



Trading in the forward timeframe

How and why ?

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EFET-ECS Training on Trading in wholesale gas and electricity markets

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They should not be considered as formal ENGIE position nor formal documentation.*

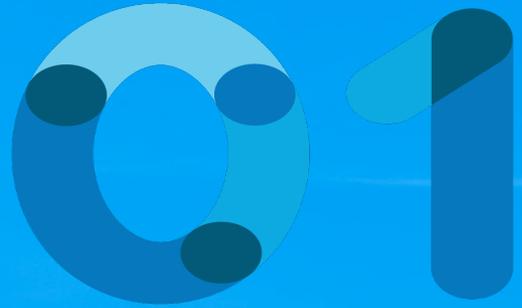
AGENDA

1. Introduction & Key Concepts

2. How is the forward price formed ?

3. Why trading in forward ?

4. Cross-border trading in forward



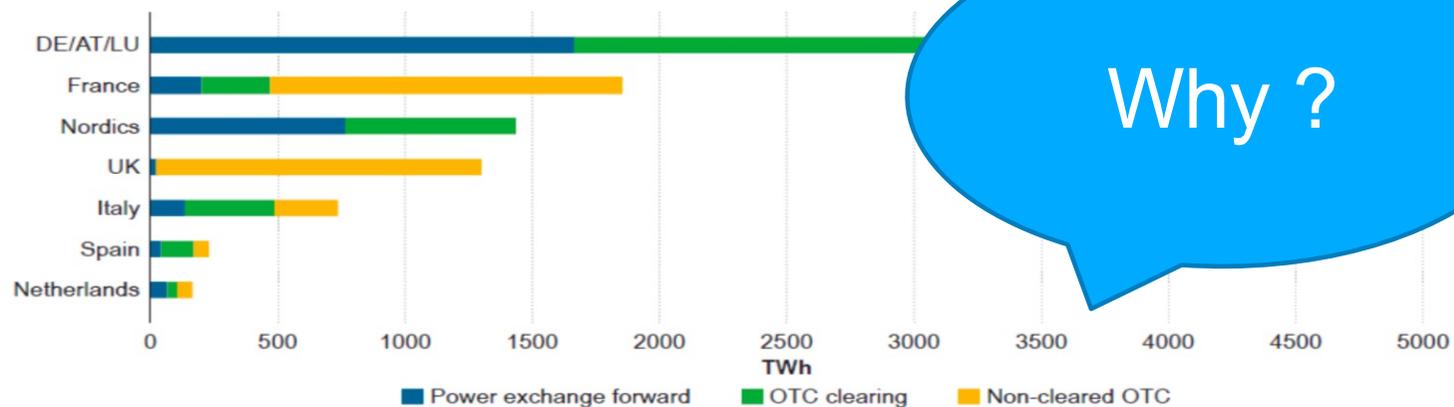
Introduction & key concepts



Is the forward market important ?

- Volumes traded in forward represent +/- 10 times more than the volume traded in the short term market (Day-Ahead and Intraday)

Figure 17: Forward market trading volumes per type in the largest European power markets (TWh)

