Nord Pool HL reflection on Market Design

NordREG seminar on wholesale and transmission developments

5th of DEC 2022

Rickard Nilsson
Senior Advisor on Market Design
Nord Pool
rickard.nilsson@nordpoolgroup.com

WHY IS THE ENERGY TRANSITION (“GREEN SHIFT”) SO DECISIVE FOR REACHING THE CLIMATE TARGETS PUT FORWARD BY EU?

The Challenge

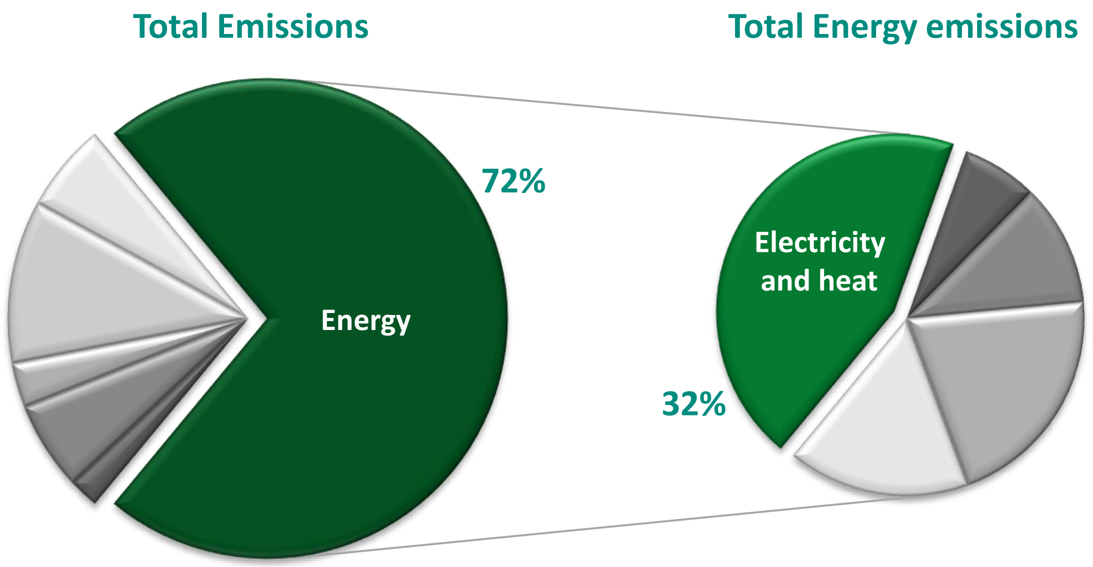
- Global warming - caused by emissions

Combating Climate Change

- German Energi Wende passed legislative support already in 2010
- The European Green Deal set the blueprint for transformational change.

Climate Targets

- 55% reduction in GHG emissions by 2030, compared to 1990 levels
- Net zero target for 2050 - carbon neutrality

