



# EnAppSys

- part of **MONTEL** GROUP



**Negative prices in the Nordic region  
What to expect over the coming years**

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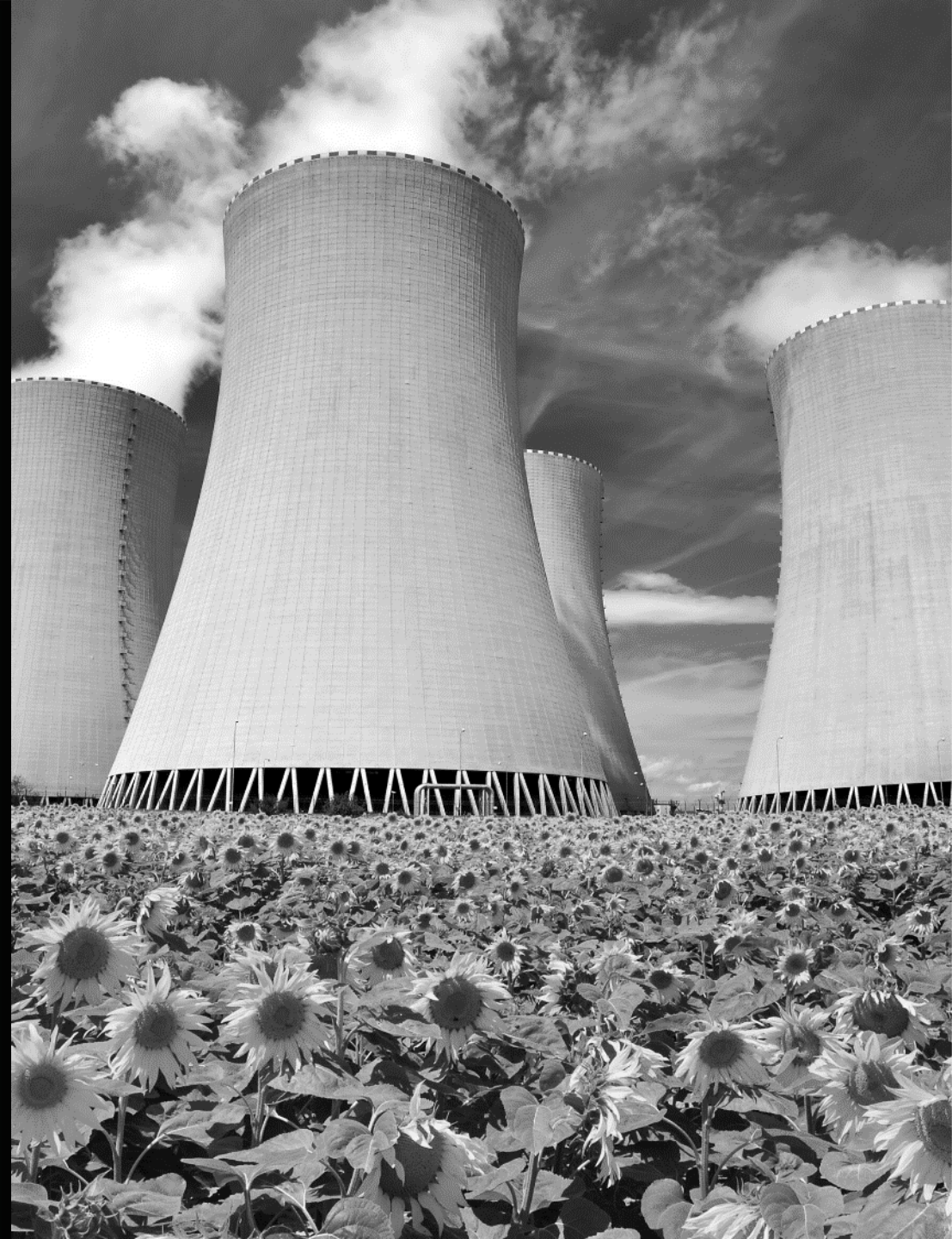
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# INTRODUCTION



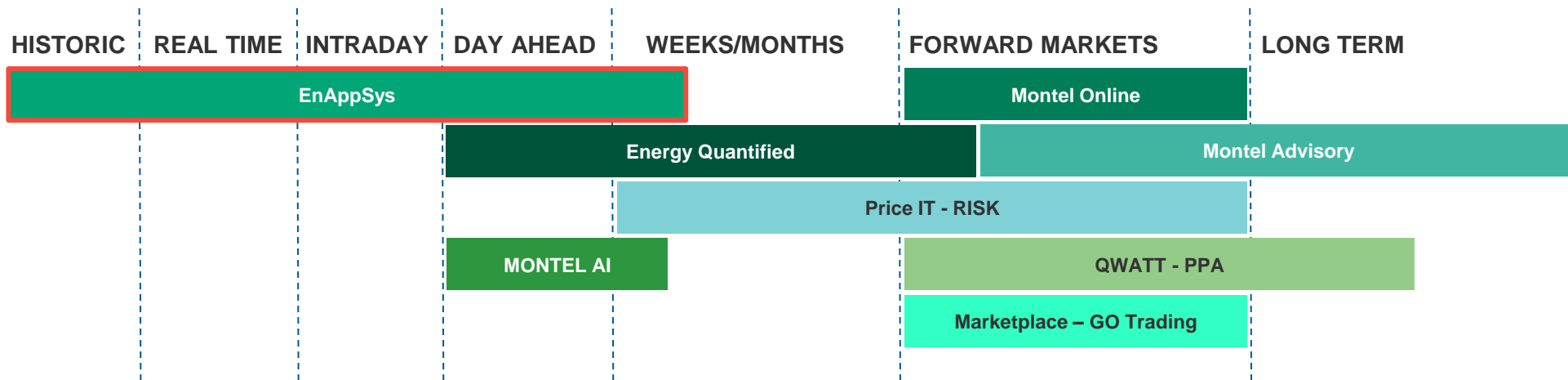
## EnAppSys is a new acquisition of Montel Group

Data and Analytics Platform for Short-Term, Intraday and Historic Data

- Demand, Renewables Forecasts
- Day Ahead Price Forecasts
- Market Sensitivities
- Intraday Trading Analytics
- Cross Border Analytics
- Balancing Markets

The EnAppSys Platform is a highly configurable and customizable source of data and analytics, featuring API-connectivity and rapid development.

