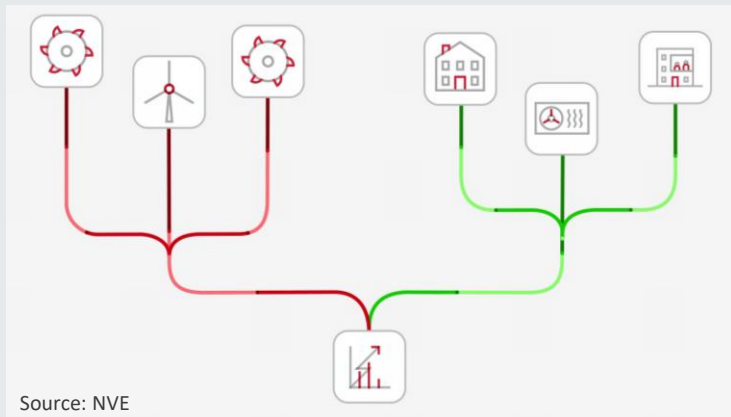


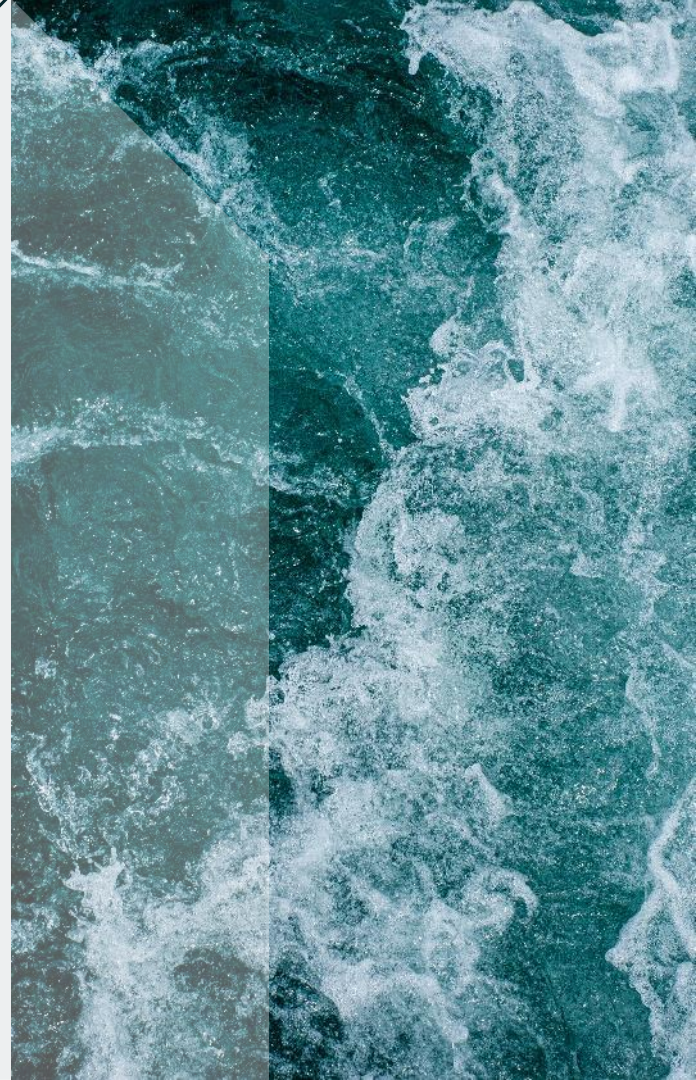
## Power markets fit for the future



Source: NVE

21 May 2025

Pietro Rabassi, Executive Vice President, Nord Pool – Euronext group



# Agenda

## 01

**Energy markets  
101 and Nord Pool**

## 02

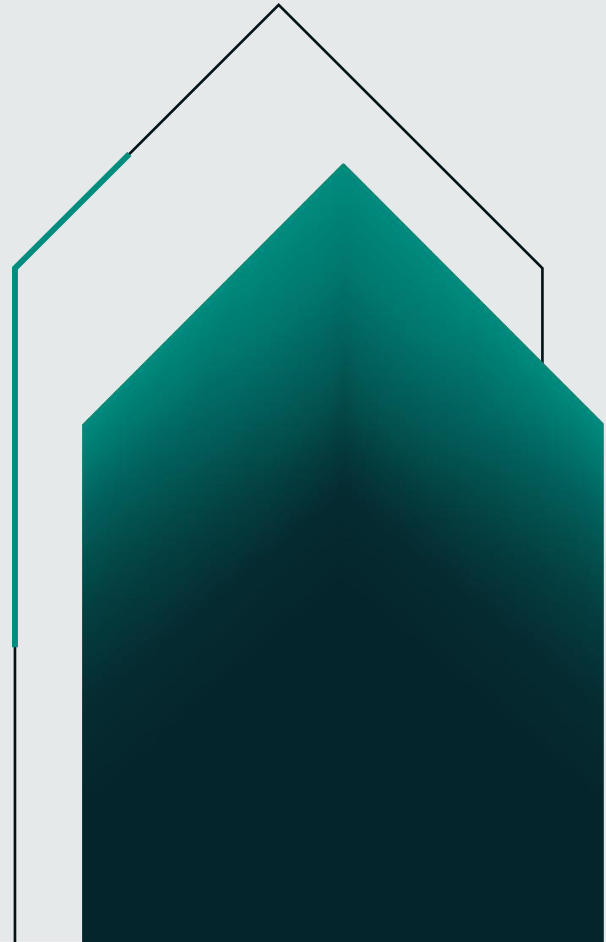
**The trends post  
2022-2023 energy  
crisis**