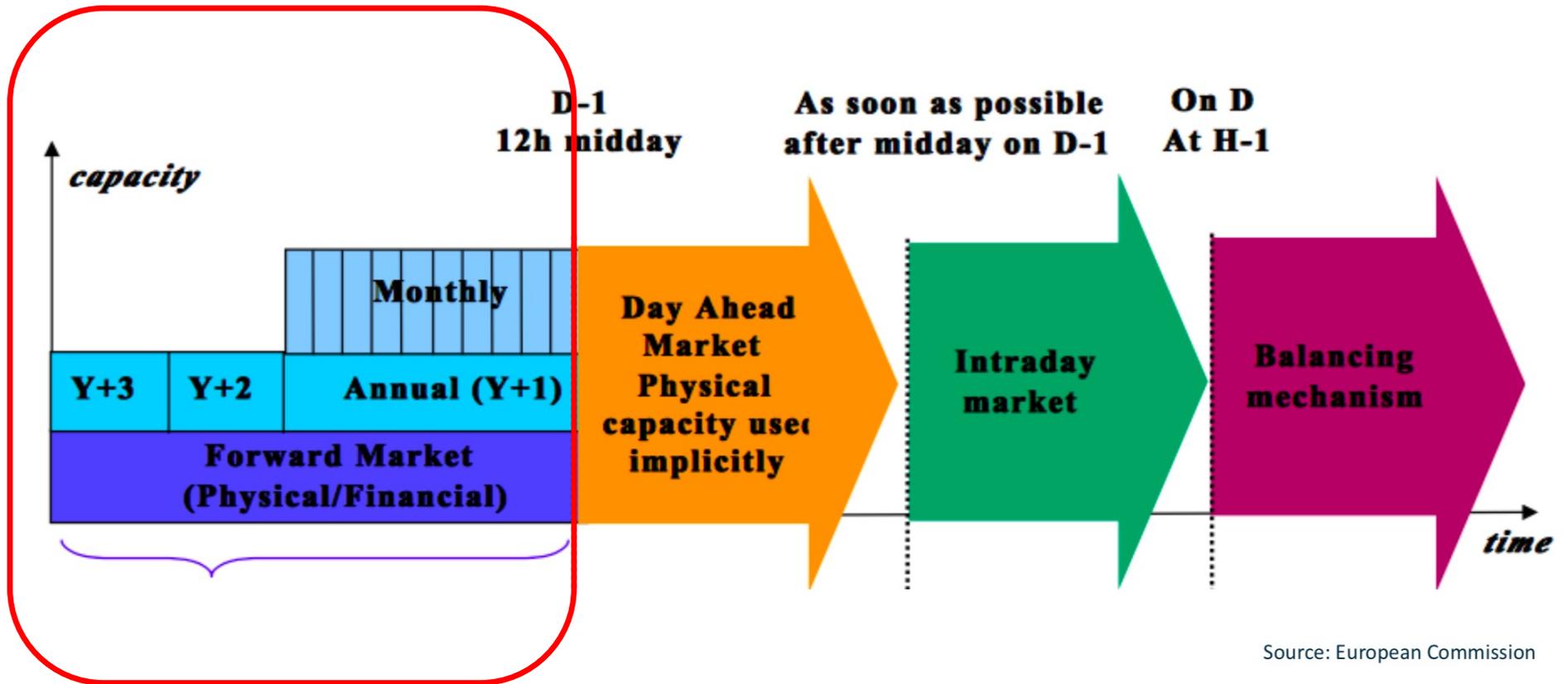


Source: European Power Trading 2017 report, © Prospex Research Ltd, March 2017.

Source: ACER MMR 2018

Note: updated chart not available in ACER MMR, but trend is confirmed. E.g. EEX mentioned 4400 TWh traded in fwd vs 600 TWh in DA and ID

Market time frames



Source: European Commission

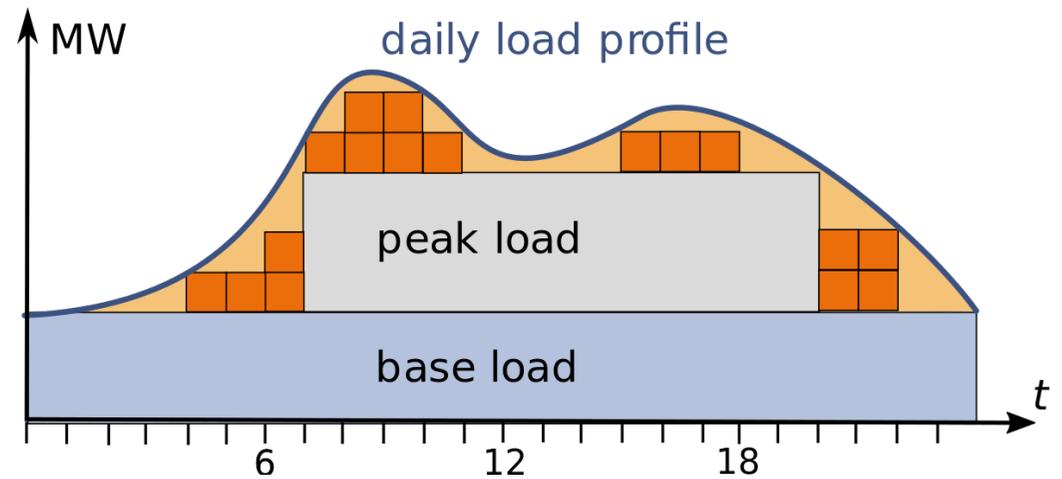
What are the available products (1/3) ?

- Spot contract: an agreement to buy or sell an asset today, for a certain price.
 - ✓ In the case of, for example, gas and electricity, this typically means day-ahead.
- Forward contract: a bilateral agreement to buy or sell an asset at a specific moment in time, for a predetermined price.
 - ✓ Normally traded over-the-counter (OTC); a deal between two institutions or via brokers
- Future contract: an agreement to buy or sell an asset at a specific moment in time, for a predetermined price.
 - ✓ Normally traded on an exchange; the exchange is the counterparty for both participants.

What are the available products (2/3) ?

- Yearly products: Cal+1, +2, ... +5
- Quarterly products: Q+1, Q+2, Q+3
- Monthly products: M+1, M+2, M+3
- Weekly products: W+1, W+2, W+3
- Daily products: D+1, D+2

- Baseload, Peakload



Source: wikipedia

What are the available products (3/3) ?

