

# From the long to the short end of the curve - how power contracts can facilitate the integration of renewables?

Tim Greenwood, EEX

Dr. Philippe Vassilopoulos, EPEX

# Renewables are driving two major trends in Power Derivatives markets



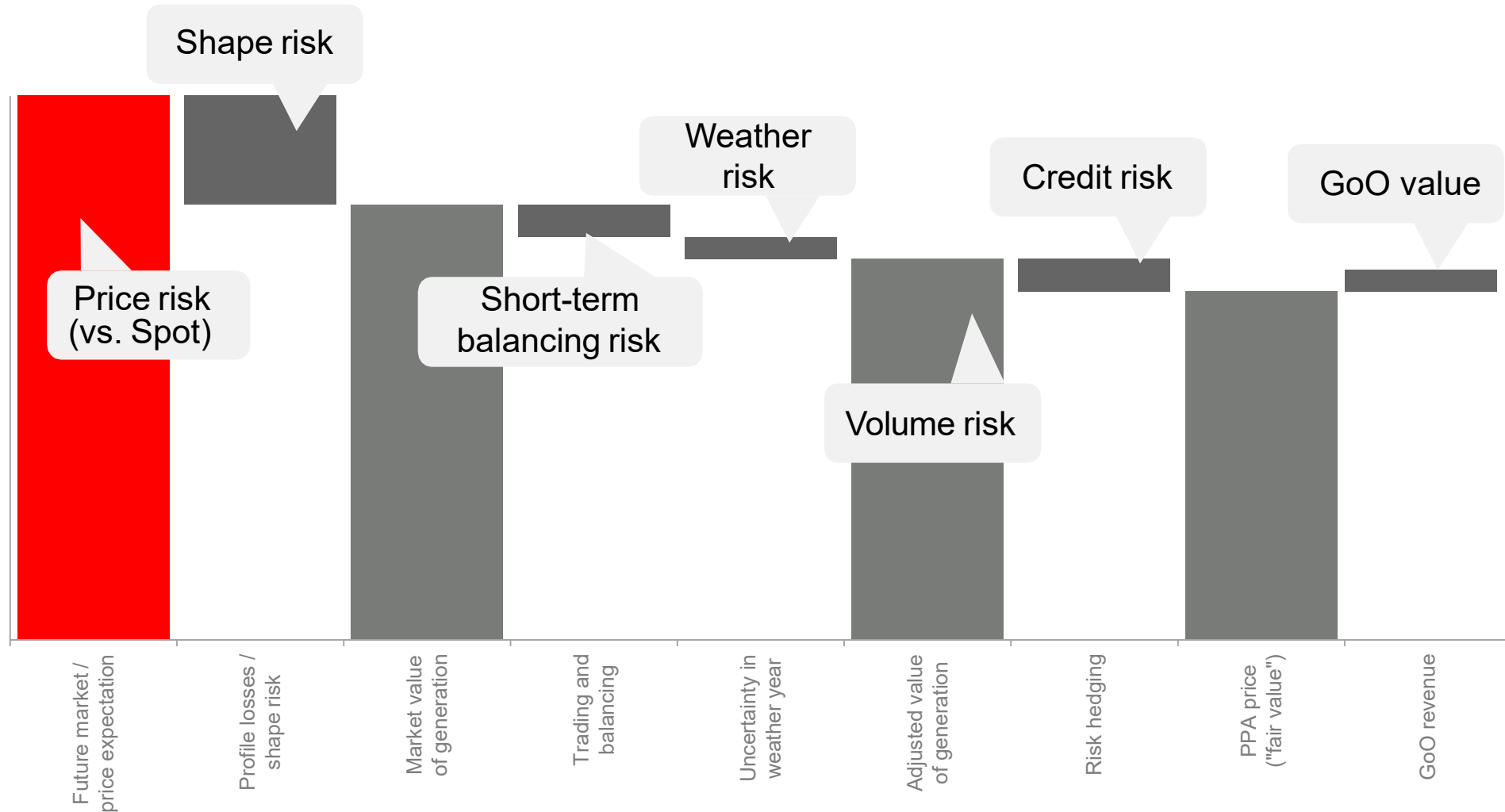
## Short-Term Trading

- Demand for hedging volatile short-term positions in individual Days and Weeks

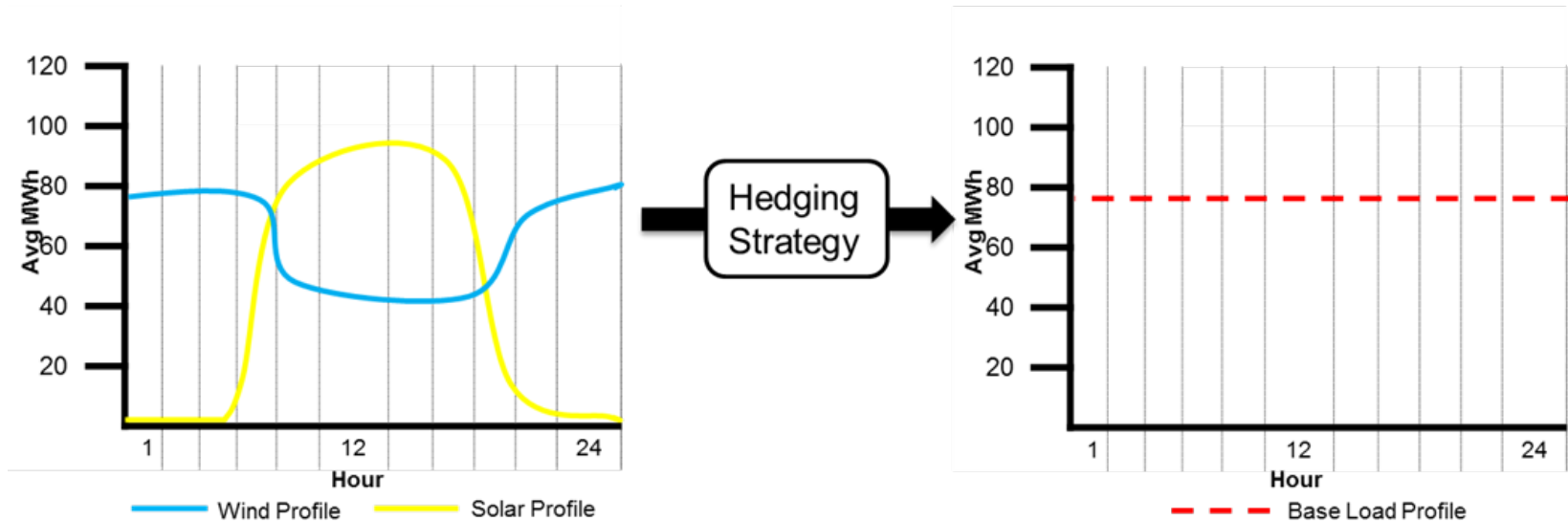
## Long-Term Trading

- Demand for hedging long-term Price Risk due to renewable energy Power Purchase Agreements (PPAs)