## 03

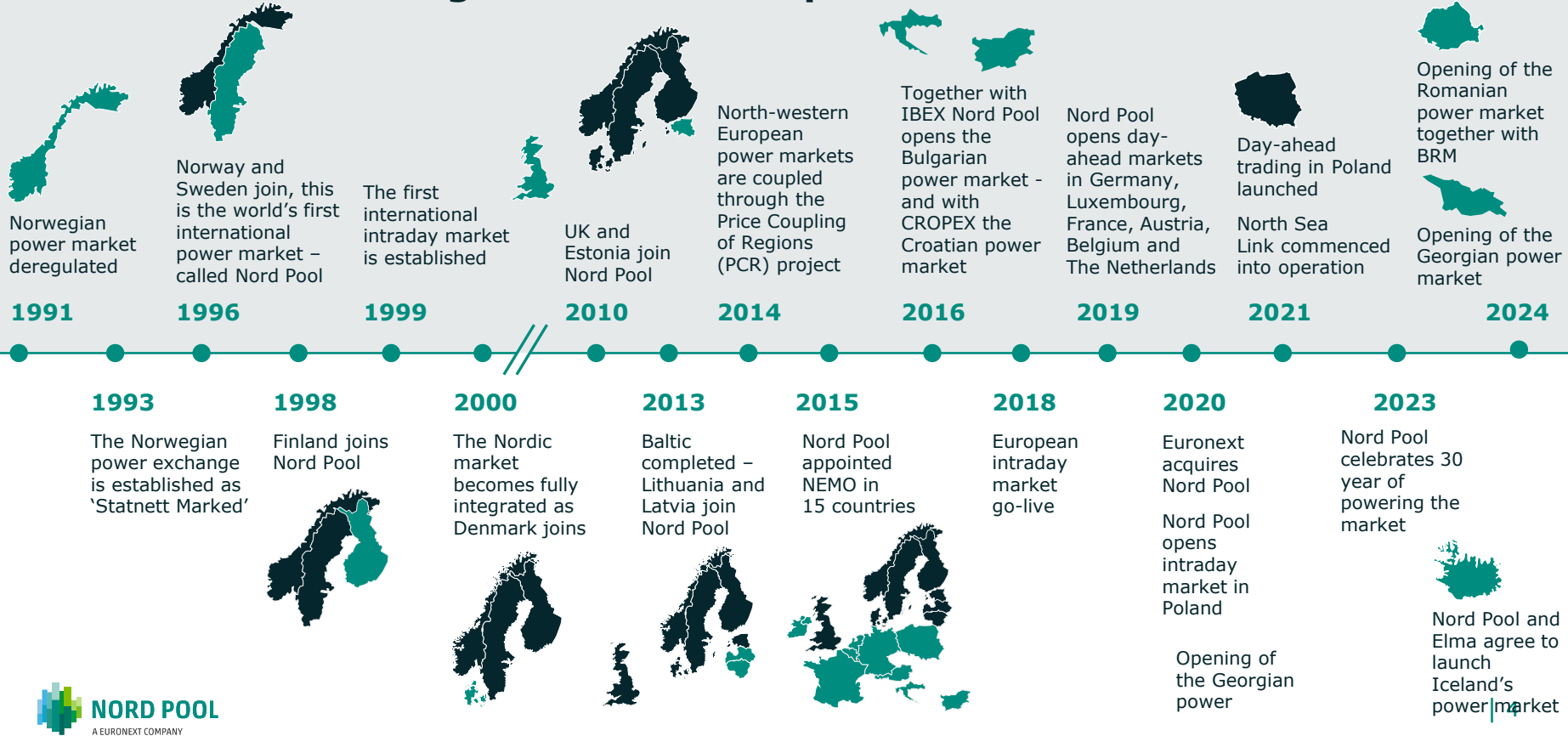
**Market design solutions to  
accommodate for the  
triangle, in the energy  
transition**

# 01

## Energy markets 101 and Nord Pool



# Nord Pool created the world's first international power market in 1996 that became the Target Model in Europe





# Does every country need to be self-sufficient all the time when it can count on its neighbors?

No, thanks to cross-border/integrated/coupled markets:

## SDAC (SIDC) - Single Day-Ahead (Intraday) Coupling

The aim of SDAC is to create a single pan-European cross-zonal day-ahead electricity market. Single day-ahead coupling is the auction process where collected orders are matched and cross-zonal capacity is allocated simultaneously for different bidding zones in the day-ahead market.

### How SDAC works

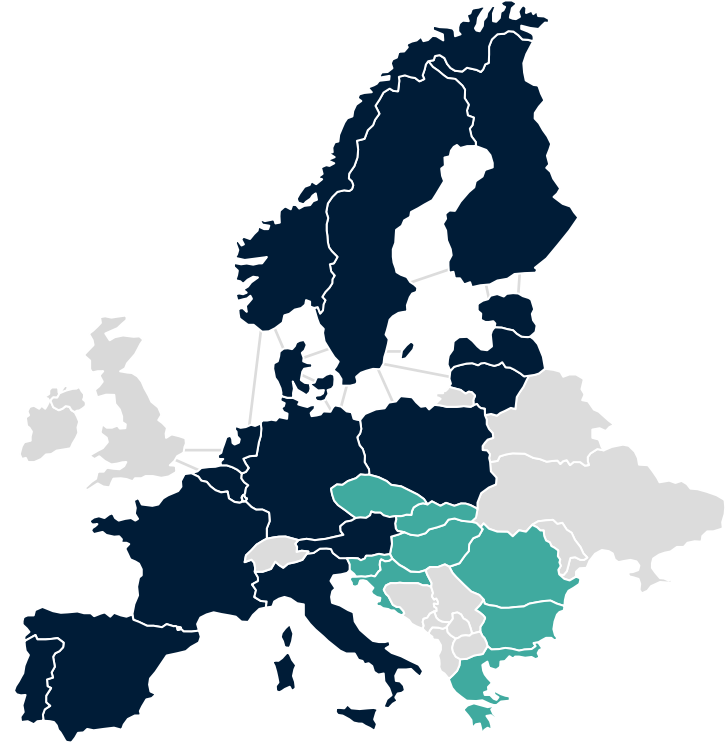
Day-ahead market coupling requires:

- processing bids, offers, network capacities and constraints from all involved NEMOs and TSOs
- matching them by operating one single algorithm,
- validating and sending matched trades, clearing prices, and scheduled exchanges to NEMOs and TSOs.

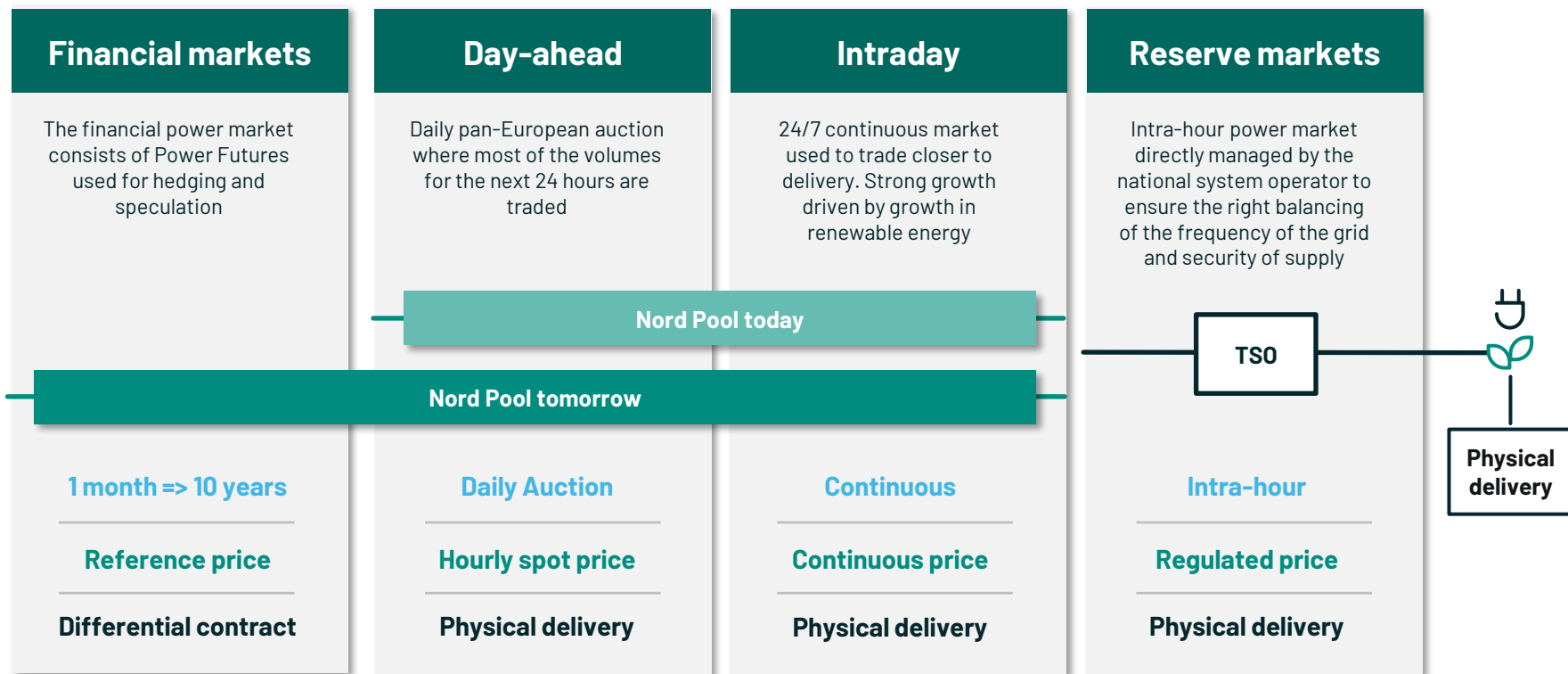
SDAC makes use of a common price coupling algorithm, called PCR EUPHEMIA, to calculate electricity prices across Europe and to implicitly allocate auction-based cross-border capacity.