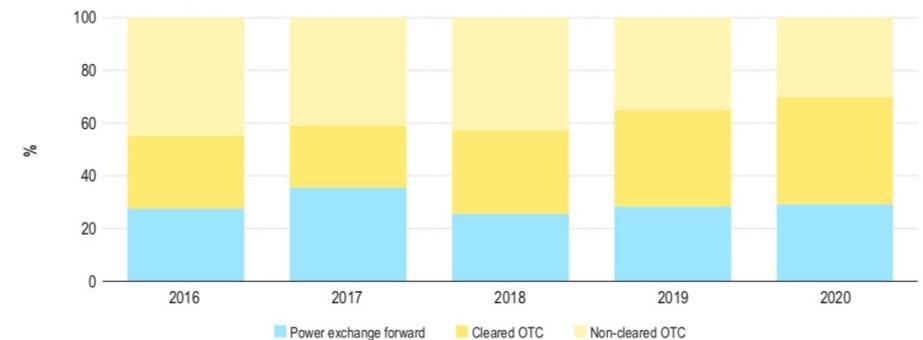
- Contracts can be physical or financial ...
- Physical contracts: the underlying asset is the physical delivery of a given commodity at the contract price.
 - ✓ For example, a physical electricity forward means that physical electricity will be delivered at a specified point in time, to a defined market area, against the agreed contract price.
- Financial contracts: the contract is settled financially based on the difference between the agreed contract price and specified index.
 - ✓ For example, a EEX financial electricity future will be settled based on the difference between the agreed contract price and the spot price published by the EEX for each day during the defined delivery period. The buyer receives the spot price minus the contract price for each MWh. If the value is negative, he pays this amount.

Where can they be traded ?

- Normally, forwards are traded over-the-counter (OTC) and futures are traded on an exchange.
- When trading on the exchange ...
 - The contract is highly standardized, as defined by the exchange. • The two parties may be anonymous.
 - Settlement is via the exchange, making use of margining.
- When trading over-the-counter ...
 - The contract can be less standard; so more instruments are possible.
 - The deal is done directly between two parties; perhaps facilitated by a broker.
 - Both parties are exposed to credit risk.

Source: ACER MMR 2021

Figure 36: Share of yearly traded volumes of selected European forward markets by product type – 2016–2020 (%)



Source: European Power Trading 2021 report, © Prospex Research Ltd.

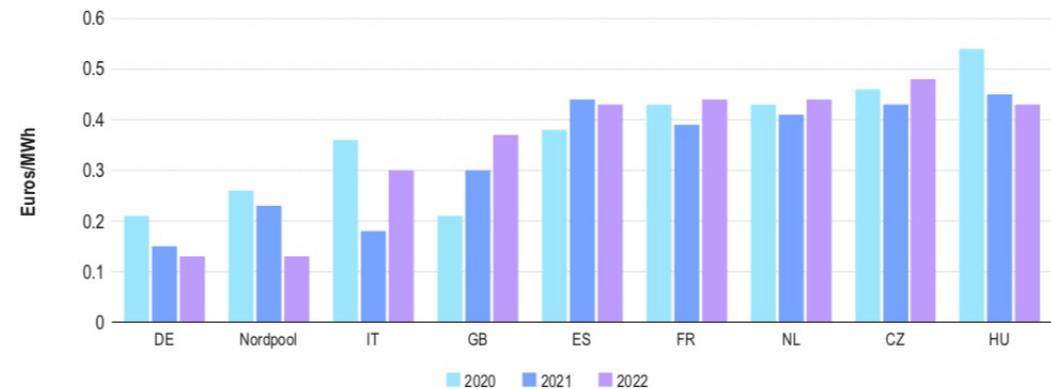
Note: Volumes from the German, French, Nordic, British, Italian Iberian and Dutch markets.

Market Prices: what are they ?

- A market price is the price at which we are able to buy or sell a given asset.
 - The **bid price** is the price at which I can sell the asset. That is, the highest price which a buyer is willing to pay for the contract.
 - The **ask price** is the price at which I can buy the asset. That is, the lowest price which a seller is willing to accept for the asset.
- The difference between the bid price and the ask price is known as the **bid-ask spread**.
- The average of the bid and ask price is known as the **mid price**.

Source: ACER MMR 2021

Figure 37: Average bid-ask spreads of OTC yearly products in European forward markets per year of delivery – 2020–2022 (euros/MWh)



