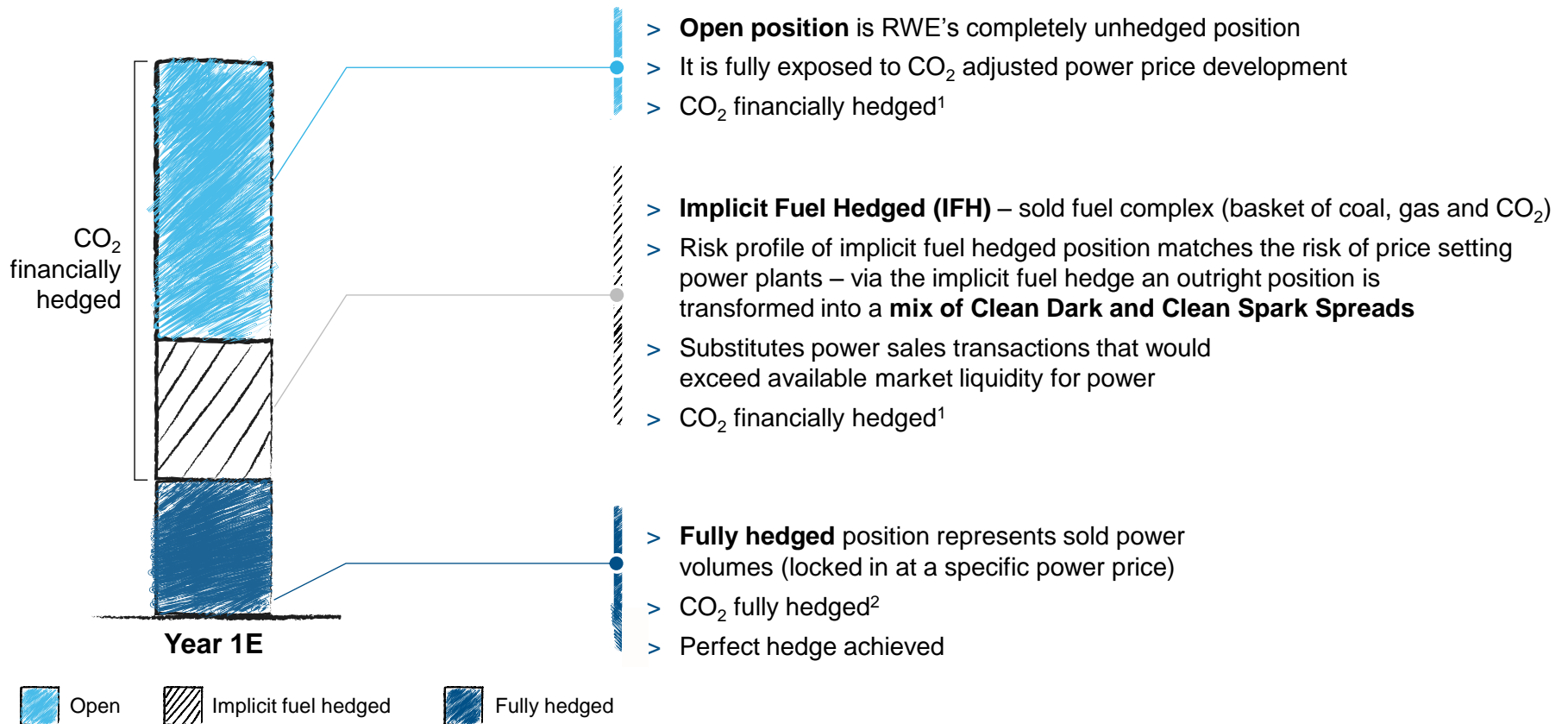


- > Specific proportion of CO₂ intensity of fuel complex is smaller than specific CO₂ intensity for RWE's outright generation
- > RWE buys CO₂ certificates to fill this gap – CO₂ financially hedged (earnings-neutral)



Hedge path of outright production volume – RWE differentiates between two hedge types

Hedging types of outright production volume



¹ CO₂ requirements are covered to close the gap between higher CO₂ intensity of outright generation and CO₂ intensity of the price setting power plant | ² Total CO₂ requirements covered

Valuation of average hedge price derives from both hedged positions and is driven by spreads & hedge volume