It allows you to create your personal views on the market while leveraging the knowledge and experience of our analysts.



## Why talk about negative prices?

Markets are changing continuously:

- Market Coupling
- Nordic Flow Based
- New Balancing Arrangements
- Cross Border Influences
- Geopolitical influences
- Local politics (subsidies, phase-out of generation assets)
- Electrification vs increasing renewable capacity



## Questions to be answered today

- ▶ What are we seeing?
- ▶ A closer look at the markets feeding into the Nordics
- ▶ How does must-run generation in border markets impact?
- ▶ What are the rationales for negative prices?
- ▶ So what, what is in it for Nordic companies?



WHAT ARE WE SEEING?



# WHAT ARE WE SEEING?

The number of negative prices has been increasing over many years.

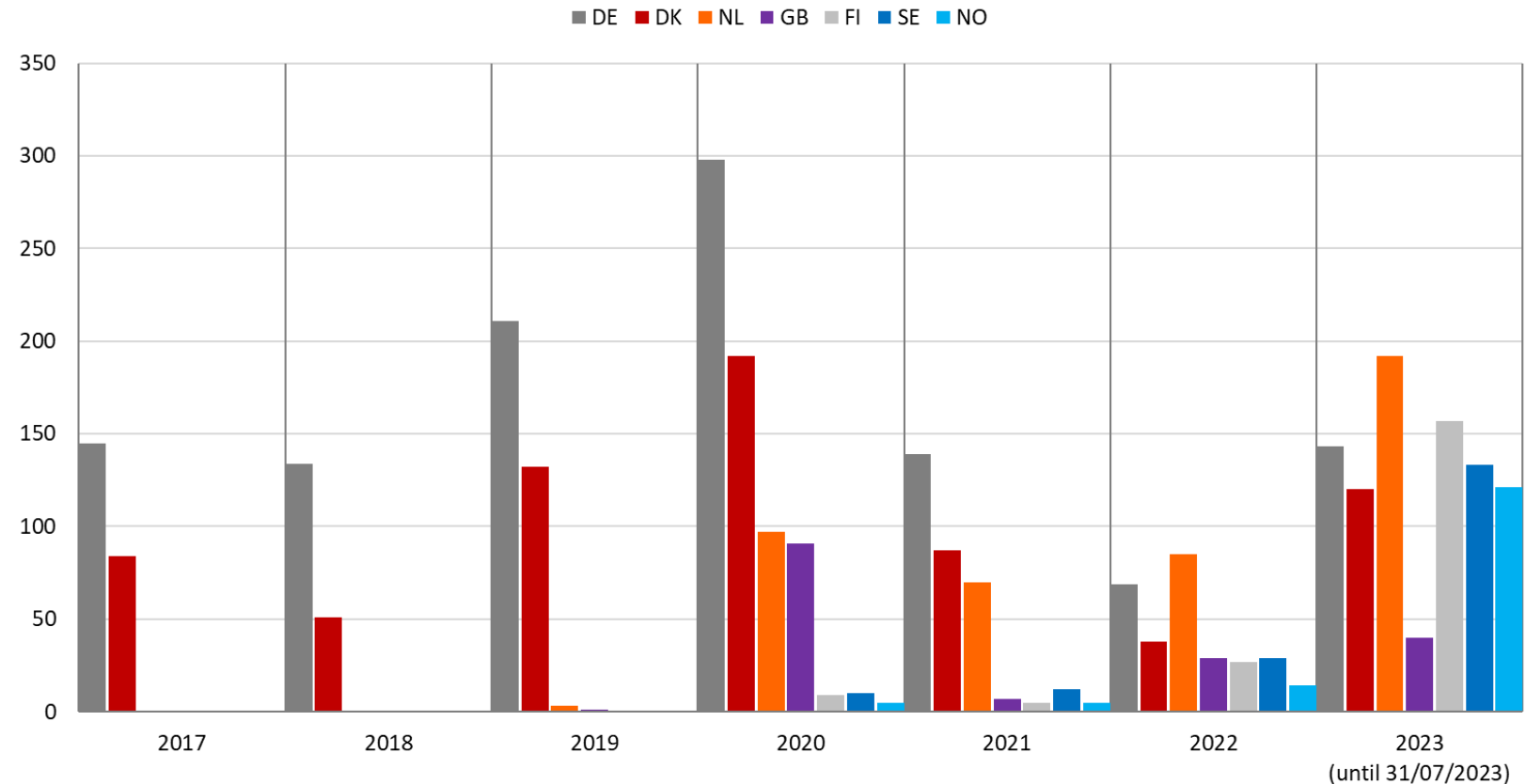
## Causes:

- Wind and Solar buildout
- Covid 19 (Demand)
- Interconnectors and market coupling
- GO Prices

More negative prices in 2023 (YTD!), despite high gas prices, higher carbon prices and nuclear closures in DE.

What else?