PCR EUPHEMIA matches energy demand and supply for 24 hours simultaneously.

This process maximises social welfare and considers price limits of orders and network constraints.

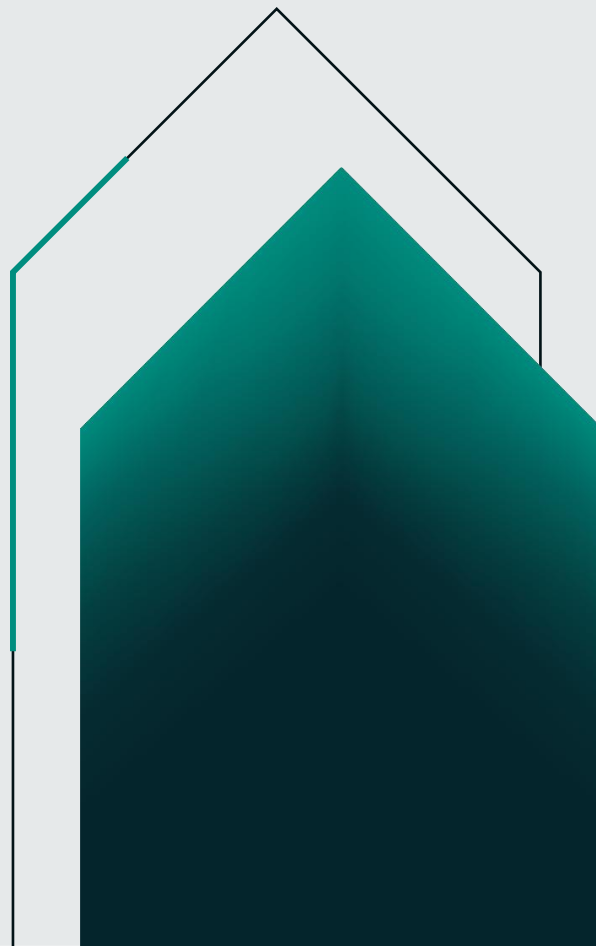


# Europe has adopted a zonal pricing (vs nodal pricing for instance in the USA). Here is how the market is designed:

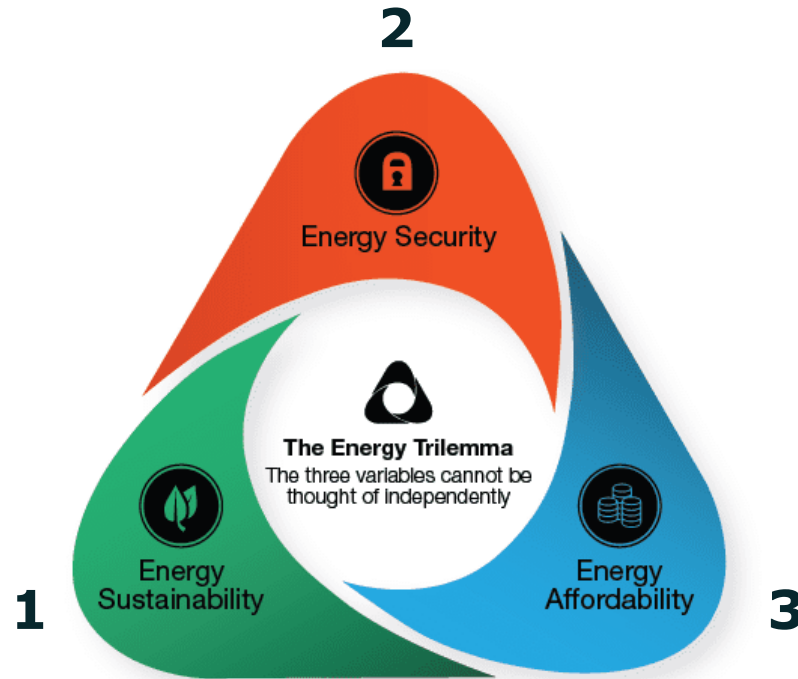


# 02

**The trends post 2022-2023  
energy crisis**

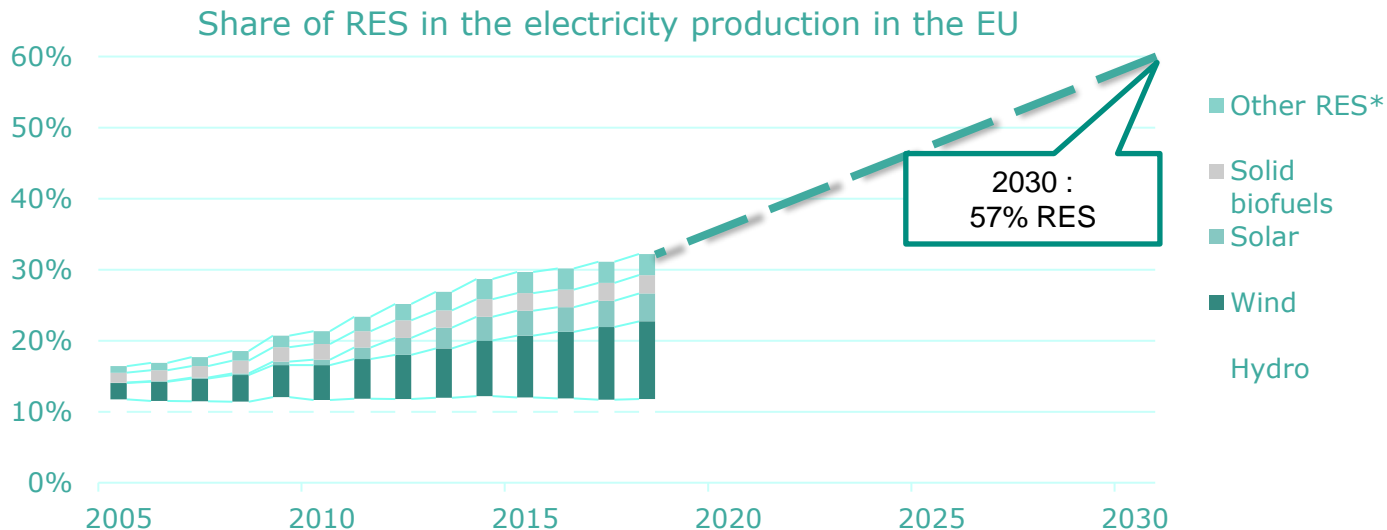


**We are electrifying more and more  
Keeping the energy policy triangle in balance is key to reach net-zero power systems, with  
some challenges though**