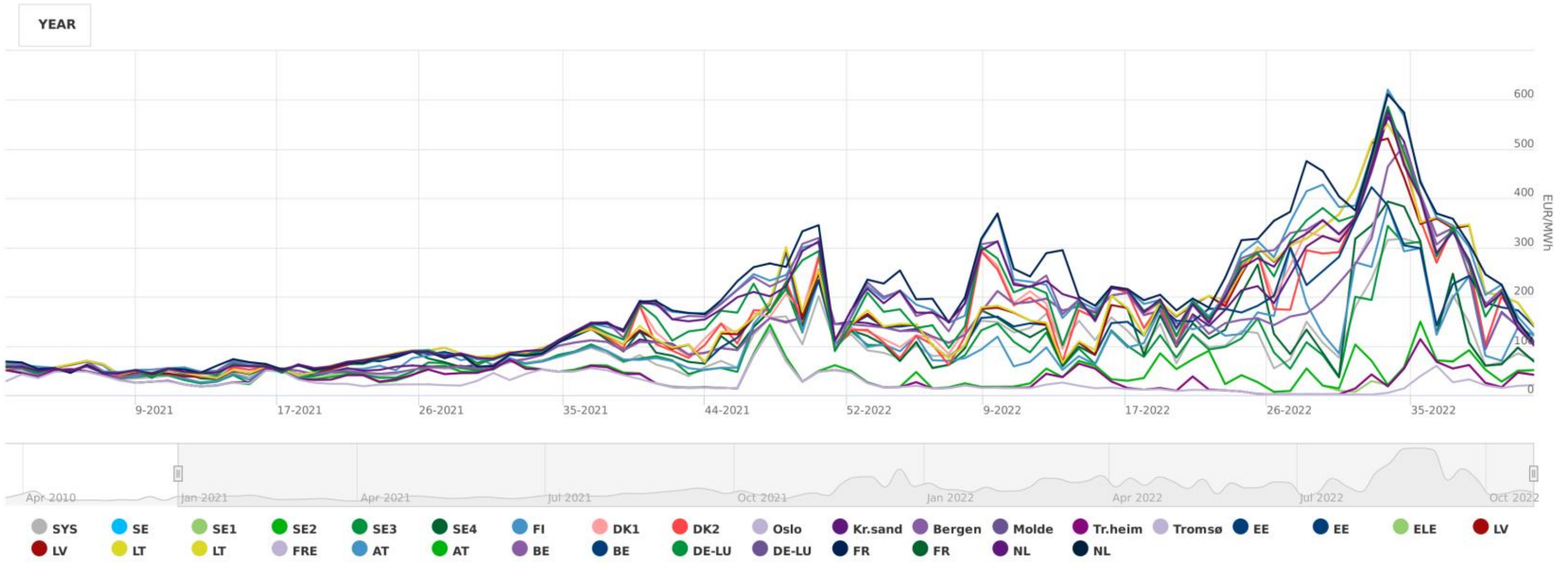


European Environment Agency

Electricity generation and heat production contributes around 1/3 of all CO_2 emissions

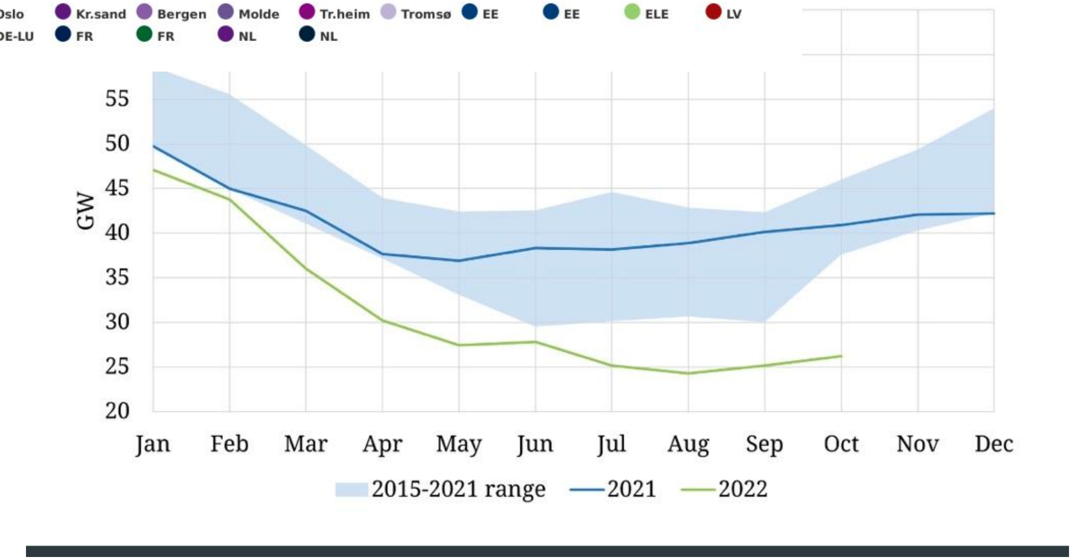
A 'PERFECT STORM' IN EUROPEAN ENERGY MARKETS

European Day-ahead (spot) prices January 2021 – September 2022



12-16 months ago: what we knew then..