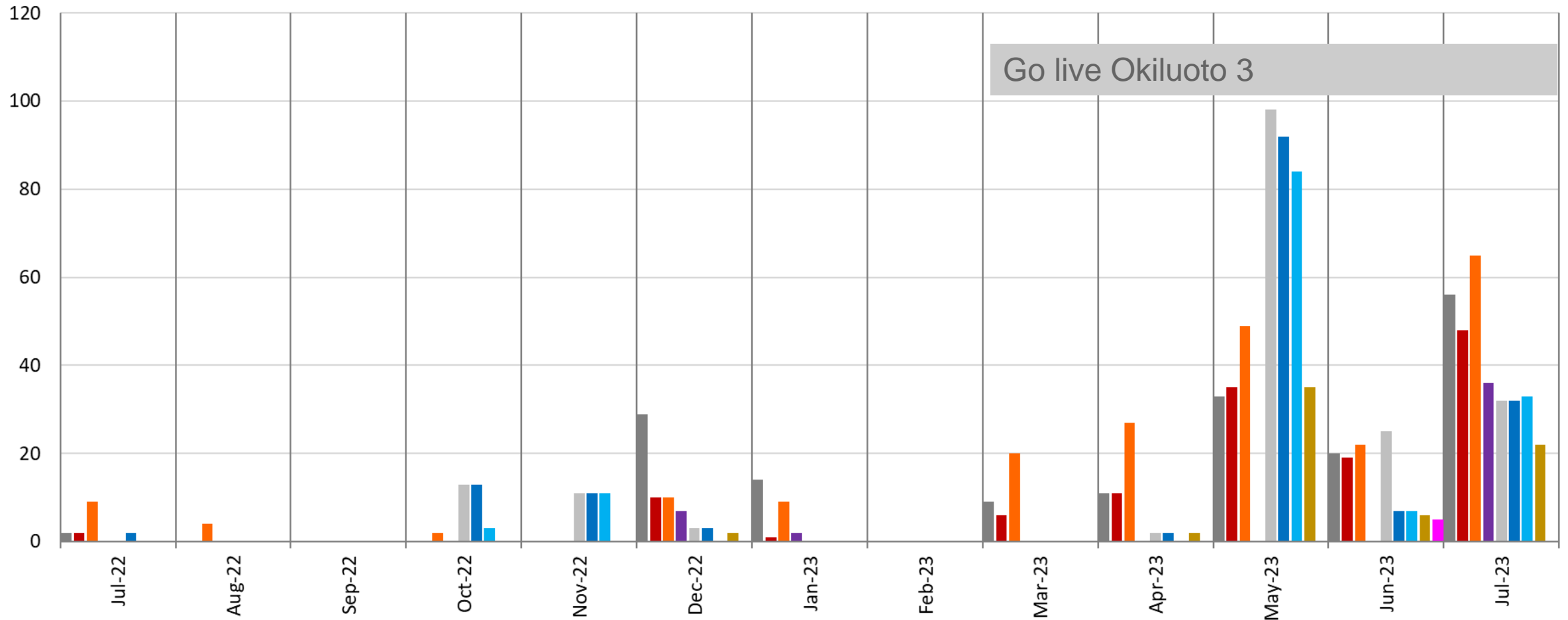
Yearly Total Hours with Negative Day Ahead Prices per Country





## Number of Hours with Negative Prices - Nordics & Border Countries

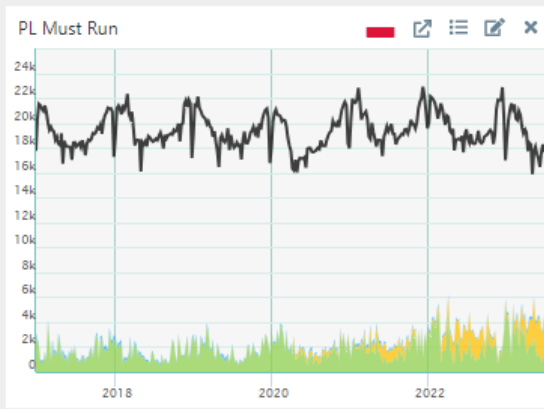
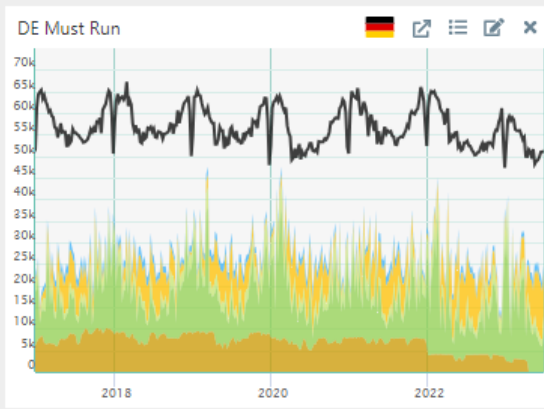
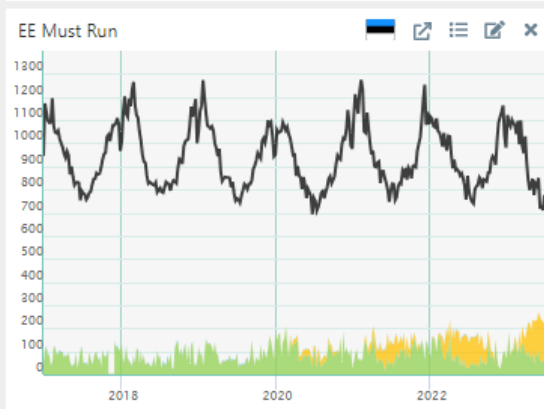
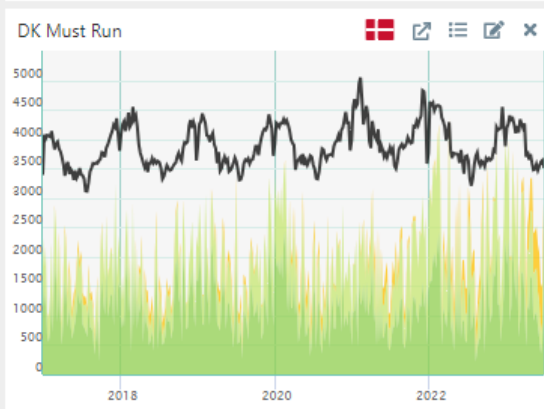
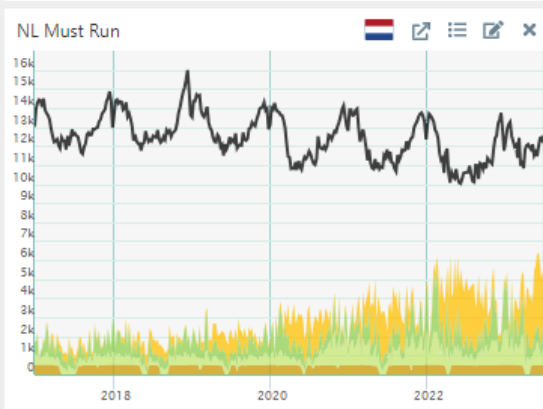
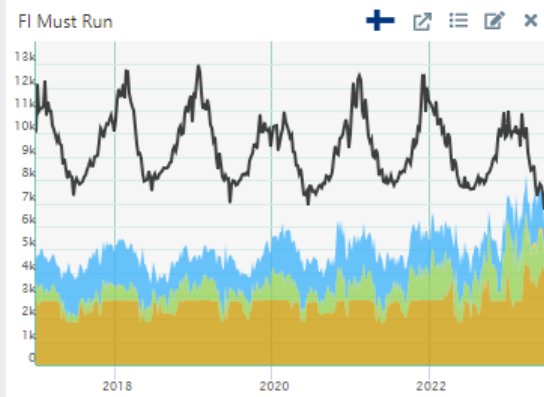
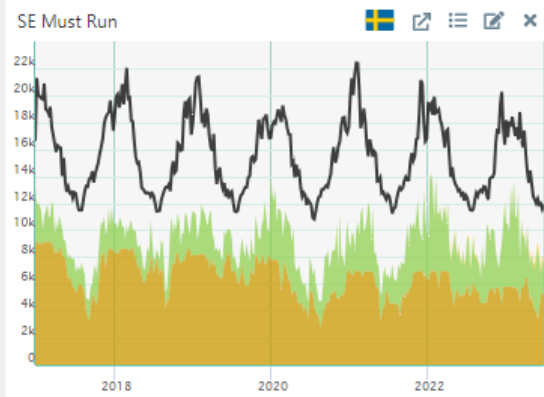
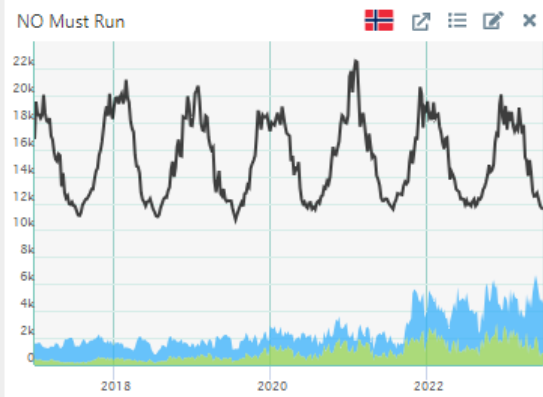
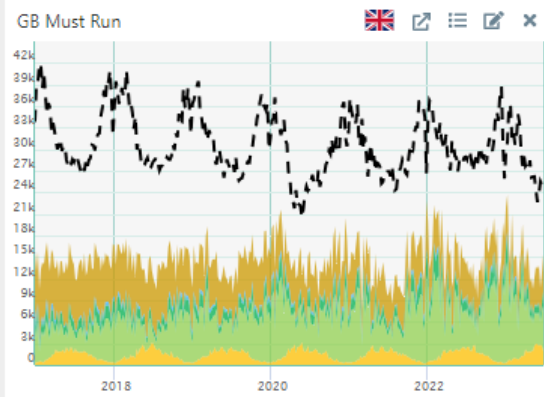
■ Germany 
 ■ Denmark 
 ■ Netherlands 
 ■ Great Britain 
 ■ Finland 
 ■ Sweden 
 ■ Norway 
 ■ Baltics 
 ■ Poland