# We have more Renewables (RES) especially intermittent (iRES) across Europe (EU-28)...

EU TARGETS BY 2030 : 57% RES, ~ 30% IRES



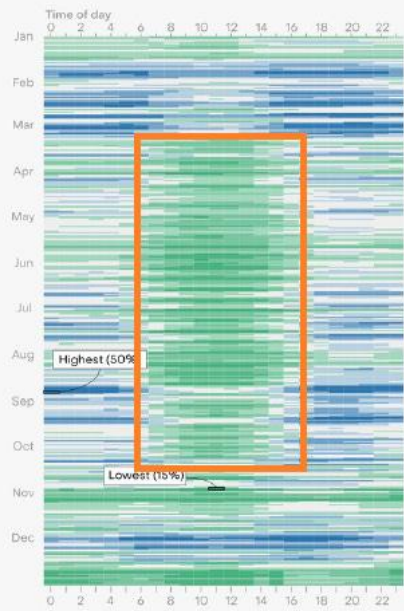
\*Electricity generation from gaseous and liquid biofuels, renewable municipal waste, geothermal, and tide, wave & ocean

Source : <https://ec.europa.eu/eurostat/web/energy/data/shares>

# Clean power in Europe is making inroads, challenging security of supply

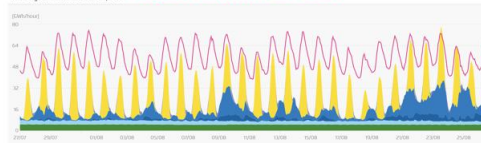
## How much fossil fuel generation is left in every hour?

Share of electricity from fossil generation in 2023 (%)

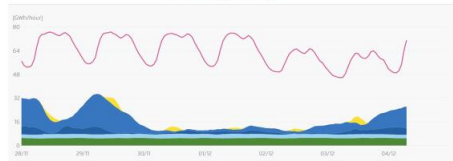


## GERMANY – POWER SITUATION

Power generation and consumption August-September 2024



## “Dunkelflaute”



Aggr. © Energiewende, Corbis, 360, 300, 300, 300

Source: Ember calculations based on ENTSO-E, Eurostat, E-Control GmbH, Cyprus Transmission System Operator, Energy-Charts, Agora Energiewende, Energy Institute, Terra, Statistics Netherlands, NetAnders, Solcast, Open-Meteo, ARE via Instrat, Red Eléctrica, and Elstatistik. Ireland and Malta excluded due to data quality issues.

EMBER

WIND POOL  
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## How warning signs hinted at Spain's unprecedented power outage

By David Latona, Emma Pinedo and Pietro Lombardi

May 2, 2025 1:01 PM GMT+2 · Updated 17 days ago



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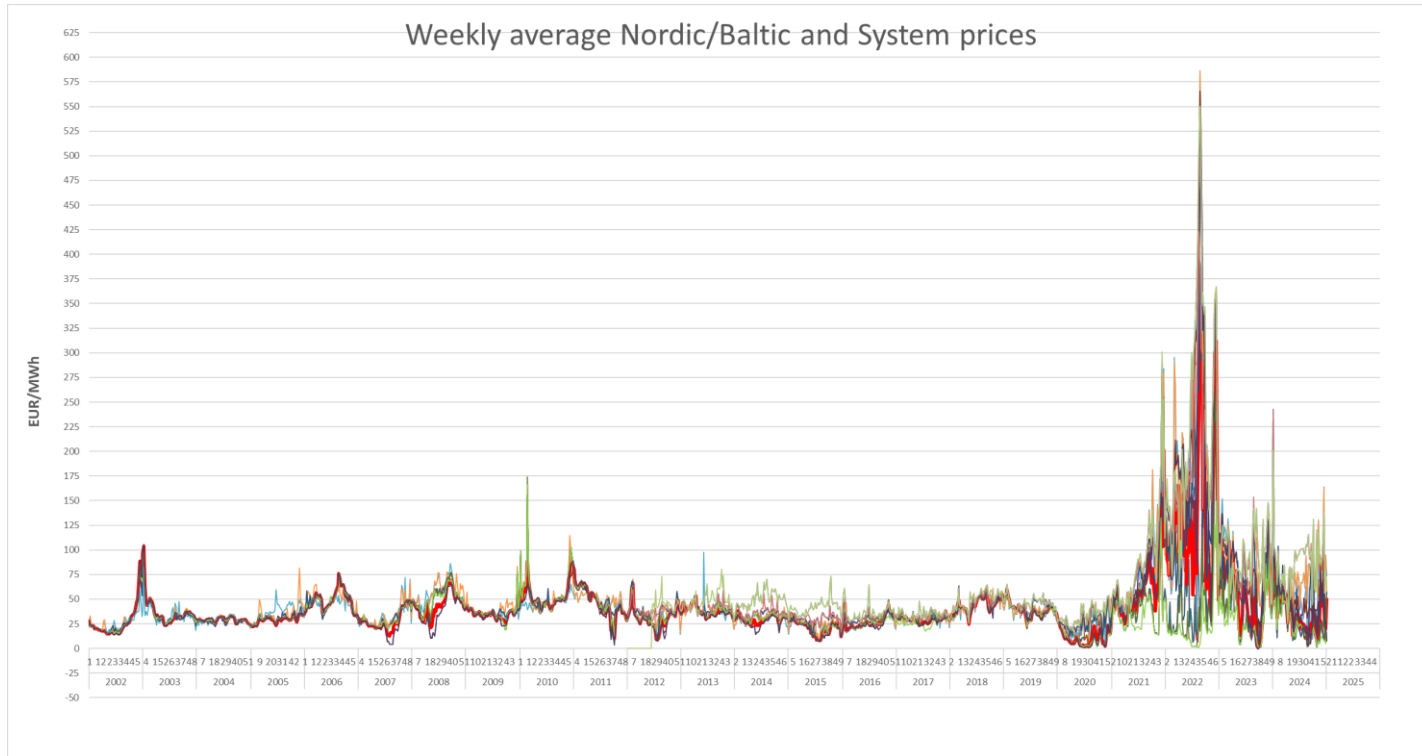
World | Africa | Asia | Australia | Europe | Latin America | Middle East | US & Canada