# Renewable Energy and PPA Risks: Price Risk is the most important

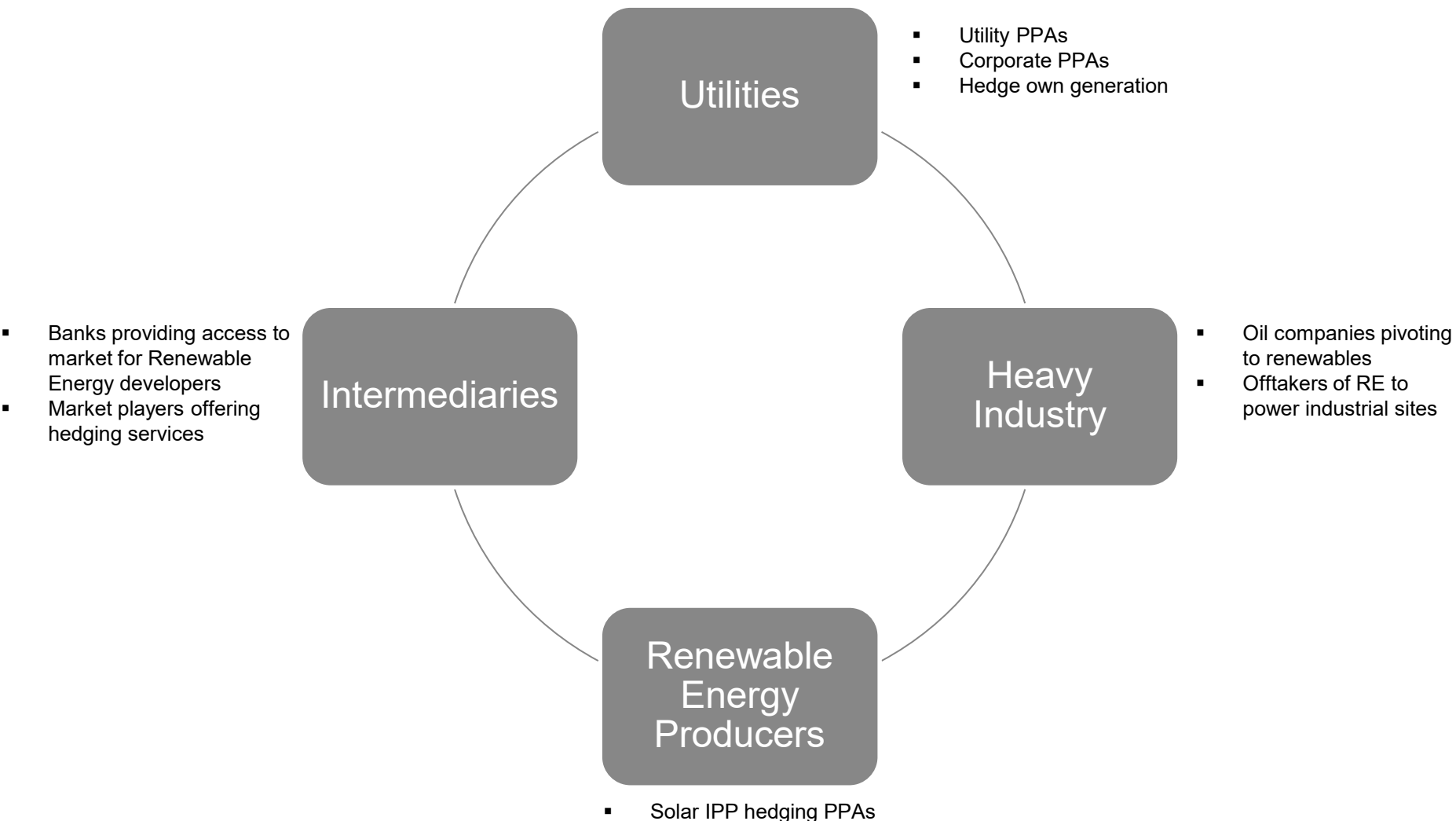


# Managing Renewable Energy Price Risk with Base Futures requires a Hedging Strategy



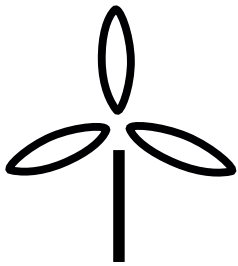
- Base Futures are a **best-fit product** and attract the most liquidity, creating a **strong price signal** and opportunities for trading at fair market prices
- To use the Base Futures to manage the risk of a wind or solar profile, a **Hedging Strategy needs to be designed** to translate the variable generation profile into a constant Base load profile
- Different Hedging Strategies can be employed, such as a **value-neutral hedge**

# Who are the PPA Hedgers on EEX?



# How are EEX Members active in PPAs?

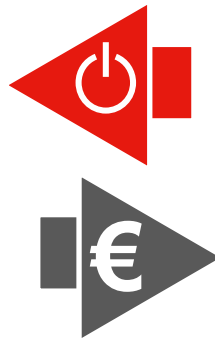
RE Developers sell Power via Long-Term PPAs