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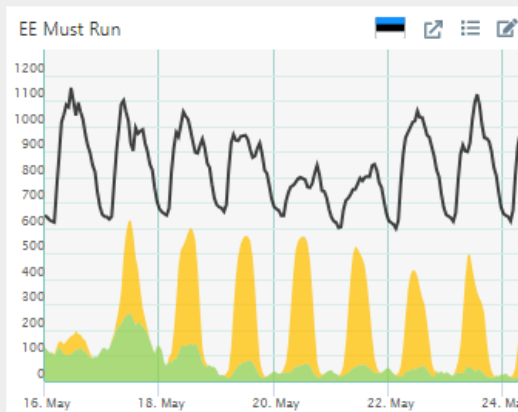
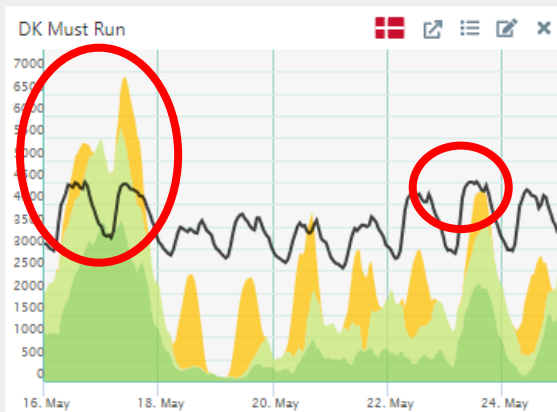
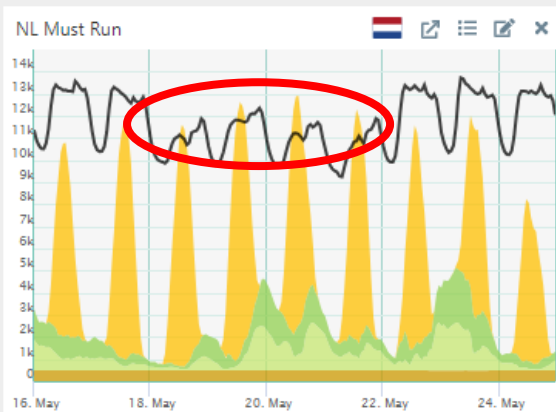
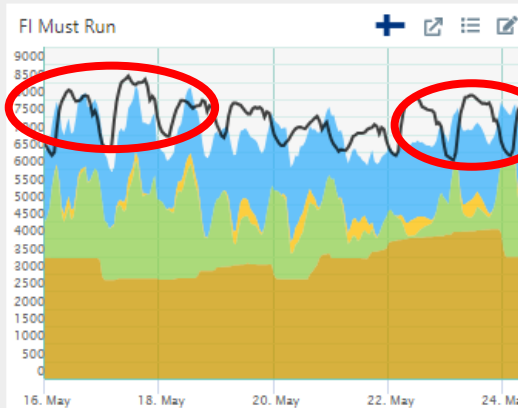
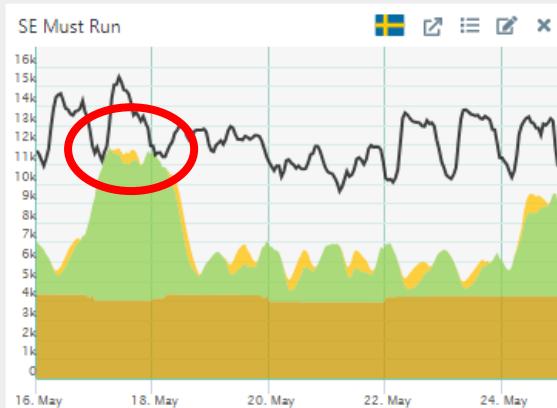
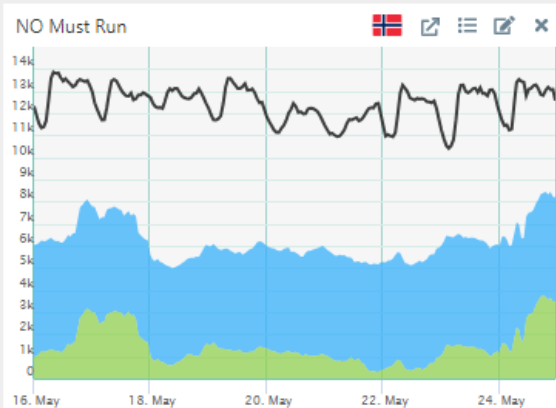
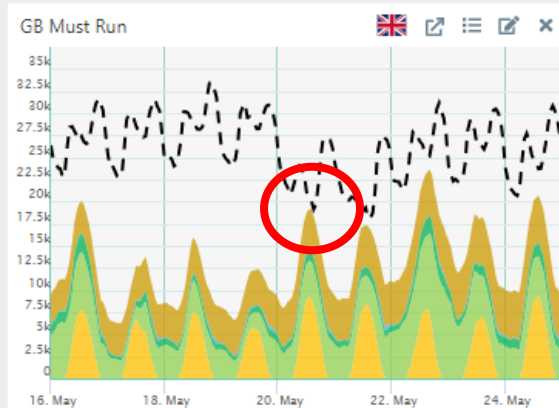
# BORDER MARKETS IMPACT