**Spain will take 'all necessary measures' to prevent another blackout, says PM**

© 28 April 2025

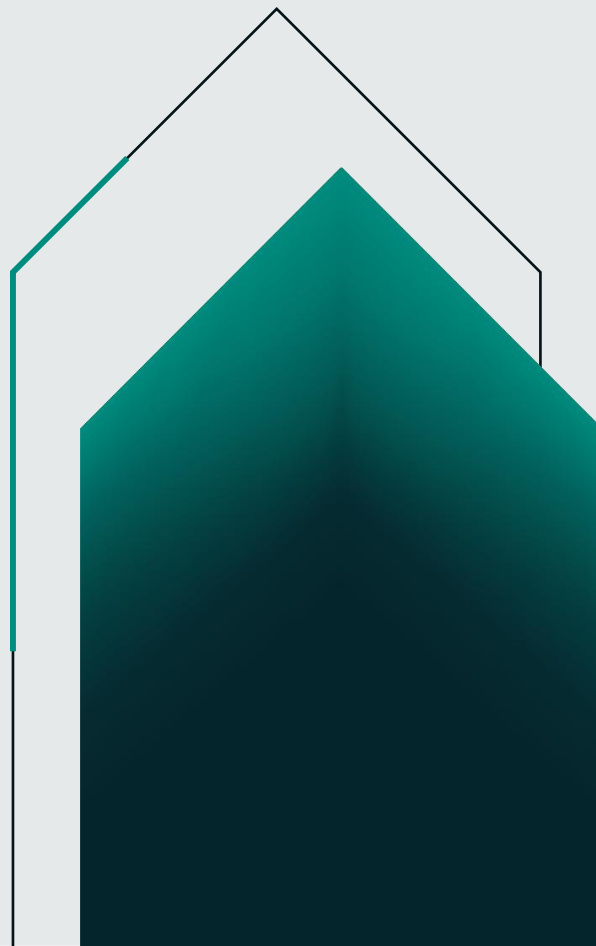
ADVERTISEMENT

## We see more and more volatile (and high) energy prices that weigh on Europe's competitiveness



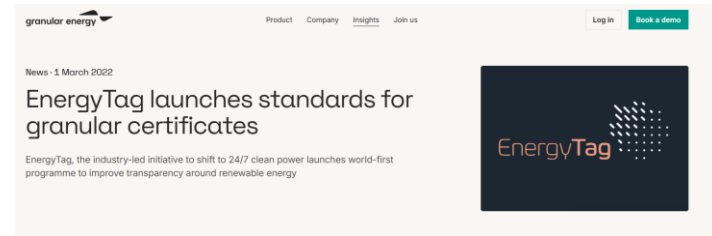
# 03

**Market design solutions to accommodate for the triangle, in the energy transition—two examples of developments needed**



## Granular Guarantees of Origin to match power and CO2-free generation

- Why is it needed? Needs of large consumers to prove their CO2-free generation with the highest granularity possible
- [Granular Energy | Solutions for 24/7 clean energy:](#)

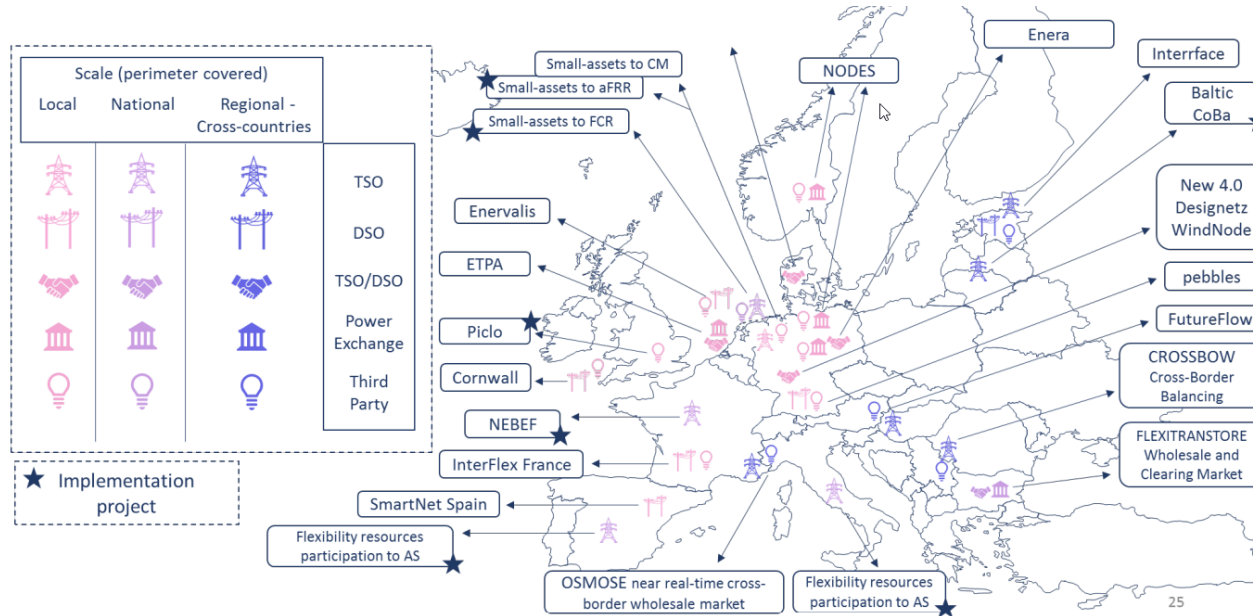


- Partnership with Granular, National Grid (UK) and AFRY:  
[Towards Delivering Clean Energy | Nord Pool:](#)

- Couple power markets with “real-time” green tagging
- Latest results of the demos on webinar on 11 June: stay tuned
- Next steps: rollout in other markets

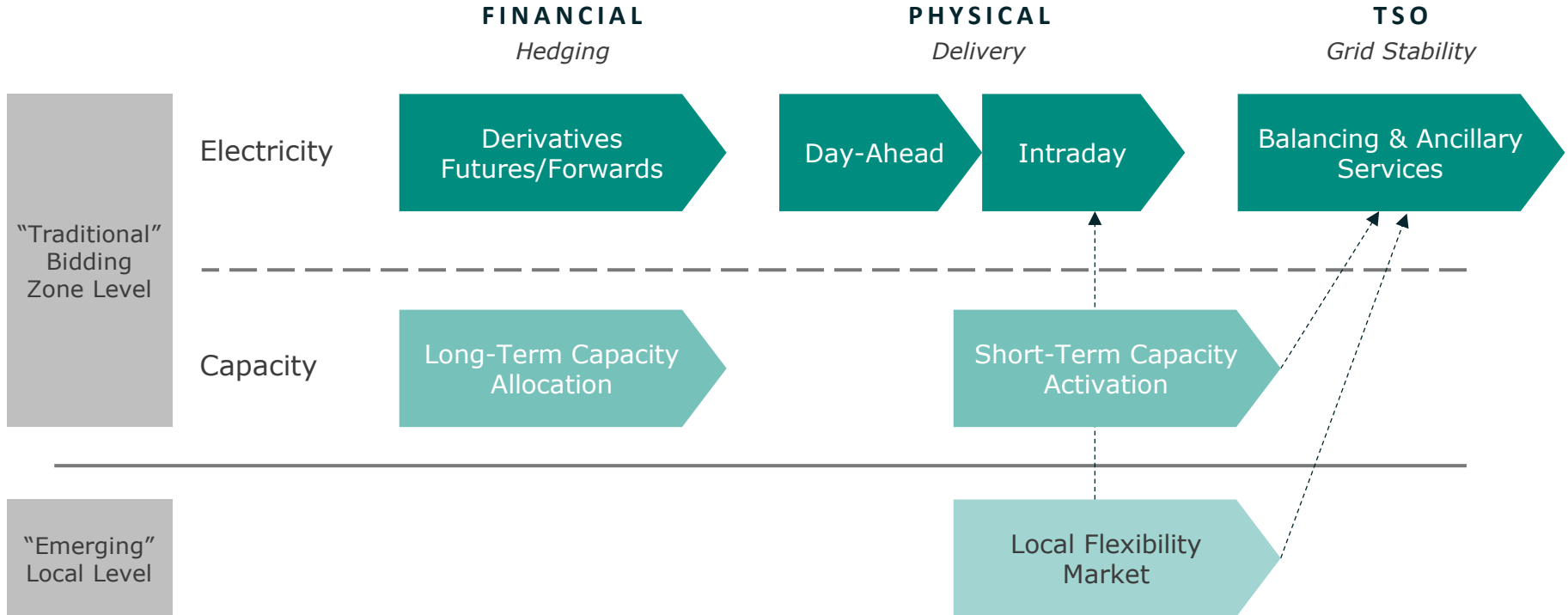
# Market design vision for flexibility markets