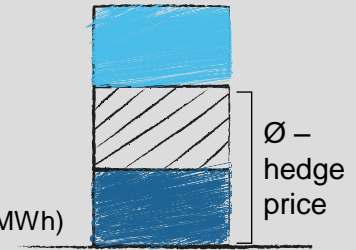
$$\emptyset \text{ Hedge price}_t = p\% * (FC + PSS_t) + f\% * PWR$$

\emptyset hedge price_t
p%
f%

average Hedge price at t (€/MWh)
implicit fuel hedged ratio (%)¹
fully hedged ratio (%)¹

FC
PWR
PSS_t

weighted average hedge price for all implicit fuel hedges (€/MWh)
weighted average hedge price for all power hedges (€/MWh)
Price Setting Spread at t (€/MWh)



- > Average hedge price is the weighted sum of the hedged fuel complex (implicit fuel hedged) and the hedged power price (fully hedged)
- > Current Price Setting Spread is added to hedged fuel complex to reflect required conversion from implicit fuel hedged into fully hedged at a later point in time. This conversion is priced into the average hedge price at current market levels

Valuation of \emptyset -Hedge price – Impact of changes in parameters

ILLUSTRATIVE

What if prices change²...

- > ...power price increases, but fuel complex increases less
- > ...power price increases, but fuel complex increases more
- > ...power price and fuel complex change in an equal proportion

Impact...

- ➔ Increase of price setting spread hence hedge price increases
- ➔ Decrease of price setting spread hence the hedge price decreases
- ➔ No change of price setting spread hence neutral for hedge price

What if hedge proportions change...

- > ...change open position into implicit fuel hedge or fully hedge
- > ...change implicit fuel hedge into fully hedge

Impact...

- ➔ Hedge price increases, if current power price > \emptyset hedge price
- ➔ Hedge price decreases, if current power price < \emptyset hedge price
- ➔ Neutral for hedge price

¹ Note that p% + f% = 100% | ² Only relevant for implicit fuel hedged volume

Collection of average hedge price calculations illustrating the impact of changes in parameters on its development

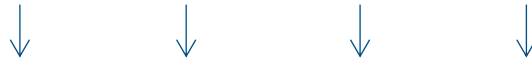
Implicit Fuel Hedge: Overview of scenarios illustrating development of the average hedge price - ILLUSTRATIVE

Reminder

$$\bar{\text{Hedge price}}_t = p\% * (FC + PSS_t) + f\% * PWR$$

Market situation

	A	B	C	D
Power Price – PWR _t (€/MWh)	29	35	35	40
Fuel Complex – FC _t (€/MWh)	25	31	28	37
Price Setting Spread – PSS _t (€/MWh)	4	4	7	3



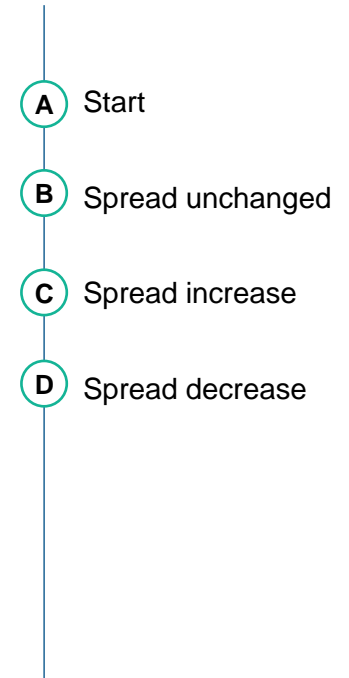
Hedge situation

Proportion Proxy Hedged (p%)	75%	75%	75%	75%
Proportion Fully Hedged (f%)	25%	25%	25%	25%

Weighted Hedge Price Proxy Hedged (€/MWh)	21,8	21,8	24,0	21,0
FC (€/MWh)	25,0	25,0	25,0	25,0
FC + PSS _t (€/MWh)	29,0	29,0	32,0	28,0

Weighted Hedge Price Fully Hedged (€/MWh)	7,3	7,3	7,3	7,3
PWR (€/MWh)	29,0	29,0	29,0	29,0

Ø Hedge price_t (€/MWh)	29,0	29,0 →	31,3 ↗	28,3 ↘
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Note: Changes in the Ø hedge price stemming from different hedge proportions would require a more comprehensive formula