Massive growth of wind and solar in Nordics and adjacent regions.

The level of 'must run' generation has increased everywhere except Germany and Sweden (Nuclear↓)

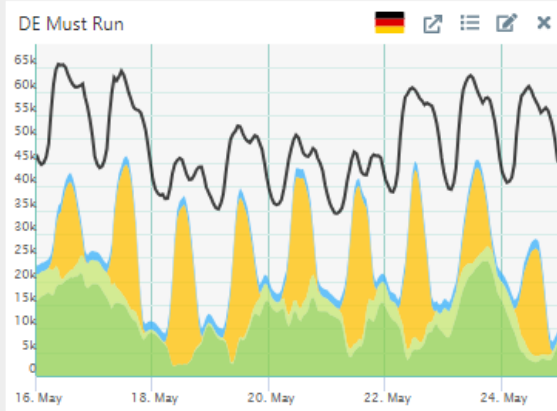


Solar and wind causing a drop in residual load.

In the coming years many countries will face 'solar peak surpluses', like NL currently.

Dispatchability and subsidy schemes will determine the impact on markets.

Note that countries lacking dispatchable hydro will have several GW of conventional power online for Ancillary Services



## WHAT IS HAPPENING ON THE CONTINENT?

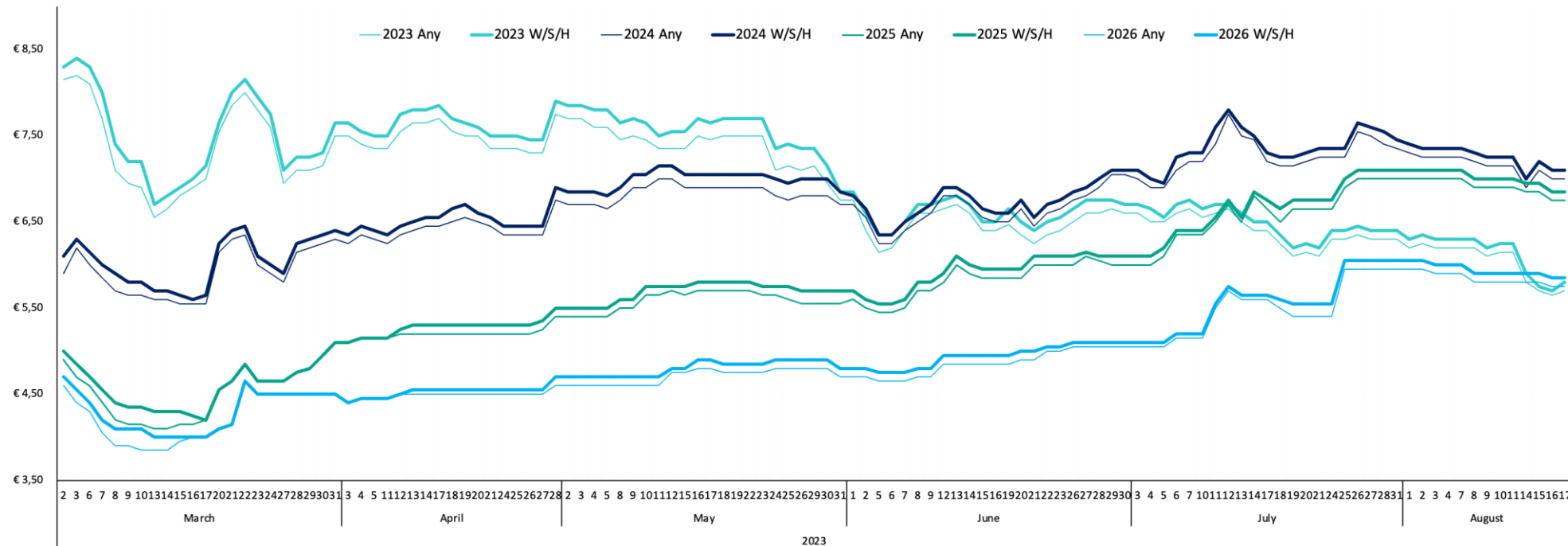
- With growth of renewables, a reduction in utilization of conventional capacity is achieved.
- This reduces the carbon intensity of the industry, but as a side effect it reduces the available flexibility in the system as well.
- With fluctuating renewables, this means ramping capabilities can get stretched in many markets, especially the ones that have little or no storage.
- This introduces new opportunities, flexibility from the Nordics can be traded intraday (through market coupling) to solve issues elsewhere.
- Border markets will provide these opportunities, as many Danish trading companies have already successfully proven.