EEX Members buy Power via Long-Term PPAs and build RE assets



EEX Members provide balancing services on Spot & hedge via Futures



Banks provide financing once PPA is in place



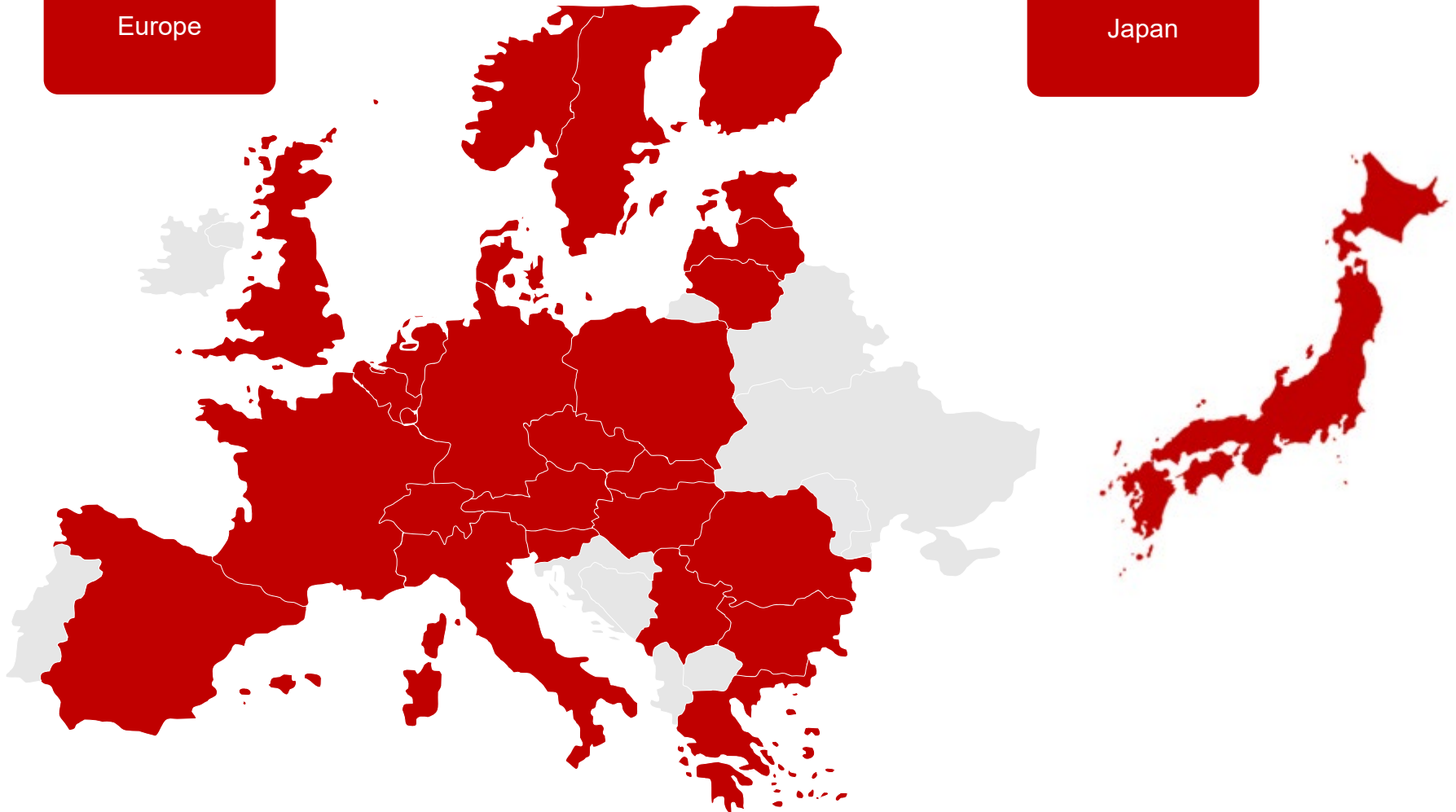
EEX Members sell Power via LT Corporate PPAs



# Market Coverage – EEX Power Derivatives

Europe

Japan



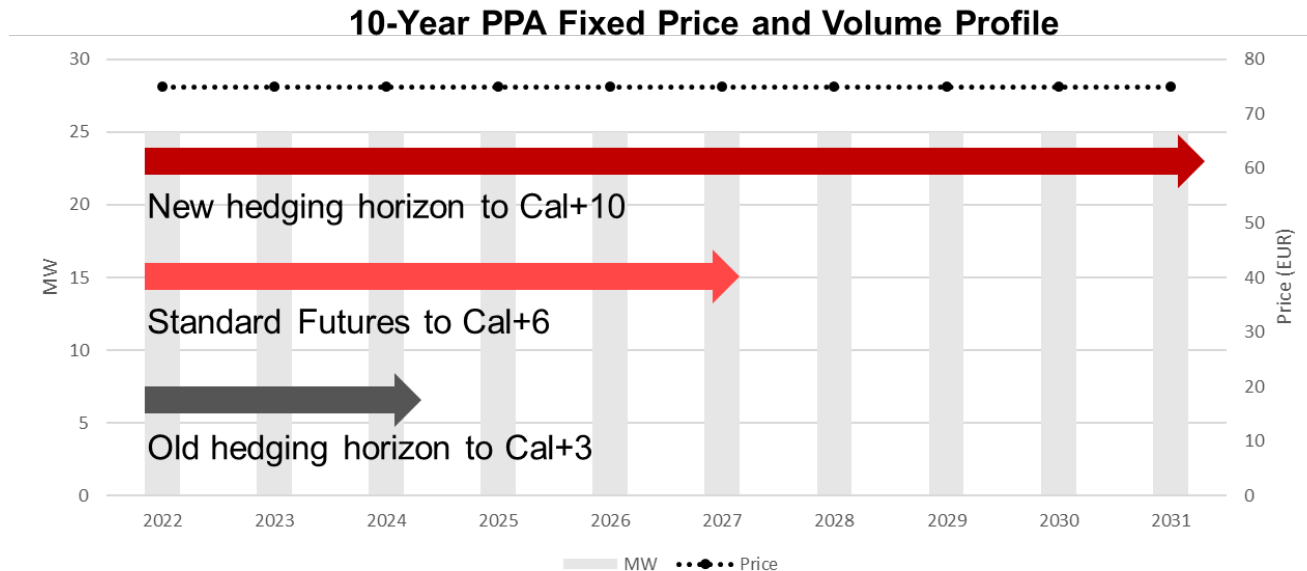
# Long-Term Hedging on EEX

- Since 29th May 2018, **51** long-term hedges of have been registered OTC in **Spanish Power**, with a total volume of **18 TWh**. This is equivalent to **3%** of the electricity consumption of Germany.
- Four long-term hedges have been registered in **Italian Power** with a total volume of **0.26 TWh**; the Italian PPA market is poised for further growth in the coming years as costs for solar power projects are highly competitive.
- The first **5 MW** long-term hedge was cleared in Polish Power on 18 December 2019.  
The Polish deal proves the value for **multinational utilities with renewable energy assets across the EU** to hedge long-term on EEX Power Futures and offload their PPA risk onto ECC, even in relatively **illiquid markets**.
- **Long-term hedging in German Power** is expected to rise as assets fall out of EEG subsidies and the German government is preparing a legal framework for PPAs. German Power can also be a **proxy hedge** ie. for offshore wind developments in Denmark.



# Extension to Cal+10 in German, Spanish and Italian Power

- EEX **extended Yearly Futures to Cal+10 on 27 September 2021** in markets with high potential of PPA activity: **Spain, Germany and Italy**, to facilitate long-term hedging and more PPA development.
- A settlement price curve to Cal+10 is published daily for all three markets, bringing more **price transparency** to PPAs and renewable energy asset valuations.
- PPA players can now benefit from **long-term price risk hedging** and **counterparty risk management** by the ECC.