Profitability of lignite plants are determined by hedged power prices and hedged carbon prices

Deep dive on commercial implications of RWE's 'Lignite' outright position

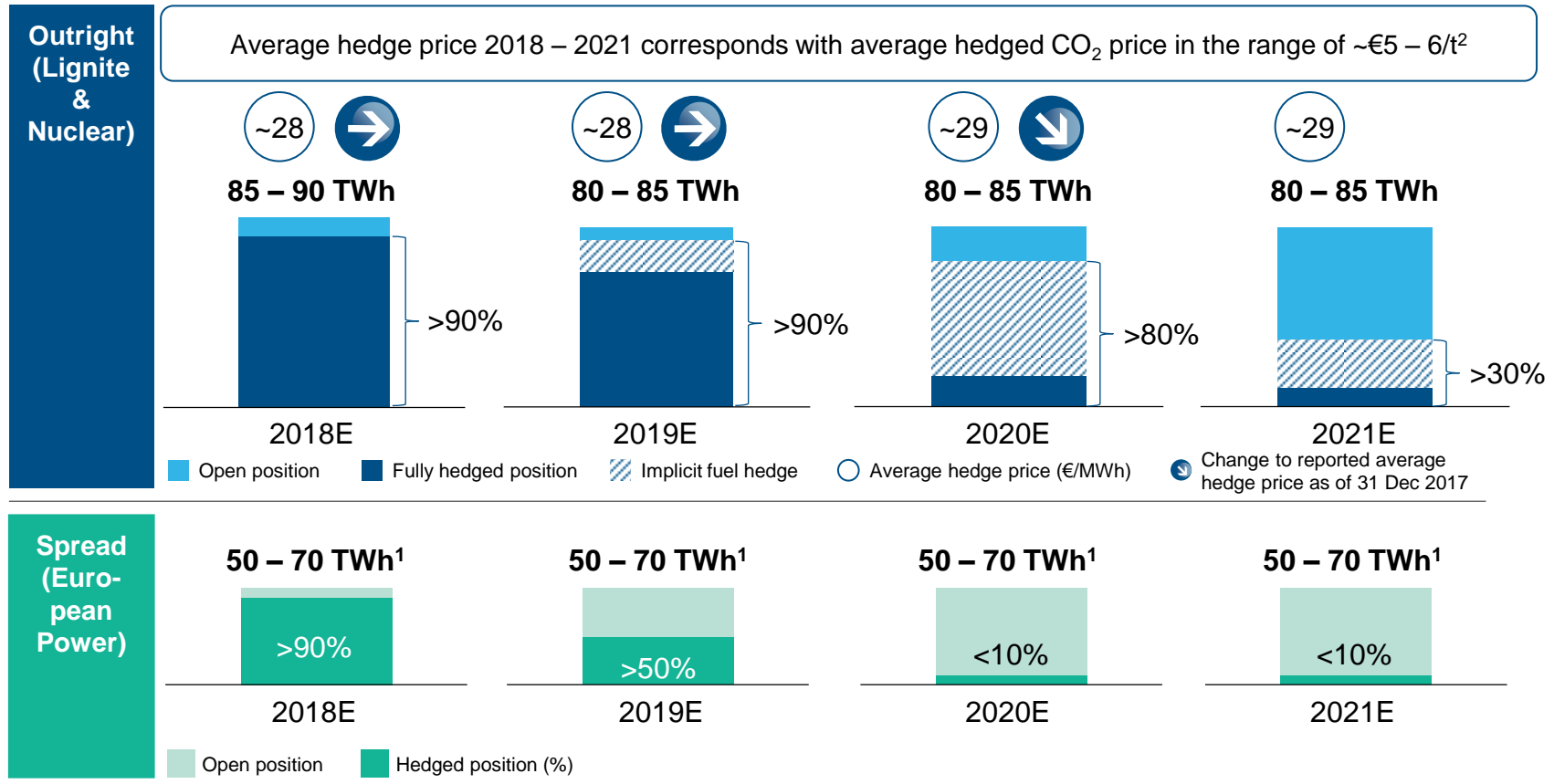
- > RWE's specific CO₂ intensity of its outright generation portfolio is higher than specific CO₂ intensity of average price setting power plant
- > Financial CO₂ hedge brings RWE's CO₂ intensity in line with average price setting power plant to be earnings-neutral to changes to the CO₂ price
- > For the profitability of the outright position both, the hedged power price as well as the hedged CO₂ price, are relevant