# WHY ARE WE SEEING NEGATIVE PRICES?



# FROM A NORDIC PERSPECTIVE

- The Nordics have always exported towards the continent, for most of the time
- Therefore negative prices must originate from local issues, for example excess water
- Recently we have seen relatively high prices for Guarantees of Origin, allowing to trade slightly below zero



## FROM A EUROPEAN PERSPECTIVE

As the Nordics no longer exclusively export, negative Day Ahead Prices are no longer limited to the value of GO's.

As surpluses get more extreme for certain periods, a scarcity component enters the supply and demand curves.

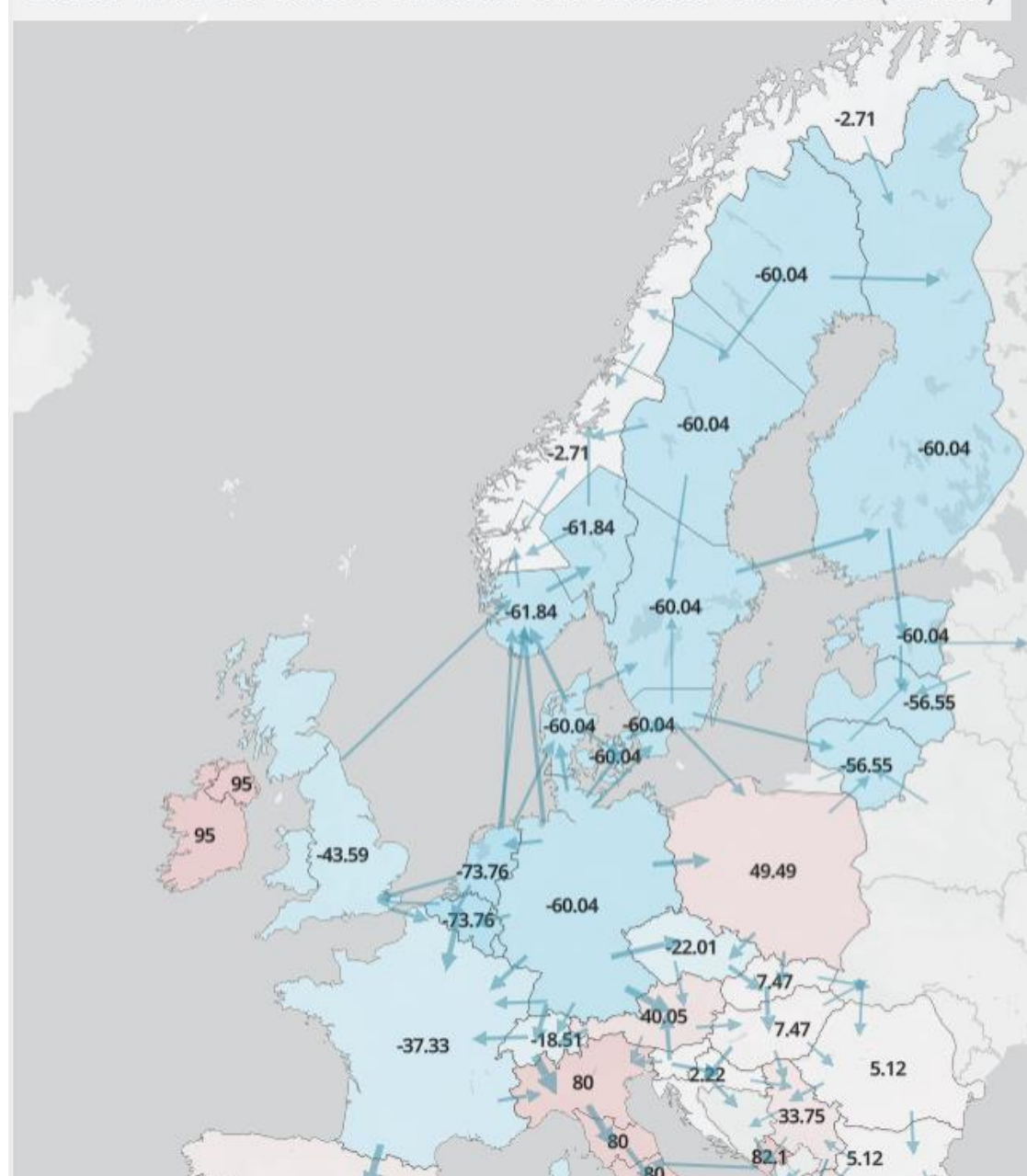
Negative prices across Europe are not solely driven by subsidies and feed-in tariffs.

Low prices from NL and DE can feed through as far as Finland.

NO2, SE4 are most vulnerable to these extremes, due to interconnector capacities.