# Building a fit-for-future wholesale power market


# EPEX SPOT at a glance

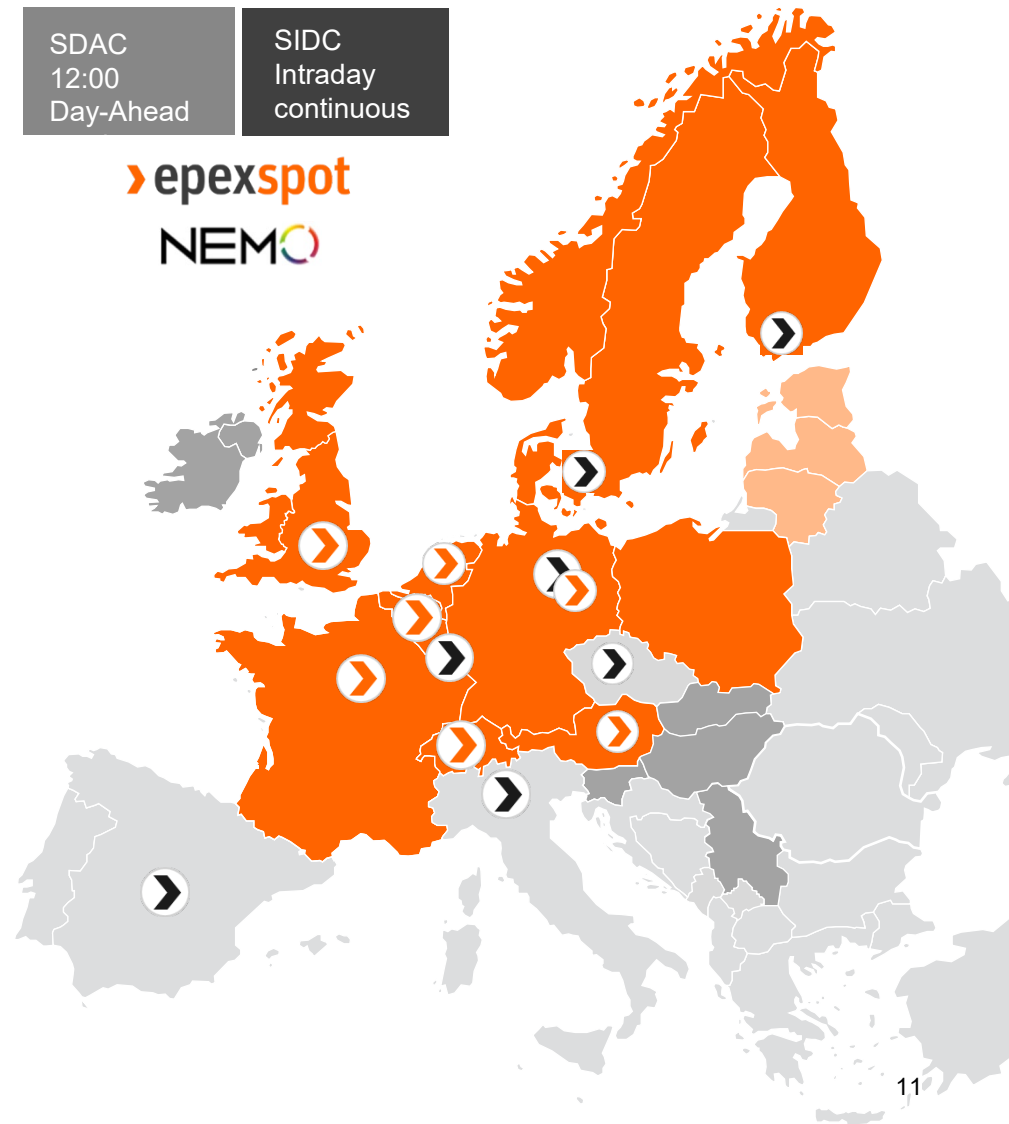
|  |   |
|--|---|
| 20+ nationalities in staff                       | 300+ members                                  |
| 7 European shareholders<br>51% private, 49% TSOs | 13 markets operated                           |
| 21 borders market-coupled                        | 7 local offices across Europe<br>14 EEX Group |

|                            |                                |
|----------------------------|--------------------------------|
| SDAC<br>12:00<br>Day-Ahead | SIDC<br>Intraday<br>continuous |
|----------------------------|--------------------------------|

epexspot  
NEMO

Markets covered under the roof of the Clearing House **ecc**

- Current EPEX SPOT markets
- Coming soon
- Serviced Power Exchanges
-  Local EPEX / EEX Group offices



# Dynamic market growth & trends

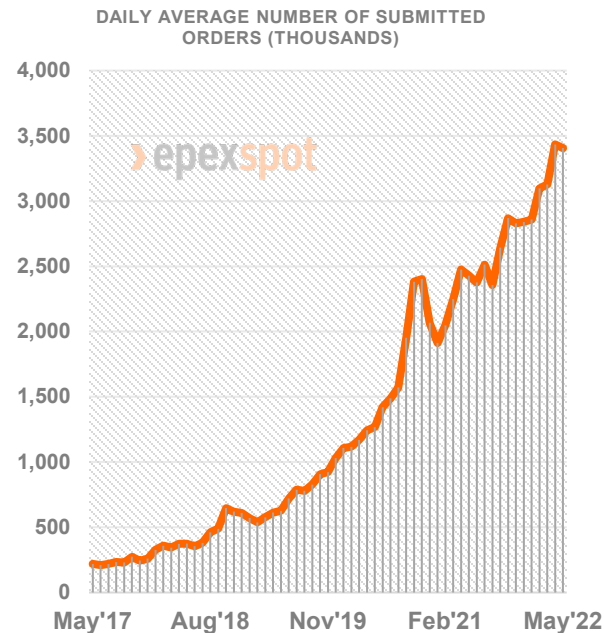
**621 TWh**  
traded in 2021 on all  
spot markets