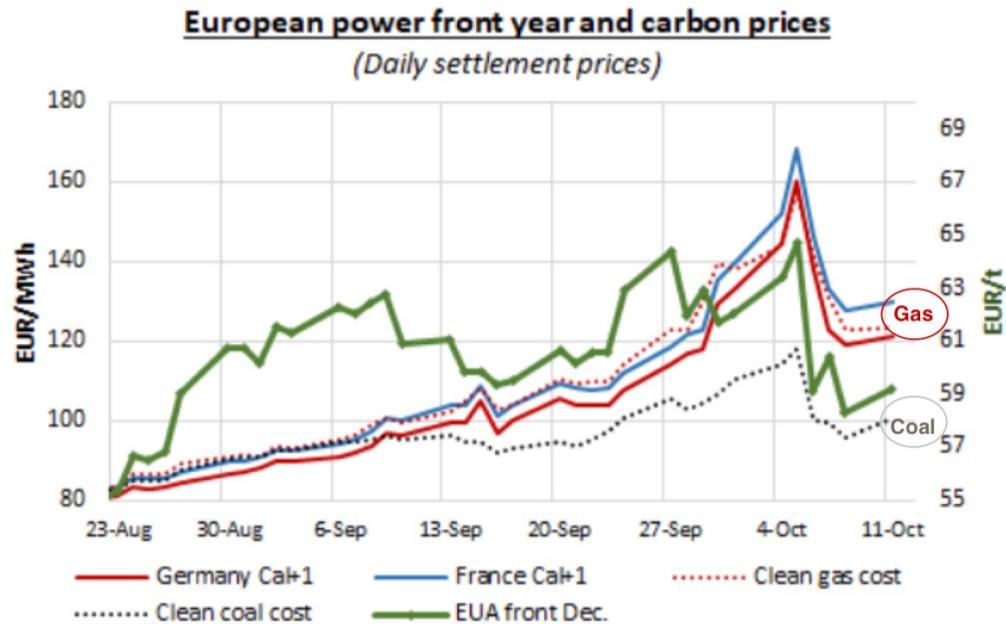


How is the forward price formed ?

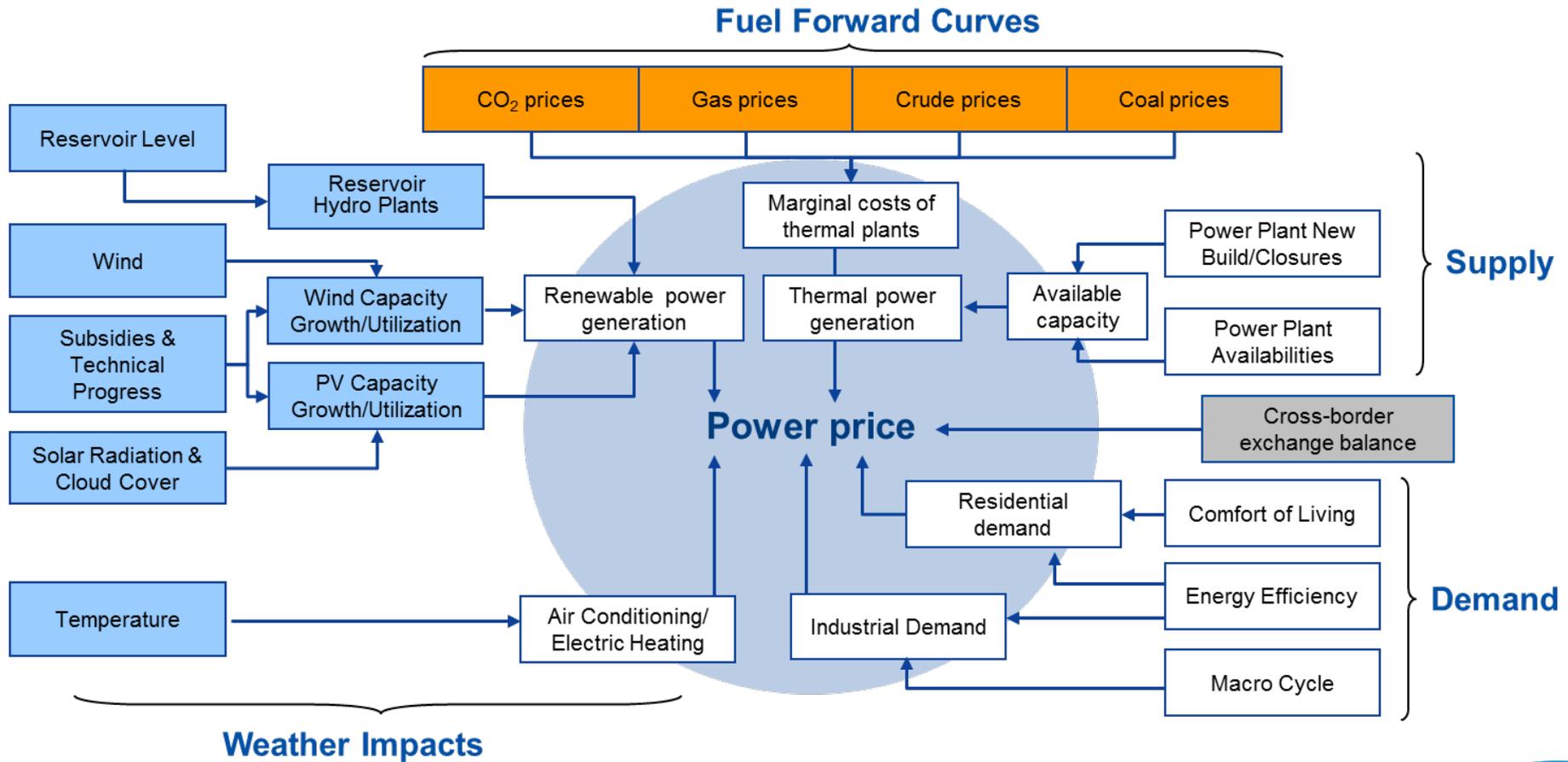


Market liquidity & traded volumes

- The forward price curve is the pattern of prices for future delivery of electricity
- A forward curve is not a forecast, it shows the prices we can transact **today** for delivery in the future
 - It is not the result of a model based “on fundamentals” but it is instead influenced by a number of contingent factors
 - It is based on the information known today



What is influencing the market prices ?