A LOT OF INITIATIVES



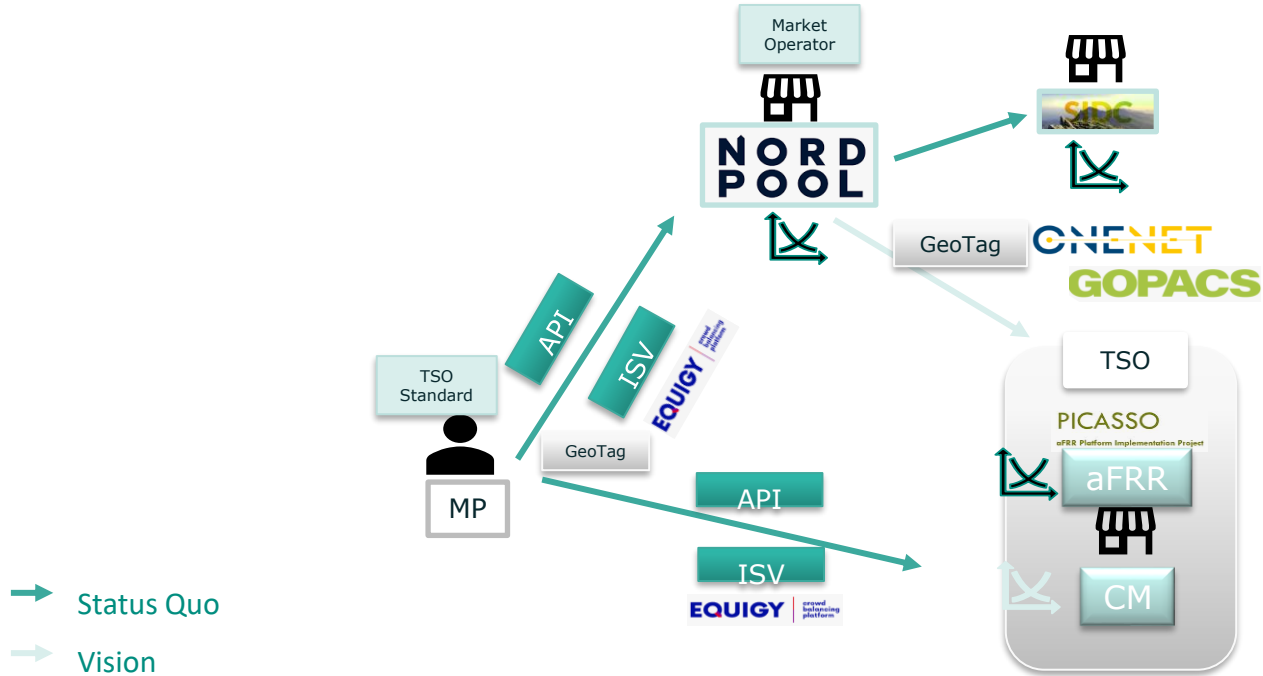
# Market design vision for flexibility markets

ONE MARKET TARGET MODEL WE BELIEVE IN



# Market design vision for flexibility

ONE OPERATIONAL MODEL WE BELIEVE IN



# Questions?

**THANK YOU!  
GRAZIE!  
MERCİ!  
DANKE!  
BEDANKT!  
TAKK!  
Dziękuję!**



# Pietro Rabassi's details

EXECUTIVE VICE PRESIDENT, NORD POOL

Pietro is Executive Vice President Europe at Nord Pool and, acting as General Manager for this region, he is responsible for expanding Nord Pool's business across Europe and creating greater value for its customers and stakeholders.

Pietro has a professional background in international business, and the public and academic sectors, particularly relevant to the energy and power sector and to his role at Nord Pool.

He has studied engineering at Politecnico di Milano and Alta Scuola Politecnica in Italy and at Ecole Polytechnique in France, economics at Milan University and pursued postgraduate business and government studies at Harvard University in the USA.

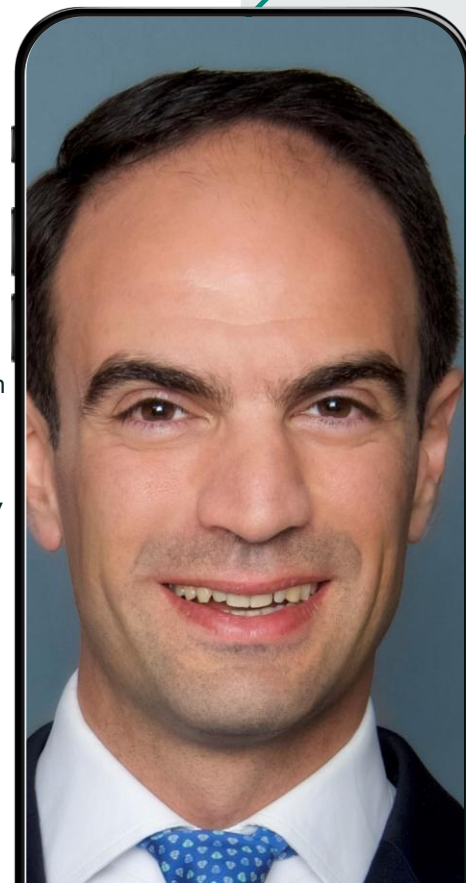
Born into an Italian-Greek family and grown up in Italy close to Austria and Slovenia, Pietro has lived in 10 countries so far. You may address him in English, German, French, Italian or Greek (you can try some Spanish, Dutch and Russian, too).

Joined Nord Pool: 2016

For more information: [www.linkedin.com/in/pietro-grigorio-rabassi](https://www.linkedin.com/in/pietro-grigorio-rabassi)

Mobile: +39 375 86 77 737

Email: [pietro.rabassi@nordpoolgroup.com](mailto:pietro.rabassi@nordpoolgroup.com)