+0.8% Y2Y

**Welcomed 28 new**  
trading members in 2021

Trading companies / Utilities / TSOs  
/ Aggregators / Commercial  
consumers

Proven technical  
**performance**  
adapted to new market behaviour

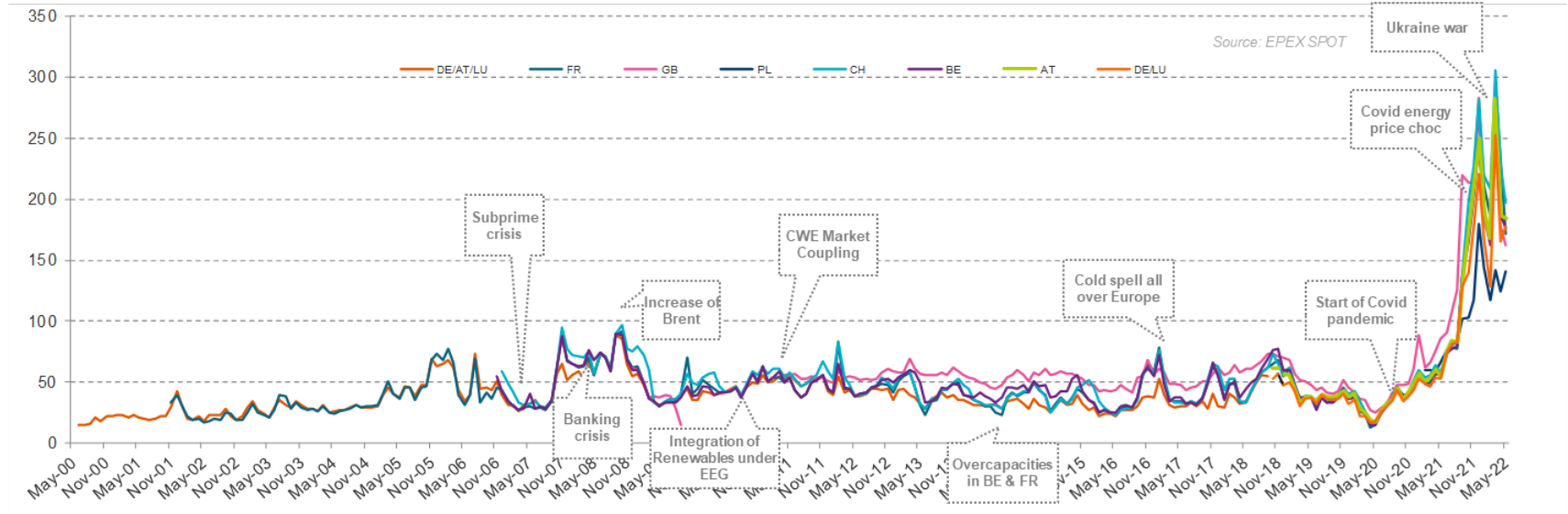


Largest Intraday market in  
Europe with  
**123 TWh**  
traded in 2021

+10% Y2Y

**15 & 30min** product  
traded volumes  
increases by **+40%**  
since 2019

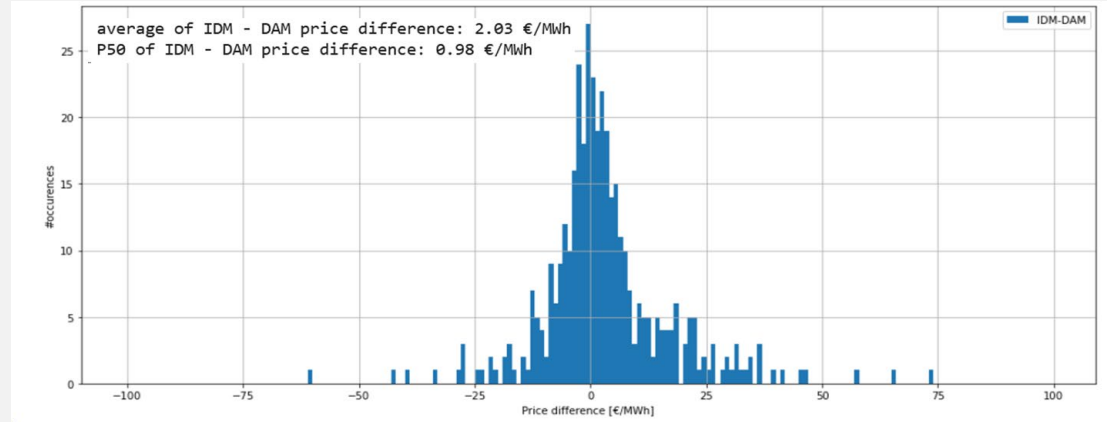
# European spot power prices going through turbulent times



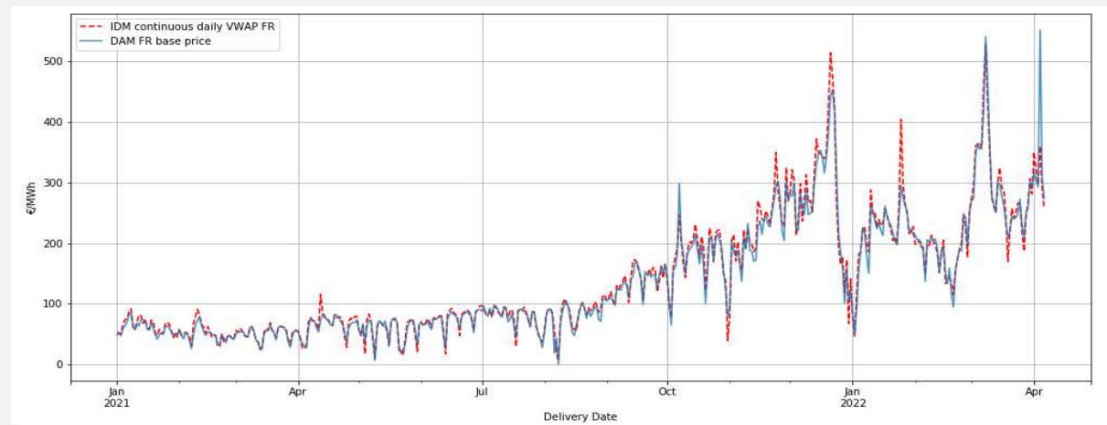
| Market            | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  | 2020  | 2021   |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| AT (Phelix AT)    |       |       |       |       |       |       |       |       |       | 59.92 | 40.06 | 33.14 | 106.85 |
| DE/AT/LU (Phelix) | 38.85 | 44.49 | 51.12 | 42.60 | 37.78 | 32.76 | 31.63 | 28.98 | 34.19 | 41.73 | -     | -     | -      |
| DE/LU (Phelix DE) |       |       |       |       |       |       |       |       |       | 52.60 | 37.67 | 30.47 | 96.85  |
| FR                | 43.01 | 47.50 | 48.89 | 46.94 | 43.24 | 34.63 | 38.48 | 36.75 | 44.97 | 50.20 | 39.45 | 32.20 | 109.17 |
| CH (Swissix)      | 47.92 | 51.02 | 56.18 | 49.52 | 44.73 | 36.79 | 40.30 | 37.88 | 46.00 | 52.22 | 40.92 | 34.00 | 114.94 |
| NL                | 39.16 | 45.38 | 52.03 | 48.00 | 51.95 | 41.18 | 40.05 | 32.24 | 39.31 | 52.53 | 41.20 | 32.24 | 102.96 |
| BE                | 39.36 | 46.30 | 49.37 | 46.98 | 47.45 | 40.79 | 44.68 | 36.61 | 44.58 | 55.27 | 39.35 | 31.88 | 104.12 |
| GB (in £)         | -     | -     | 47.18 | 44.51 | 49.68 | 42.02 | 40.43 | 40.43 | 45.32 | 57.44 | 42.85 | 35.26 | 117.84 |

# Despite current market conditions, power spot liquidity and price discovery quality remain strong

Intraday continuous & Day-Ahead auction  
**German Baseload price difference, 2021**