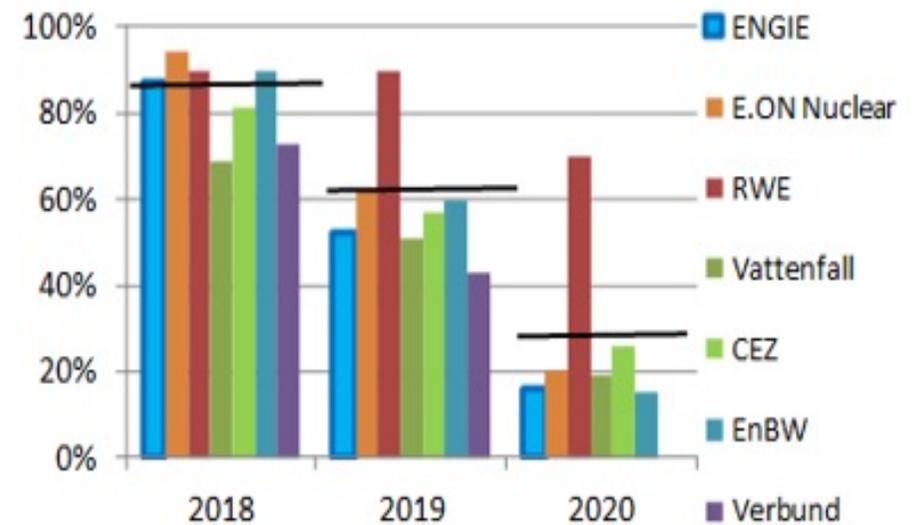


03

Why trading in forward ?

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Why hedging ?



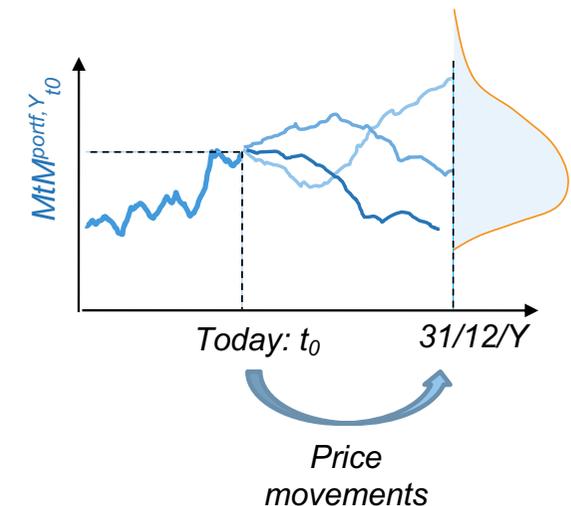
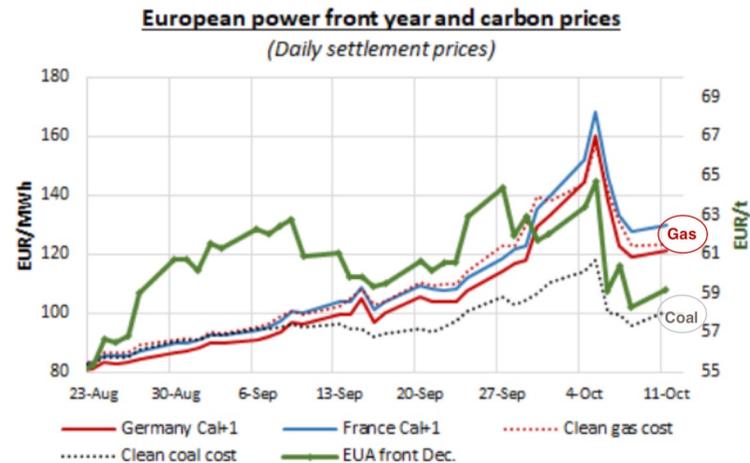
Hedging ratios observed in Q317, as published in the annual reports

What are the risks ?

- A portfolio of assets is **by definition “risky”** -> what is “risk” for a portfolio manager or a trader ?
 - **Uncertainty on future revenues** generated by the assets in the portfolio (power plants, procurement contracts (PPAs...), portfolio of (flexible) clients, storage, ...)