Note that poorly interconnected countries see prices closer to the SRMC of their main fuel. (IT, PL, AT, IE)

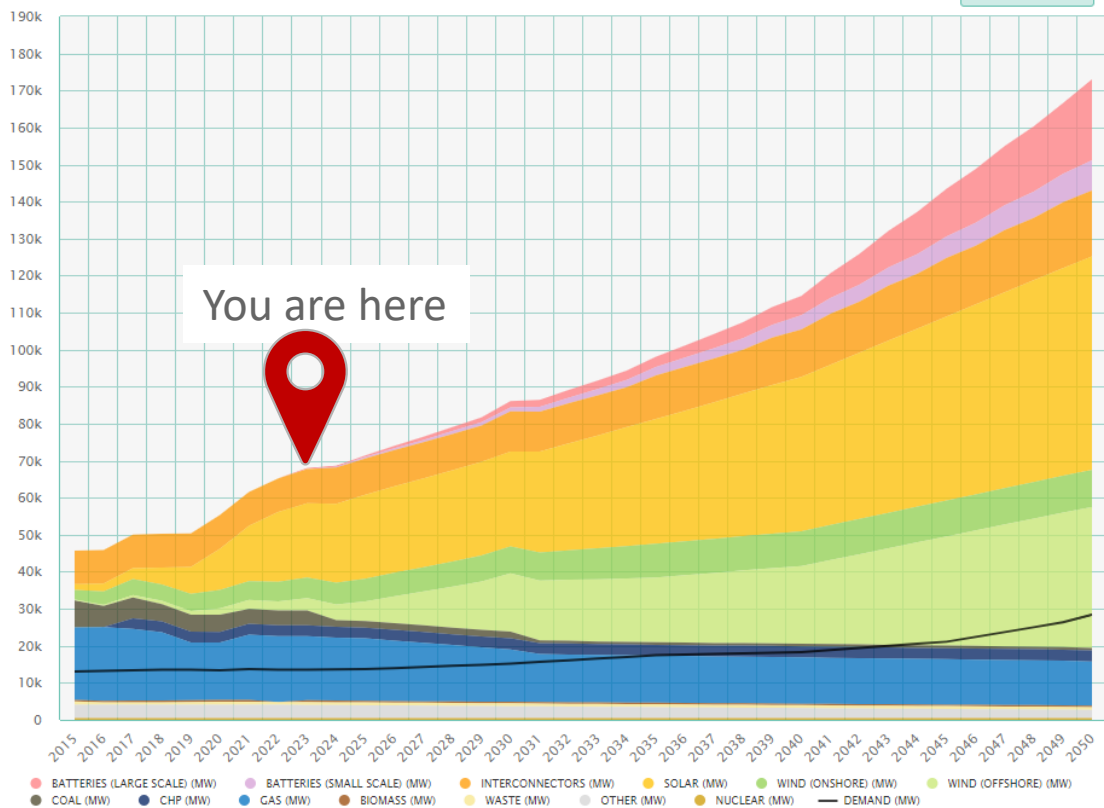
EUROPEAN DAY AHEAD PRICES FOR 14:00:00 16/07/2023 (€/MWh)



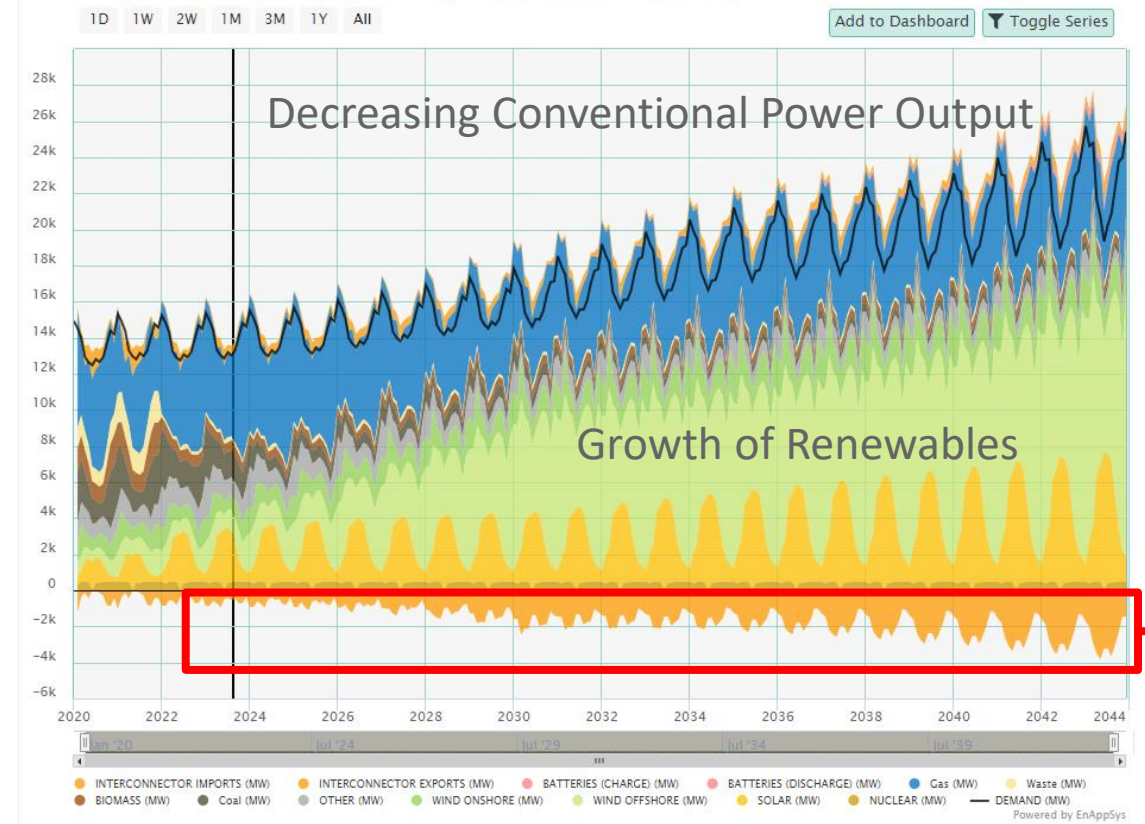


# WHAT'S NEXT?

DUTCH CENTRAL CASE INSTALLED CAPACITY BY FUEL TYPE (MW)



ENAPPSYS PROJECTED CENTRAL CASE FUEL MIX FOR 17/08/2023 17:29 TO 18/08/2023 17:29 (MW)



Many European Countries set to move between massive imports and exports  
This requires more flexibility, whereas the flexible assets see decreasing run hours and output.