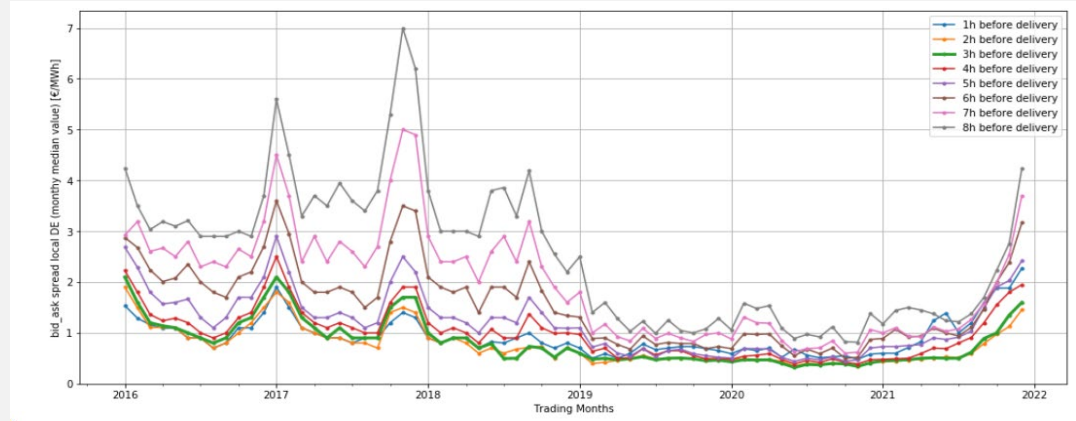


Intraday continuous & Day-Ahead auction  
**French Baseload price evolution, 2021-2022**

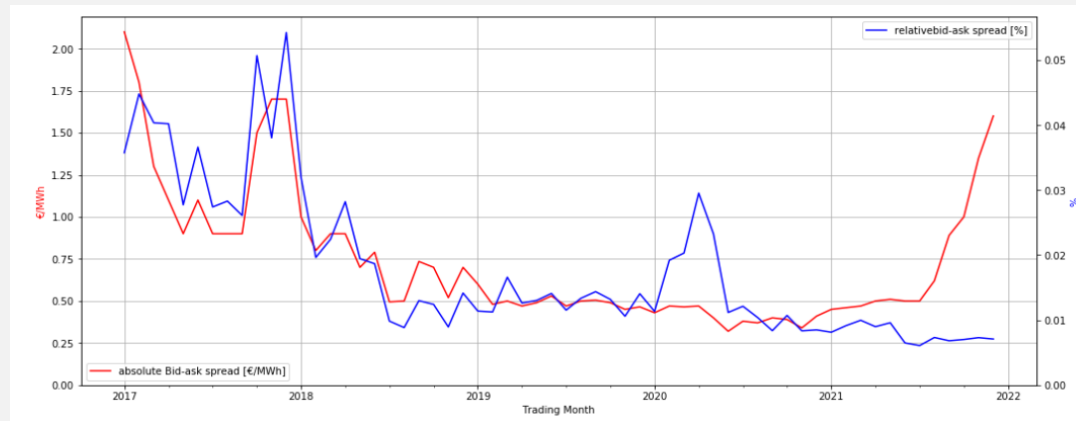


# Despite current market conditions, power spot liquidity and price discovery quality remain strong

Intraday continuous  
**German bid-ask spread,**  
 2016-2022

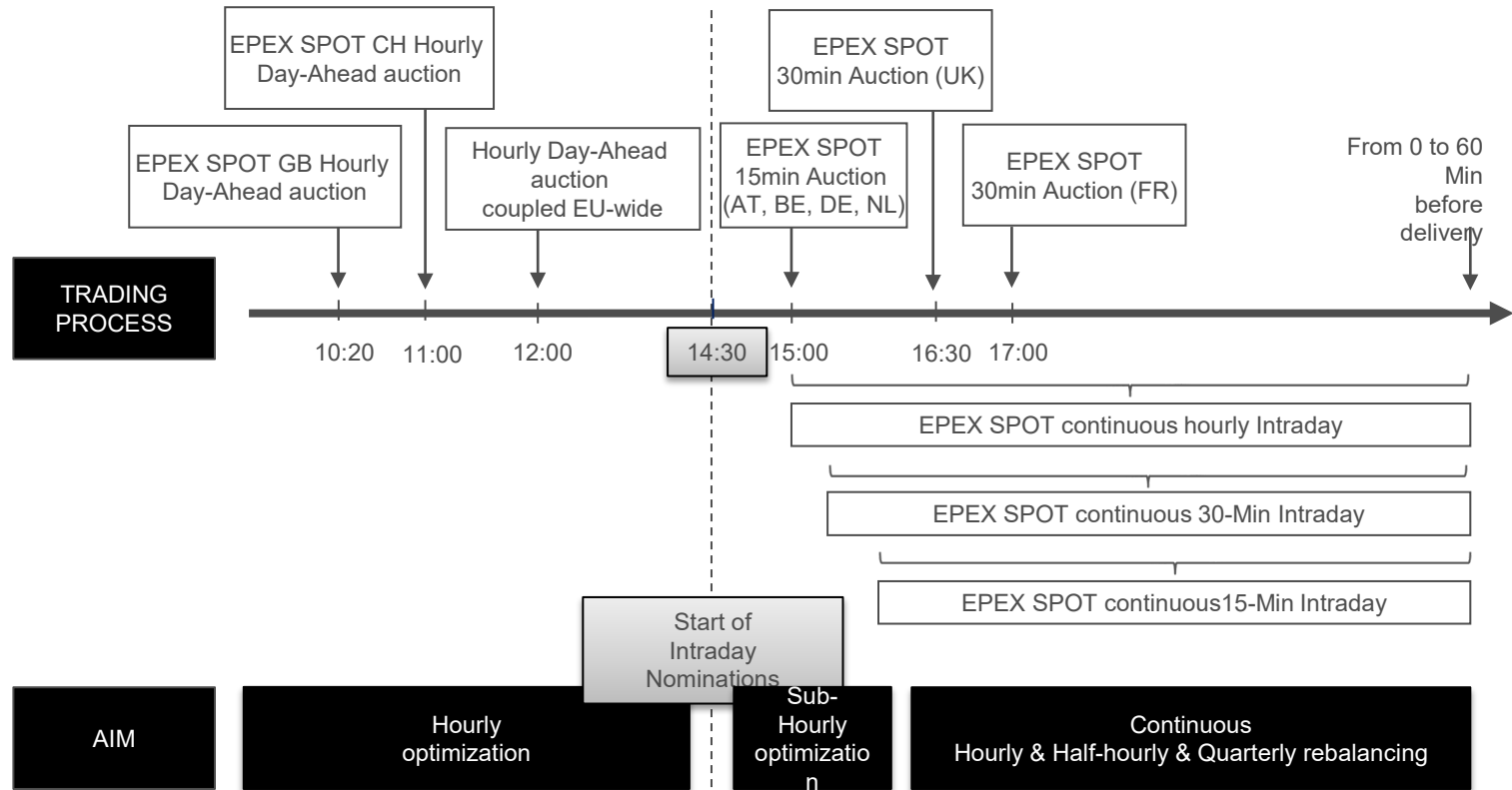


Intraday continuous  
**German bid-ask spread,**  
 2017-2022:  
*Absolute and Relative\**  
*values*