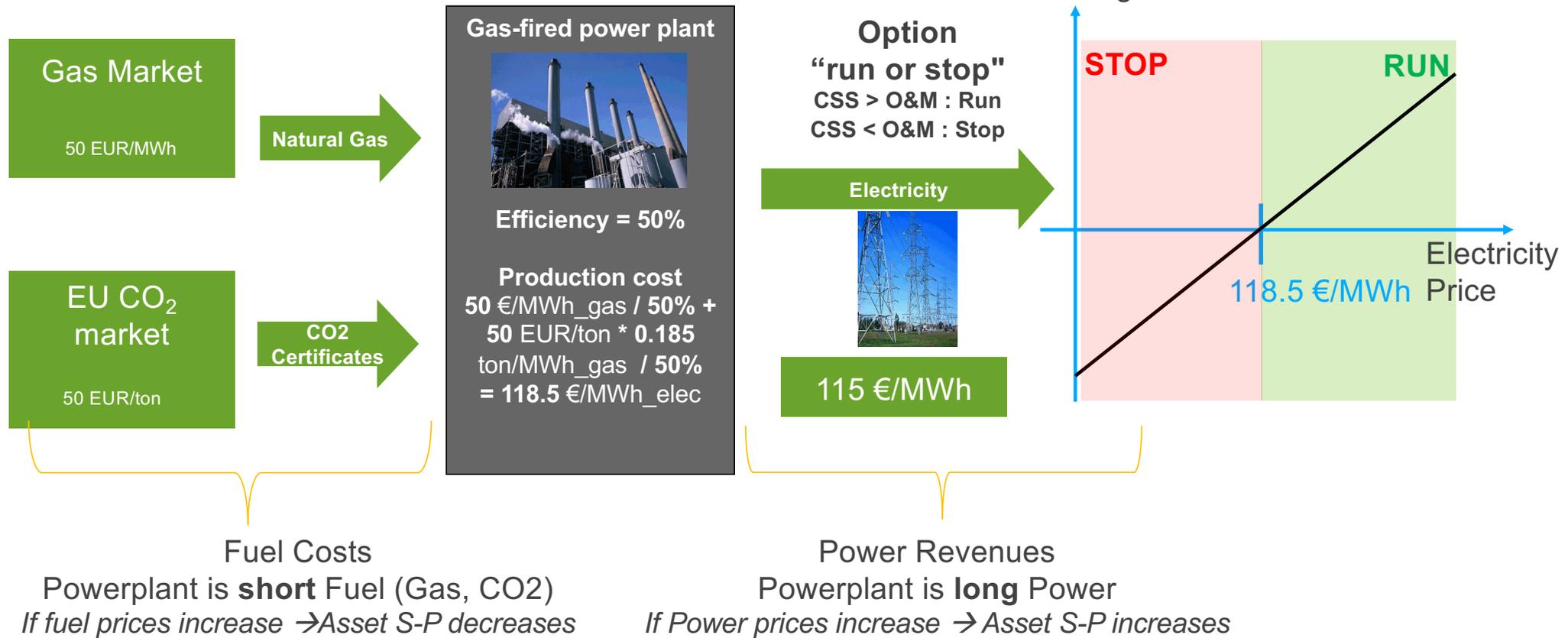
- Different kind of risks:

- ✓ **price** risk,
- ✓ volume risk,
- ✓ regulatory risk,
- ✓ counterparty risk



- How to tackle **price** risk ?
 - First step is to accurately **forecast the positions** of each asset and contract
 - Second step when trying to mitigate risks is to **identify** and classify/organize the risk factors
 - To mitigate the price and volume risks, market participants can then perform **hedging** actions

Risk mapping: case study: forecasting and modelling a gas power plant



Hedging: case study: *hedging a gas power plant*

Example:

Power plant with 50% efficiency: input of 2 units of gas to produce 1 unit of power (no CO2 for illustration purpose)

(1) Strategy “*hedge and sleep*”

T1: forward gas 22 €/MWh ; power 50 €/MWh

- ⇒ Forecast: Plant margin: 6 €/MWh => plant will run
- ⇒ Hedging: Sell power, buy gas, margin of 6 €/MWh

T2: forward gas 24 €/MWh ; power 45 €/MWh

- ⇒ Forecast: Plant margin: -3 €/MWh, but already hedged at 6 €/MWh

T3: forward gas 23 €/MWh ; power 48 €/MWh

- ⇒ Forecast: Plant margin: 2 €/MWh, but already hedged at 6 €/MWh

P&L: 6 €/MWh

(2) Strategy “**Option Value**”

T1: forward gas 22 €/MWh ; power 50 €/MWh

- ⇒ Forecast: Plant margin: 6 €/MWh => plant will run
- ⇒ Hedging: Sell power, buy gas, margin of 6 €/MWh

T2: forward gas 24 €/MWh ; power 45 €/MWh

- ⇒ Forecast: Plant margin: -3 €/MWh, but already hedged at 6 €/MWh
- ⇒ Sell gas, buy power, additional margin 3€/MWh

T3: forward gas 23 €/MWh ; power 48 €/MWh

- ⇒ Forecast: Plant margin: 2 €/MWh, but already hedged at 6 €/MWh
- ⇒ Sell power, buy gas, additional margin 2€/MWh

P&L: 11 €/MWh

Conclusion

Good reasons to hedge...