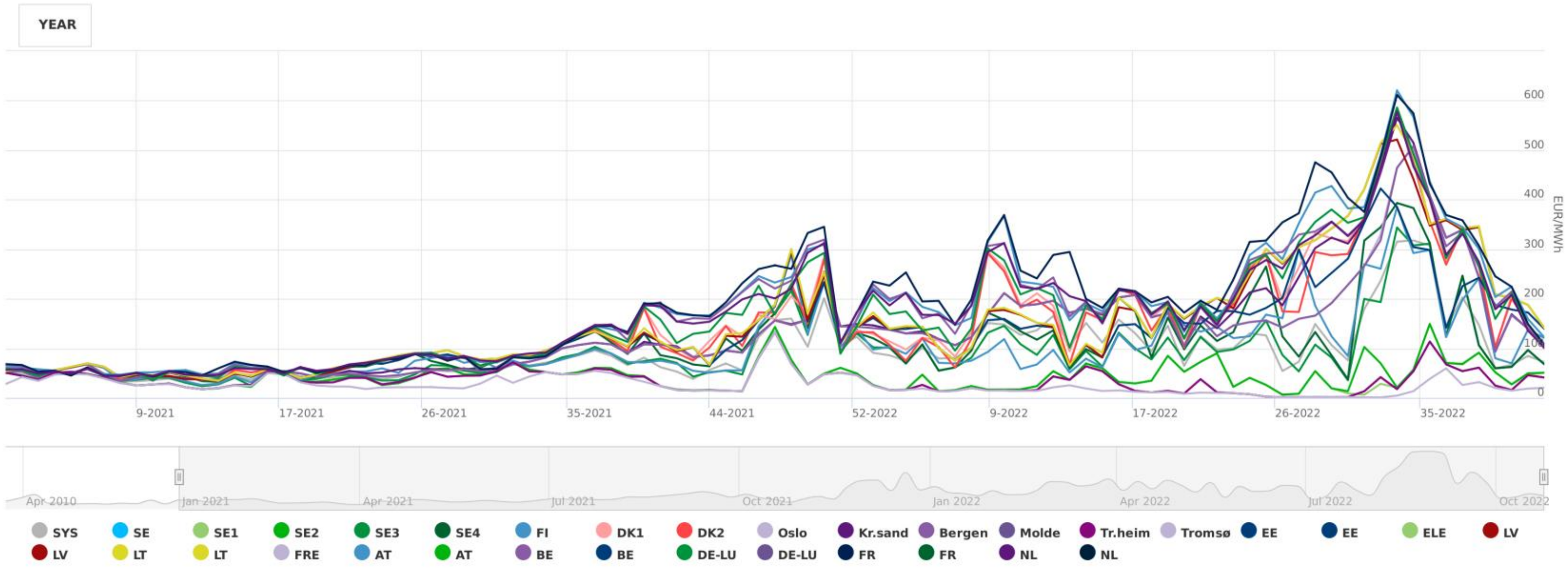
- Energy transition and decommissioning of nuclear, coal and thermal production capacity (phasing out large baseloads)
- Higher CO2 cost
- Intensified price volatilities due to larger share of intermittent sources



NORD POOL

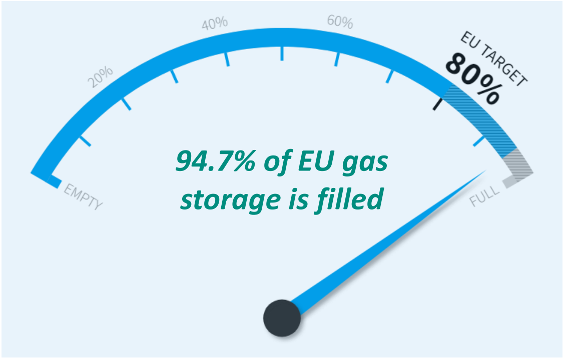
A 'PERFECT STORM' IN EUROPEAN ENERGY MARKETS (CONT'D.)

European Day-ahead (spot) prices January 2021 – September 2022



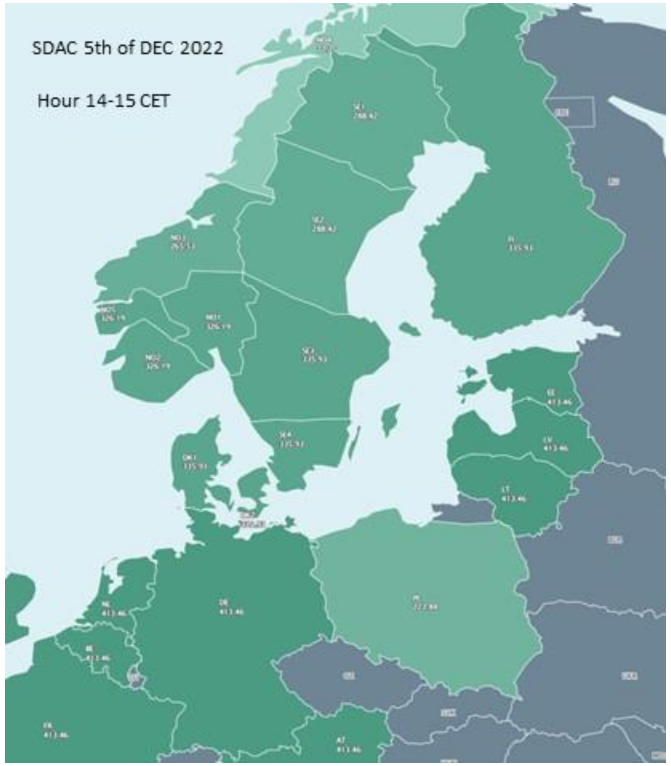
However, we see some positive developments recently..