\* Relative local bid-ask spread = Local bid-ask / VWAP

# Together we have built a robust & reliable liquid wholesale energy trading process





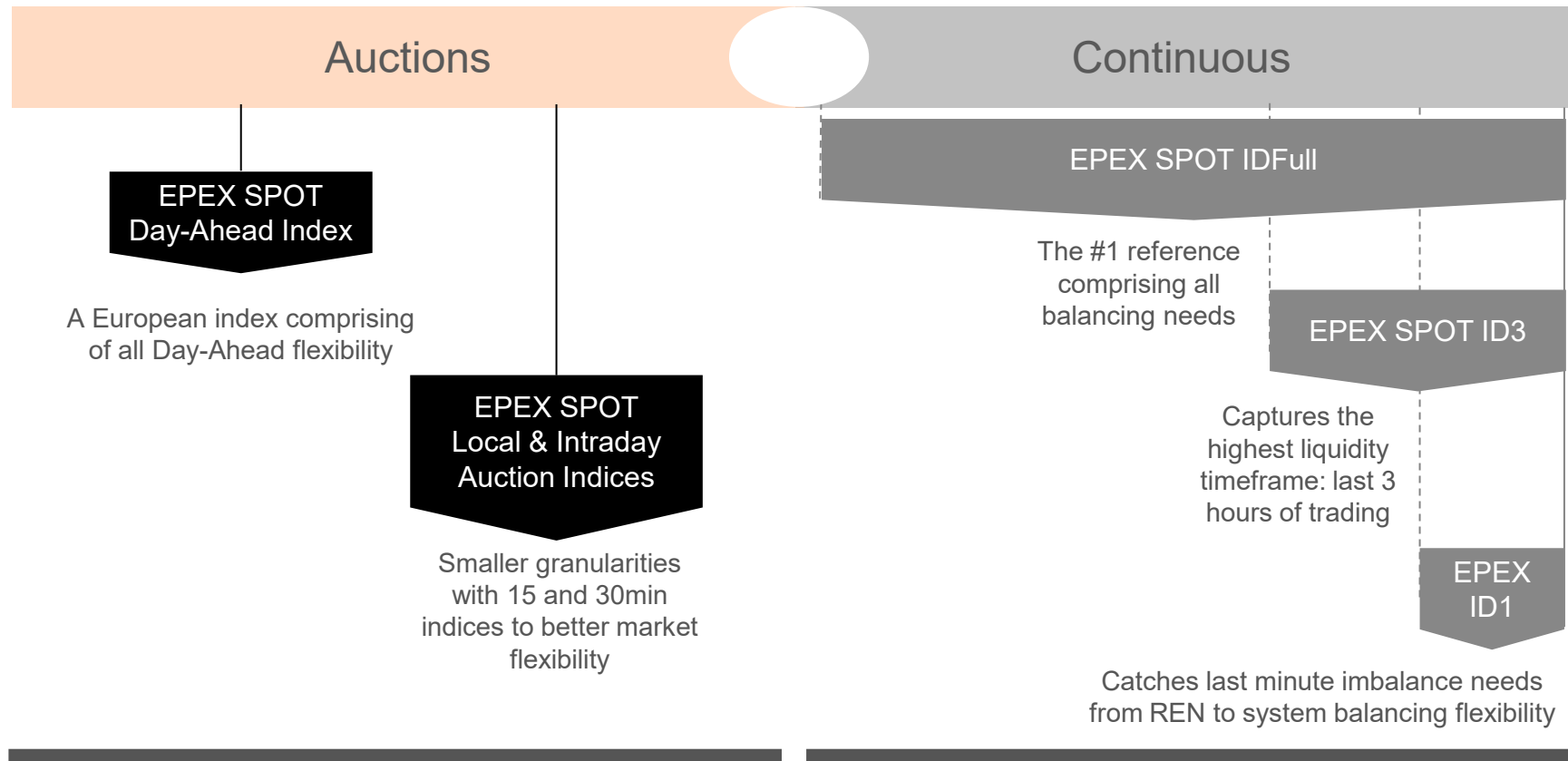
# Trusted and valued price indices

## Auction Prices

to support your **daily strategies**

## Continuous Prices

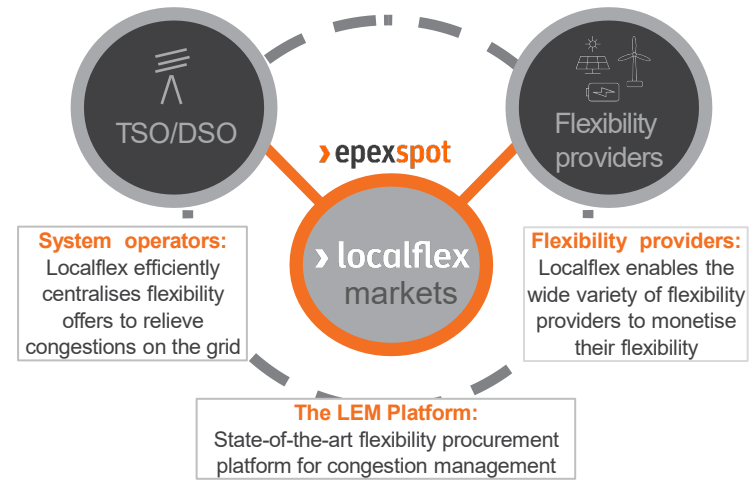
to value **creative and smart trading**



# EPEX SPOT's Local flexibility market solution

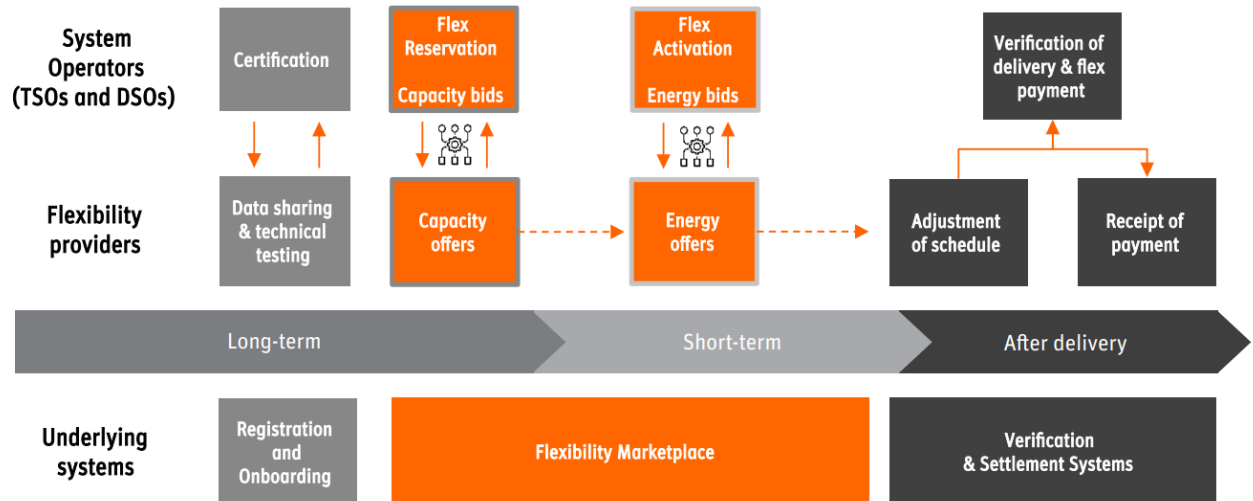
Local flexibility markets are about the implementation of a market mechanism to:

- **Efficiently centralize** localized physical flexibility **where and when needed**
- Facilitate grid-oriented **T&D coordination and optimization**
- Foster the **development of new decentralized flexibility sources**



## Important principles for a flexibility marketplace:

- Transparency
- Open to all technologies
- Standardized products
- Platform synergies
- Neutral market operation
- Price signals for flexibility
- Contractual framework



# The EPEX-GOPACS collaboration for Congestion management in the Netherlands

EPEX SPOT and GOPACS have just announced their **cooperation to reinforce the Dutch short-term redispatch** process.