1. Avoid expensive or inefficient hedging
2. Position not certain enough
3. Expectation about price evolution



or not hedge

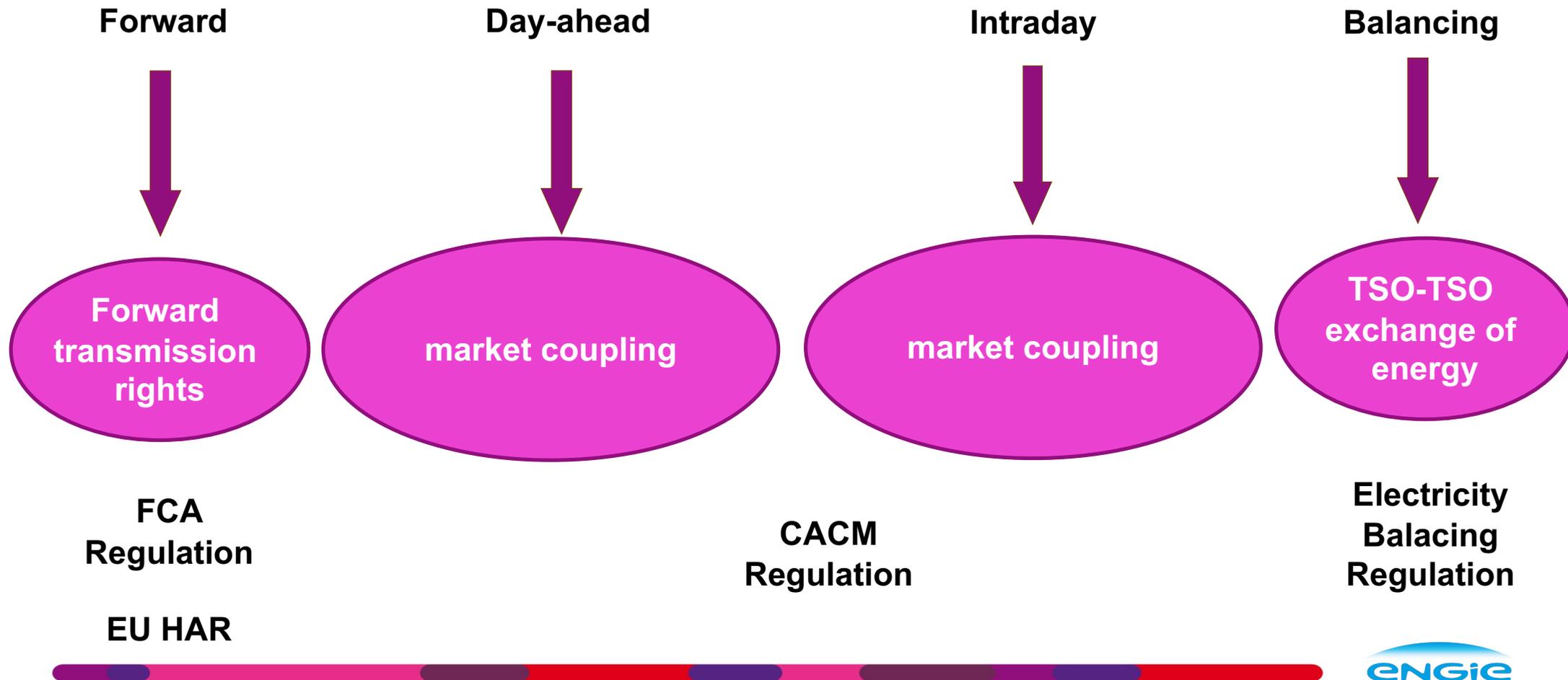
1. Meet shareholders expectations
2. Secure P&L
3. Secure affordable prices for customers

A stylized logo consisting of the numbers '0' and '4' in a pink and purple color scheme. The '0' is a thick, rounded ring with three small circles inside. The '4' is a thick, blocky number with a diagonal split. The logo is set against a dark purple background with a subtle cloud pattern.

Cross-border trading

The ENGIE logo in white, featuring a white arc above the word 'ENGIE' in a bold, sans-serif font. The logo is set against a dark purple background with a subtle cloud pattern.