Hedged Scenario	A	B	C
Hedged Power price (€/MWh)	29	41	45
Hedged CO ₂ price (€/MWh)	6	18	18
Realised margin for lignite generation (€/MWh)	23	23 →	27 →
Comments on earnings compared to scenario A		Power price increase purely driven by CO₂ price increase . No margin impact (earnings-neutral)	Power price increase driven by CO₂ price & fuel price increase . Margin increase (earnings-positive)

ILLUSTRATIVE

Hedging figures Q1/2018 – lower Ø hedge price for 2020 due to strong decline of spreads since beginning of 2018

Expected positions and hedge status as of 31 March 2018

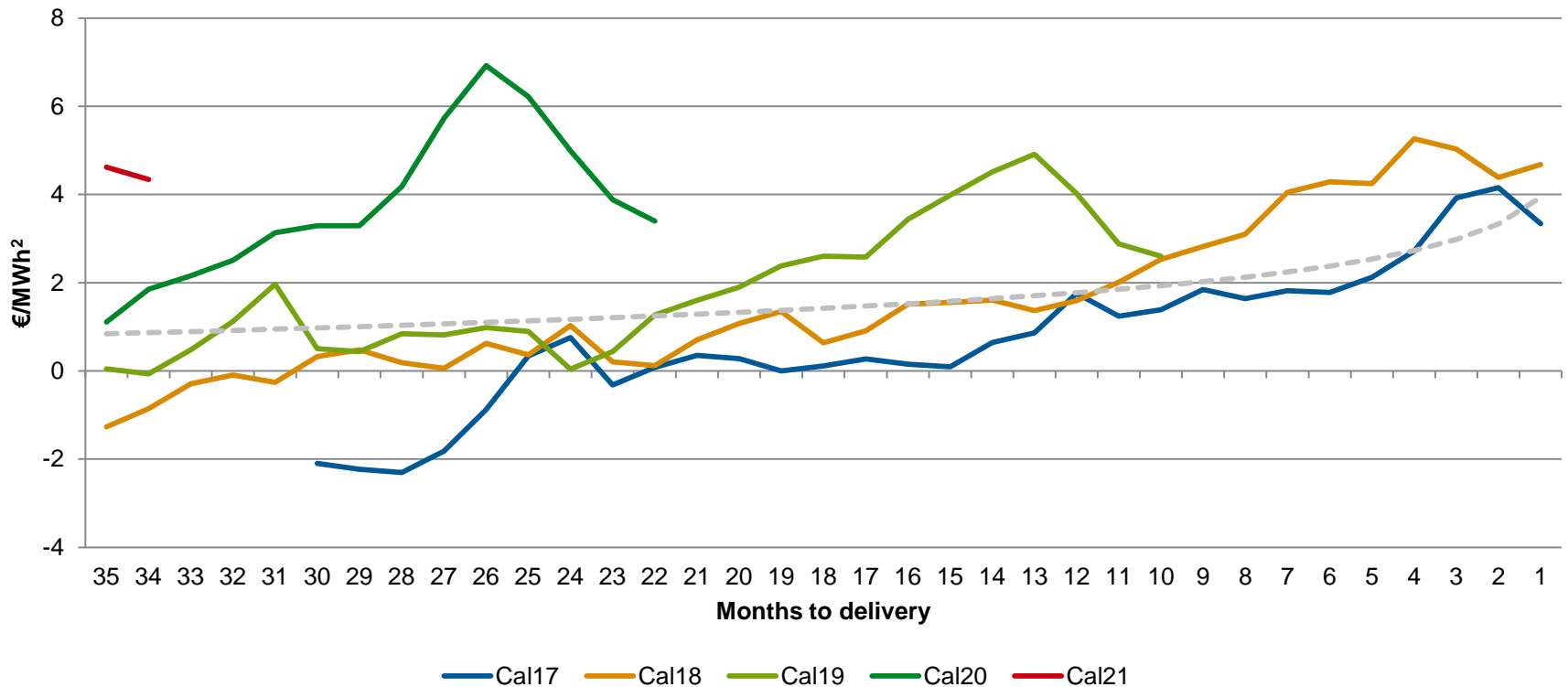


CO₂ > CO₂ position financially hedged until end of 2022

¹ Total in-the-money spread | ² Equivalent to emission costs of ~€6 – 7/MWh for lignite generation