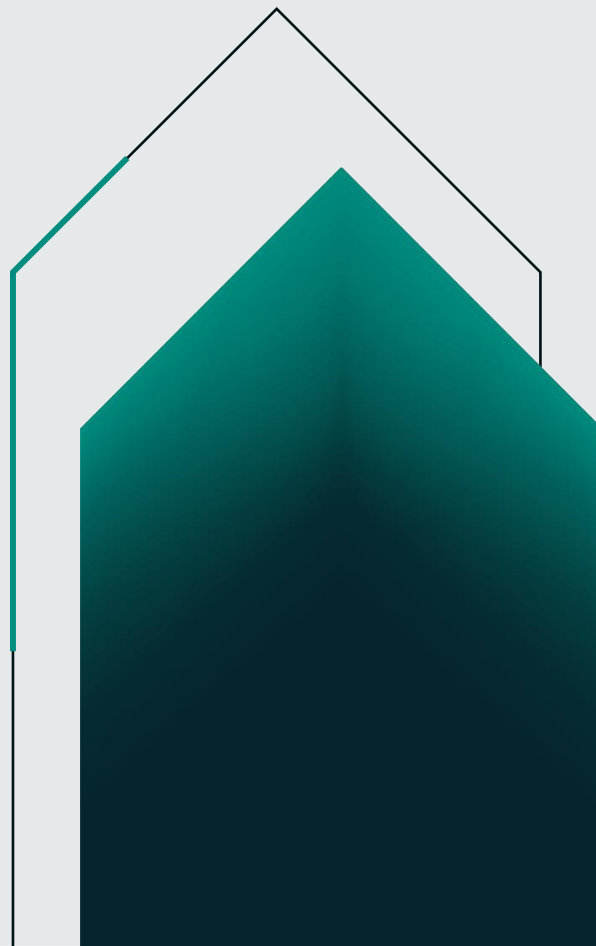




**NORD POOL**

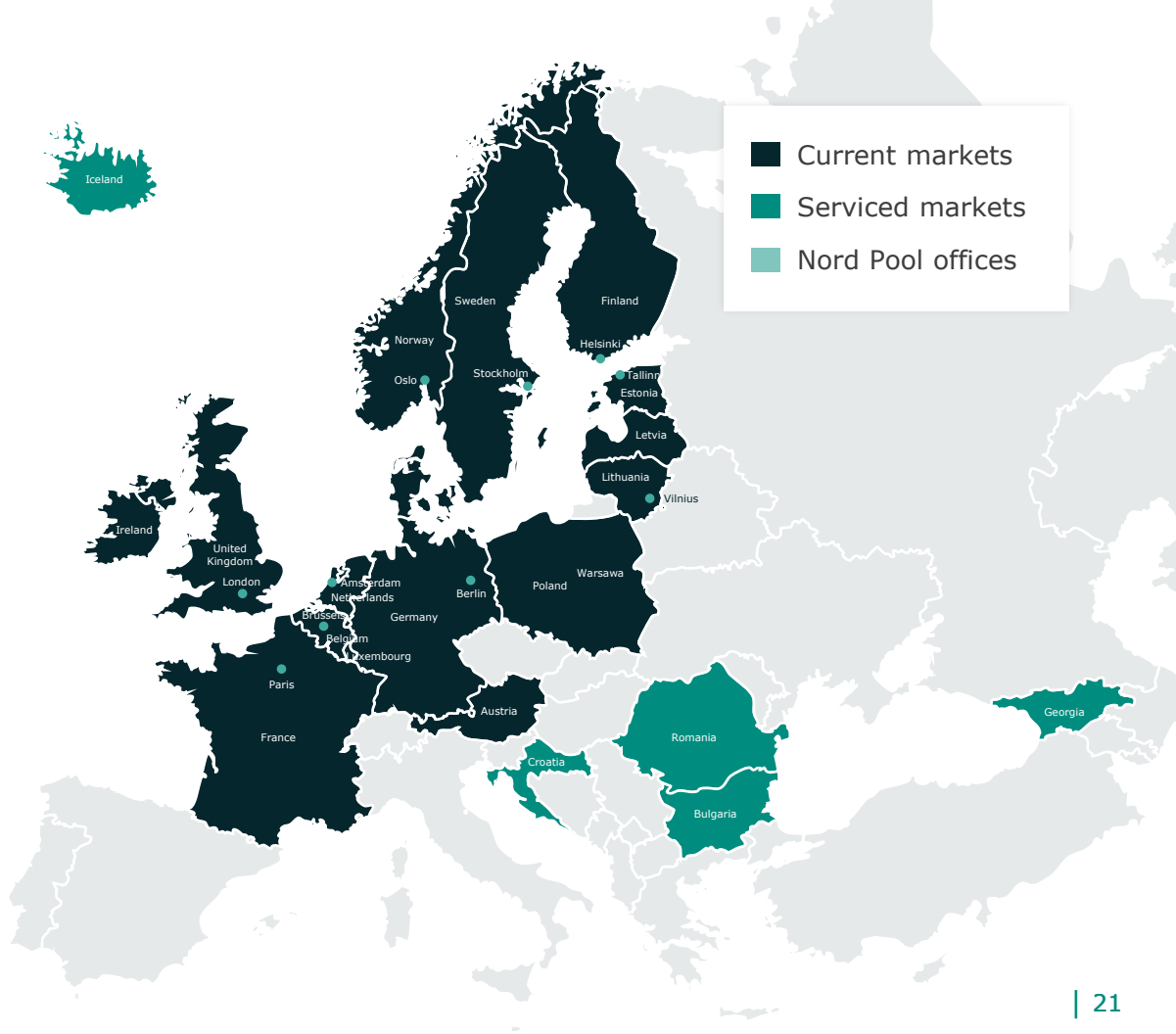
A EURONEXT COMPANY

**ANNEX**



# Nord Pool

- Pan-European marketplace for Power - operating in 16 European countries
- Nord Pool offering:
  - › day-ahead and intraday trading
  - › clearing and settlement services
  - › data subscriptions
  - › consulting services and academy
- Servicing 5 additional European countries
- Operating EPAD Auctions
- More than 400+ customers from 20 countries trade on Nord Pool's markets
- Offices in Oslo, Helsinki, Stockholm, Vilnius, Paris, Brussels and London



**1036 TWh**  
day-ahead



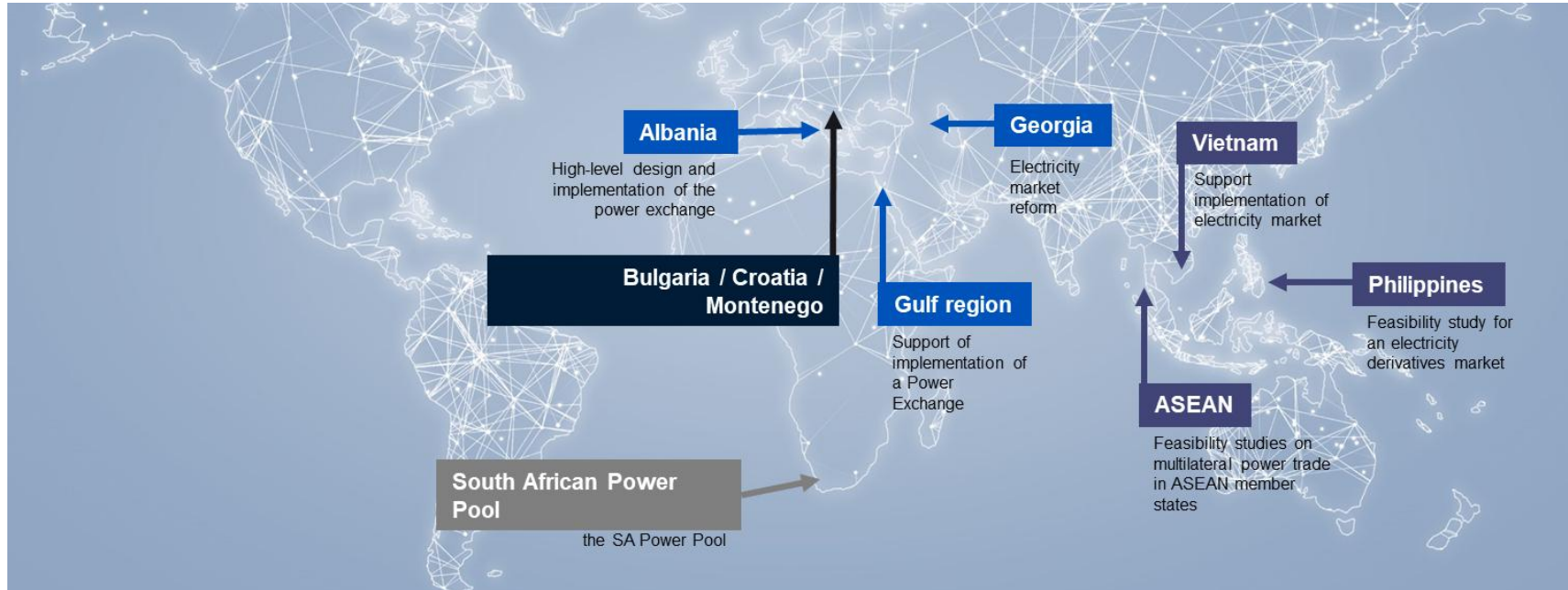
**114 TWh**  
intraday



**400+**  
customers

# We consult with our expertise across the world

NORD POOL IS A WELL RECOGNISED BRAND ACROSS THE WORLD. OUR CONSULTING BUSINESS ADVISES GOVERNMENTS, POWER EXCHANGES, REGULATORS, TSOS AND OTHER INDUSTRY EXPERTS