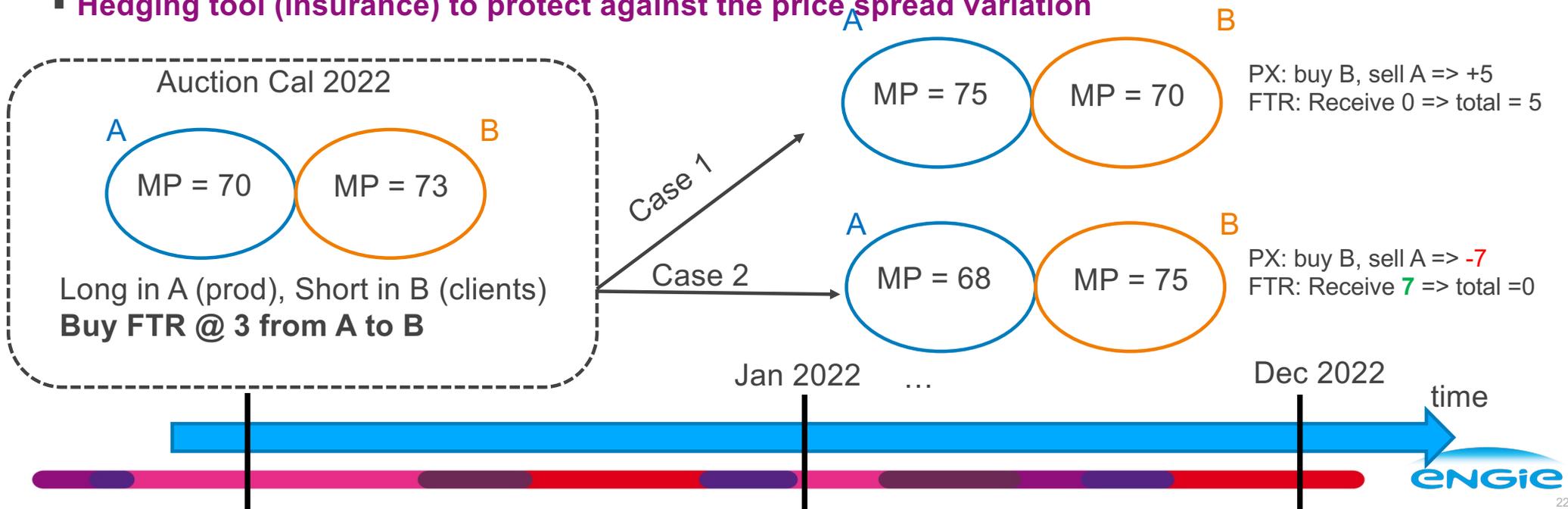
Forward products for electricity
How can you trade across the border ?



Forward transmission rights

How does it work ?

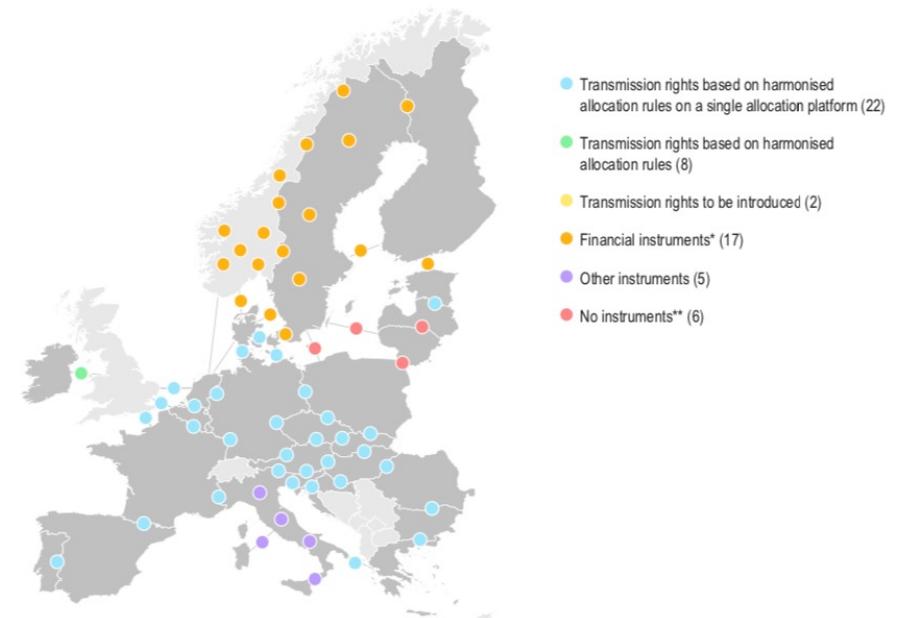
- TSOs have to issue forward transmission rights (year-ahead, month-ahead) since they operate the transmission grid and collect the congestion rents in the market
 - Capacity Calculation per region (FCA)
 - EU HAR describes the products and the allocation
- **Hedging tool (insurance) to protect against the price spread variation**



Forward transmission rights *A perfect solution ?*

- Limited number of liquid markets in Europe
=> issuance of cross-border transmission rights is crucial to allow hedging in forward
- However:
 - Not implemented in all borders
 - (very) limited volumes
 - Eg: 200 MW sold BE->FR in 2020 yearly auction
 - Limited to year-ahead while forward trading covers the next 3 to 5 years !
 - Limiting the development of investments such as RES PPAs
 - Recent ACER decision on the CORE region potentially leading to major changes and very low (zero) volumes allocated at some borders

Figure 23: Forward capacity allocation - status of the implementation as of 1 January 2021



Source: ACER.

Note: The financial instruments in place in the Nordic countries are also theoretically available in EE and LT. However, in practice, there is no sufficient liquidity to allow their use.

Conclusion

- Day-ahead and intraday markets are gaining traction. Growth largely driven by
 - > the energy transition (RES-E)
 - > regulatory developments (SDIC, GOT/GCT)
 - > technological change (automated trading)
- However, the increase in short-term trading does not mean a decrease in forward trading: **the need to hedge positions is ever more present.** NRAs and policy makers should hence not focus only on spot markets.
- **Cross-border capacity** availability (= insurance against price spread volatility) is key for the efficient integration of short-term markets.