# WHAT'S IN IT FOR NORDIC COMPANIES?



## SO WHAT?

Taking this a step further can inform your bidding strategy on the day ahead market.

Expected volatility in border markets may provide better opportunities than traditional strategies.

Non-physical traders have been trading these markets for years, with or without local assets. With the right tools you can position yourselves to take advantage of volatility in the markets around you.

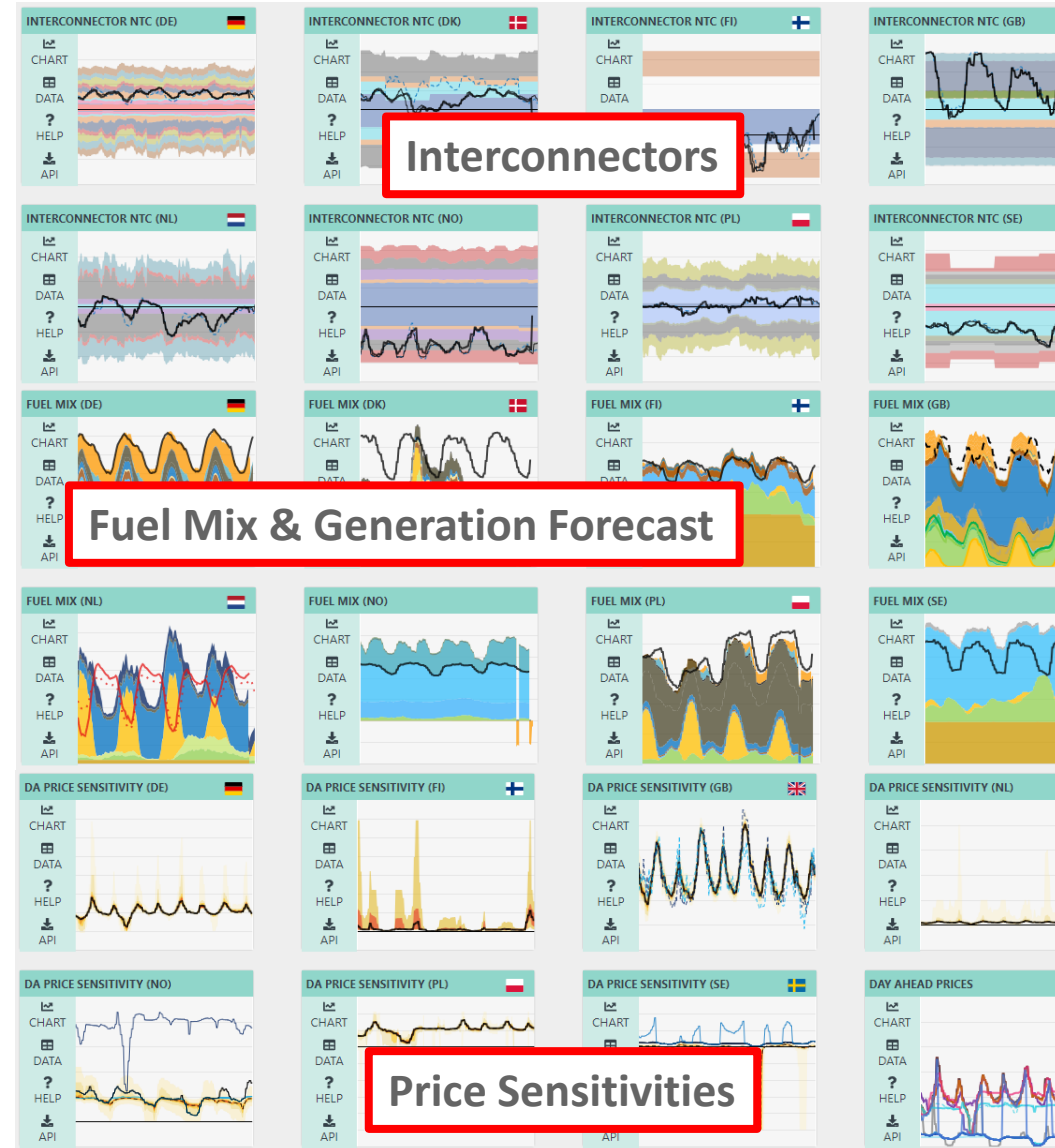
Negative prices are one of the features of the increased market coupling, negative prices in border markets push conventional power 'out-of-merit' prompting a higher need to import this flexibility.

Nordpool and EPEX intraday volumes have steadily increased in recent years, with more variability in the direction of flows, we expect the volumes to grow faster in the coming years.

How do we identify these opportunities?

# Increasing opportunities for Nordic market parties

- Hourly trading will move to quarter hourly resolution, along with balancing markets.
- Understanding the fundamentals of surrounding markets helps identify opportunities and risks.



# Intraday trading and balancing market data will then inform your decisions



As border markets influence the day ahead market, the intraday market will offer additional opportunities to limit risk and increase revenue.

Flexible generation and consumption capacity has more value in the intraday and balancing markets, especially in coupled markets.

**Live Balancing Market Data**

## SUMMARY

- Negative Prices are here to stay.
- Next to internal causes, border markets will continue to produce low prices as well.
- Scarcity is an underestimated influence factor, next to the more fundamental causes such as subsidy and GO revenue. Scarcity will produce different price levels than just the moderately negative prices caused by “internal Nordic causes”.
- Where Nordic markets would historically export to the continent, there will be changes of direction on the interconnectors much more frequently.
- This introduces new opportunities for Nordic market players, especially parties with flexible generation.
- In the coming years, border markets will increasingly influence the dynamics of the Nordics, which makes it more important to follow the fundamentals and real-time data of those markets.
- The trend will continue from long-term trading, to shorter term, to day-ahead and intraday and balancing. Adjusting to the new reality offers massive opportunities and options to reduce risk and exposure to the increasing volatility.
- We are here to help you make sense of continental markets, while providing you similar short term insights for the Nordics.

Thank you for your attention

Q&A



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