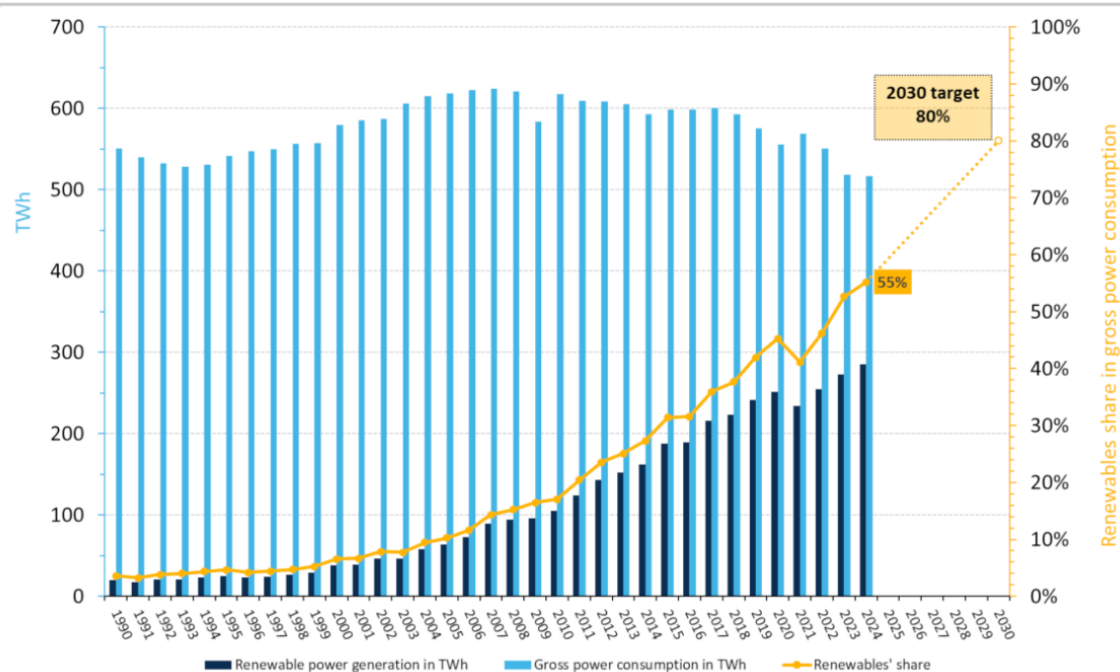
## **The new EU Electricity Regulation – the market design reform – provided a good new framework to accommodate for the triangle**

- European short-term electricity markets function well, the price signal should be protected
- Marginal pricing ensures that: (i) the cheapest source of energy is used before the more expensive and (ii) investment signals are provided for the correct energy sources
- Forward Market should be the main market for future hedging
- PPAs are mainly instruments for larger industrial and commercial consumers
- Two-way CfDs may provide support for investment in new technology that otherwise is not commercially viable

## ...and a similar pattern applies to Germany—one main driver

### Renewables' share in gross electricity consumption in Germany 1990 - 2024.

Data: AGEB 2024.



Source : Clean Energy Wire

# ...and the Nordic countries have the lowest prices in Europe

**2020-2023**

(EUR/MWh)

	2023	2022	2021	2020
NO4	29,95	24,47	35,03	8,88
NO3	38,55	41,94	41,07	9,46
SE1	39,97	59,06	42,49	14,39
SE2	39,98	61,95	42,55	14,39
SE3	51,70	129,21	66,00	21,19
SYS	56,44	135,86	62,31	10,93
FI	56,47	154,04	72,34	28,02
SE4	64,88	152,10	80,52	25,86
NO1	66,95	192,51	74,69	9,29
NO5	67,05	192,06	74,59	9,17
NO2	79,45	211,28	75,10	9,29
NO2-NSL	81,05	212,83		
DK2	81,25	210,15	87,91	28,41
DK1	86,83	219,04	88,14	24,98
EE	90,79	192,82	86,73	33,69
LV	93,89	226,91	88,78	34,05
LT	93,44	230,23	90,45	34,04
DE-LU	95,18	235,45	96,85	30,47
NL	95,82	241,92	102,96	32,24
FR	96,86	275,88	109,17	32,20
BE	97,27	244,53	104,12	31,88
AT	102,14	261,40	106,85	33,14
UK	108,03	240,12		39,59
PL	111,65	166,72		

**2024**

(EUR/MWh)

	2024
1 NO4	23,35
2 SE2	24,64
3 SE1	25,05
4 NO3	28,17
5 SE3	35,77
6 SYS	36,06
7 NO5	41,03
8 NO1	42,04
9 FI	45,57
10 SE4	49,71
11 NO2	50,13
12 UK-NSL	51,16
13 FR	58,02
14 BE	70,32
15 DK1	70,64
16 DK2	70,86
17 NL	77,29
18 DE-LU	78,51
19 AT	81,54
20 UK	85,87
21 EE	87,27
22 LT	87,34
23 LV	87,43
24 PL	96,26

## Price Spreads

€ MWh

20-39

40-59

70-100

<b>2020</b>	<b>9-35</b>
<b>2021</b>	<b>35-109</b>
<b>2022</b>	<b>24-276</b>
<b>2023</b>	<b>30-112</b>
<b>2024</b>	<b>23-96</b>

**2024 prices lower than 2021 levels...**

**... more price volatility, but spreads are further reduced in 2024**

# EU Clean Industrial Deal is the new framework to ensure the energy policy triangle

## Current Sentiment

Europe's industrial core is crying out for help, arguing it faces an existential crisis amid high energy prices, an avalanche of green regulations, and tough competition from elsewhere. At the same time, the Commission is under pressure to prove its Green Deal is workable as it faces strong resistance from right-wing and far-right forces across the bloc.

## Response

“We need a new Clean Industrial Deal for competitive industries and quality jobs in the first 100 days of the mandate. Our full focus will be on supporting and creating the right conditions for companies to reach our common goals. This means simplifying, investing and ensuring access to cheap, sustainable and secure energy supplies and raw materials.”

*Ursula von der Leyen  
President of the European  
Commission*

## Market Implications?

- The market mechanism must be protected – “don’t shoot the messenger”
- Market model produces from the cheapest energy sources first up until the point where supply meets demand
- The market gives the right price signals
- Policy measures must be introduced after the price signal

# We need more...

Continuous  
Market

Demand-  
side  
flexibility

Liquid  
Financial  
Market

Capacities and  
Interconnectors

Energy  
Efficiency

Flexibility  
Market

Storage  
Solutions

Capacity  
Markets

Reserve  
Markets

Sufficient  
Baseloads