- › **GOPACS:** collaboration of Dutch System Operators (TSO Tennet, DSOs) to coordinate short-term flexibility procurement for congestion management
- › **EPEX SPOT:** implementation of a new product in M7 for market participants to be able to offer physical flexibility to Tennet and Dutch TSOs during the intraday timeframe.

**Go-live expected mid-2023**



PRESS RELEASE:  
[https://www.eex-group.com/fileadmin/Global/News/Group/EpexSpot/220523-EPEXSPOT\\_GOPACS\\_Press-Release.pdf](https://www.eex-group.com/fileadmin/Global/News/Group/EpexSpot/220523-EPEXSPOT_GOPACS_Press-Release.pdf)

› eex › epexspot › ecc

The first pan-European  
**Guarantees of Origin (GO) market**  
to be launched in September 2022\*

*\*subject to member and technical readiness*

# GOs market at a glance

## › AUCTION SPECIFICATIONS

Pay-as-clear spot auctions - **monthly**

Facilitated **onboarding** for EEX market members

GOs with a certain **production period**

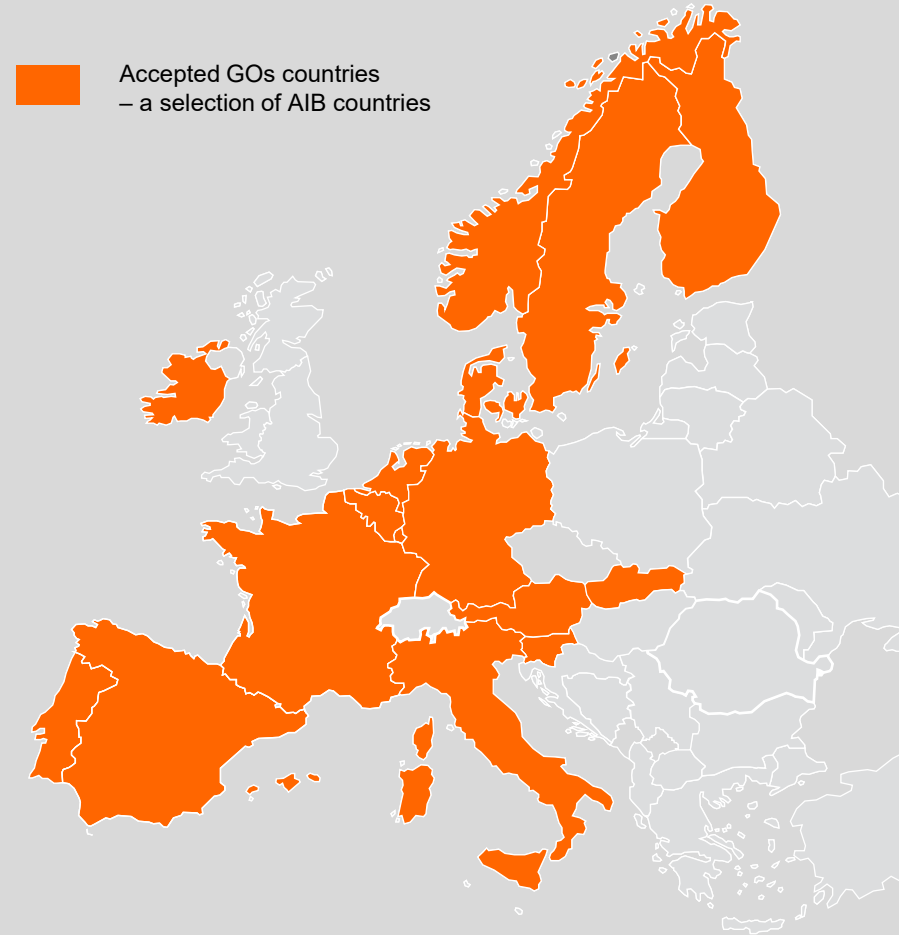
Publication of **indices** and price references

## › ALGORITHM

Maximize **market welfare**

Maximize **traded volumes** for market participants

Cleared and settled by **›ecc**  
 Delivery via the **›eex** registry



# Speedwell Climate x EPEX SPOT create index that reflects weather & power price fluctuations

- › Index reflects both wind and spot price fluctuations over a period of time (day, month, seasonal, etc.).
- › Enables **wind power producers, asset holders** and **investors** to better manage their risk – ensuring stability of revenues, increased financing and development of renewables in the market.
- › Each index will help deal with the uncertainty of the captured price of a wind farm.

## Three innovative wind power indices

- The factor difference between the actual weighted price received and the baseload price
- The actual price received on a weighted basis per MWh
- The product of the hourly wind energy production and the weighted auction price

## Product Specifications

| Great Britain            | Standard Periods                           | Tailored Periods                                     |
|--------------------------|--|--|
| All / Offshore / Onshore | Days / Weeks / Months / Quarters / Seasons | Any non-standard period can be provided upon request |

## Interested?

Contact: [info@speedwellclimate.com](mailto:info@speedwellclimate.com) or [marketdata.sales@epexspot.com](mailto:marketdata.sales@epexspot.com)

# About EEX Group

**EEX Group** is a group of specialised companies providing market platforms for energy and commodity products across the globe. The offering of the group comprises contracts for Energy, Environmentals, Freight, Metals and Agriculturals. The group offers market access and tailor-made solutions to trading participants as well as integrated process handling with its own clearing houses. The companies belonging to the group are specialised for the different markets and provide on-site support for their customers.

EEX Group consists of the trading venues European Energy Exchange (EEX), EEX Asia, EPEX SPOT, Power Exchange Central Europe (PXE) and Nodal Exchange as well as the registry provider Grexel Systems and the clearing houses European Commodity Clearing (ECC) and Nodal Clear. EEX Group is based in 17 worldwide locations and is part of Deutsche Börse Group.

› eex group

Thank you

› eex

› epexspot

› eexasia

› nodal

› ecc

› nodalclear

› grexel

› pxe