Significant decline of fuel spreads since end of 2017

Development of German fuel spreads¹ – reported Q1/2018



¹ Fuel spread defined as: Power price – (pass-through-factor carbon × EUA price + pass-through-factor coal × coal price + pass-through-factor gas × gas price) |

² Note: Shown figures based on average fuel spreads per month (€/MWh) | Source: Bloomberg; data until 31 March 2018

CAO activities extract additional value on top of hedging

CAO value contribution

Deviation from Reference Hedge Path

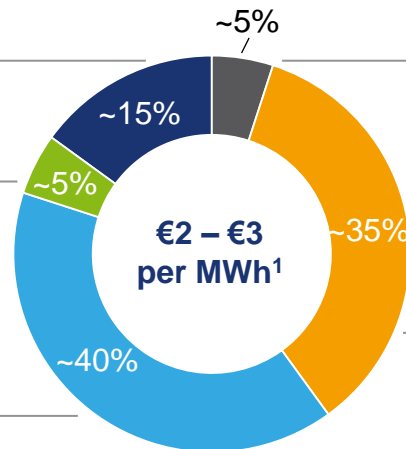
- > Within defined limits
- > Based on fundamental market views

Fuel procurement & logistics

- > Physical procurement of fuel and substitutes
- > Commercialisation of by-products

Reserve & ancillary services

- > Reserve, voltage support/ reactive power
- > Frequency response, black start



Option management

- > Re-optimisation of power station option
- > Shape management
- > Trading around hedge positions

Short-term optimisation

- > Short-term trading
- > Balancing markets
- > Dispatch/intra-day trading

¹ On top of realised forward hedges as per Reference Hedge Path. Reported within results of Lignite & Nuclear and European Power

Key messages of outright generation hedging

- ✓ In general, a perfect hedge for outright generation positions against commodity price risks is selling power at attractive market conditions
- ✓ The implicit fuel hedge (selling the fuel complex) is the best proxy hedge to substitute outright hedge
- ✓ Implicit fuel hedging allows to overcome liquidity constraints in the power market and accelerated risk reduction compared to purely outright hedging of power
- ✓ Implicit fuel hedging retains upsides and downsides from an under/overvaluation of the power price relative to the fuel complex (price setting spread)
- ✓ CO₂ is financially hedged until 2022: power price changes driven by CO₂ (via the price setting plant) have no impact on RWE's earnings

Your contacts @RWE Investor Relations

Important Links

- > Annual and Interim Reports
<http://www.rwe.com/ir/reports>
- > Investor and Analyst Conferences
<http://www.rwe.com/ir/investor-and-analyst-conferences>
- > IR presentations & further factbooks
<http://www.rwe.com/ir/presentations>
- > IR videos
<http://www.rwe.com/ir/videos>
- > Consensus of analysts' estimates
<http://www.rwe.com/ir/consensus-estimates>



Financial Calendar

- > **14 August 2018**
Interim statement on the first half of 2018
- > **14 November 2018**
Interim statement on the first three quarters of 2018
- > **14 March 2019**
Annual report 2018
- > **3 May 2019**
Annual General Meeting
- > **15 May 2019**
Interim statement on the first quarter of 2019



Contacts for Institutional Investors & Financial Analysts



- > **Gunhild Grieve**
Head of Investor Relations
Tel. +49 201 5179-3110
gunhild.grieve@rwe.com



- > **Lenka Zikmundova**
Tel.: +49 201 5179-3116
lenka.zikmundova@rwe.com



- > **Martin Vahlbrock**
Tel.: +49 201 5179-3117
martin.vahlbrock@rwe.com



- > **Jérôme Hördemann**
Tel.: +49 201 5179-3119
jerome.hoerdemann@rwe.com



- > **Dr. Burkhard Pahnke**
Tel.: +49 201 5179-3118
burkhard.pahnke@rwe.com



- > **Susanne Lange**
Tel.: +49 201 5179-3120
susanne.lange@rwe.com



Contact for Private Shareholders



- > **Sabine Gathmann**
Tel.: +49 201 5179-3115
sabine.gathmann@rwe.com



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