- European Gas storage reaching 95% - ahead of time
- High LNG import into to Europe (floating terminals set up in record time)
- Power consumption already reduced - ↓ 12% in Germany
- Coal fired power plants and nuclear plants being recommissioned
- EDF has undertaken to restart "most" of the reactors for the winter
- Hydro reservoir levels are rapidly increasing, more rain than normal recently
- We expect anyhow a very tight situation this winter – weather dependent!



THE “MARKET” SHOULD BE PROTECTED AGAINST SHORT-TERM MEASURES WITH NEGATIVE AND LASTING LONG-TERM EFFECTS

- The supply/demand price signals should be upheld and protected
    - Price signals are key to steer short-/long term actions to balance production and consumption and for efficient utilization of Cross Zonal Capacity, and
    - Serve as references for long-term trading and hedging, e,g. for derivatives and in parts also for for PPAs and CfDs linked to intermittent RES investments, and
    - Is used for contracting on both wholesale and retail (end-consumer) levels, and
    - Provide signals for investments in added CZ Capacity, new (e.g. RES) supply, demand, Demand Side Response, storage, batteries, and
    - Support Sector Coupling between e.g. electricity, heating/cooling and transportation
- Market (price) intervention ahead of the (SDAC) price signal can put SoS at risk and deepen the crisis; SDAC gives supply/demand planned balanced for 27 EU MS & NOR
- The real underlying root causes for the surging power prices are primarily:
    - › Overall energy (MWh) and in parts capacity (MW) supply shortage risks
    - › Soaring gas prices (and compounded by destruction of supply channels)
    - › The green transition (phasing out baseload and only intermittent RES only partially replacing it; which drives price volatility until DSR, storage and CZ cap can cope with such variations)
    - › EU, especially Germany and 4-5 other MS, need to become energy independent from Russia
    - › Limited CZ capacity made available to the market, and fairly inflexible demand side
- It has never been more profitable to invest in new RES production, and policy makers needs to accelerate <u>predictable</u> frameworks to reduce lead times for such supply



NORD POOL

TEMPORARY MEASURES AS PROPOSED BY EU

Temporary measures, supposed to last from December 2022 until June 2023, have been formulated by the EC and/or EU Council, as an answer to the economic burden on household and businesses across EU MS'

Defined measures

1. *Incentivising coordinated electricity and gas demand-reduction across the EU*
2. *Capping the revenues of inframarginal electricity producers or middlemen (…) with a € 180/MWh cap*
3. *Liquidity instruments that would ensure that market participants have at their disposal a sufficient collateral to meet margin calls (…)*

What are being implemented

Implementations are national decisions

No harmonised implementation x- Europe and revenues from the cap will be much lower than "promised" by politicians

Several MS have stated that they will not be able to implement this by December 1st

State support to cover collateral requirements offered in several countries

Current market design → **Temporary measures** → Short-term design → Long-term design

Sept. 2022 | **March 2023** | **2026-2027**

SHORT TERM MARKET DESIGN

After implementation of short-term emergency measures, discussions on changes to the current market design will continue: Nord Pool will be proactive in talks about both strengthening of current market design and establish sensible future changes

Current situation

Current DA Market Design

- Marginal uniform pricing
- Merit order curves (supply and demand)
- Bidding Zones with Market Coupling
- Multi NEMO per MS
- Decentralised MCO function

Likely | Unclear | Unlikely

Potential changes / Impact assessment

Temporary Price Cap on Infra Marginal supply — Harmonized application

- Will limit the upside for investors in new capacities (production, storage)
- Difficult to implement by regulators and governments (especially unclear handling of hedging positions, bilateral agreements, and since both OTC and organized markets are based on contracts without declaring if sales represents a given production, DSR, bilateral contracts or something else; e.g. the markets are based on Portfolio Bidding)
- Can impact wholesale market liquidity, thus critical that IMR is applied equally across all timeframes (Forward to Balancing) and both on exchange and bilateral markets, and remain time limited (e.g. based on EU Council REG cease after June 2023)

Requirements on demand reduction

- Does not impact the electricity market design as such, and can have positive effects on supply/demand balance & prices
- Price signal should be the main driver for demand flexibility, ideally on both wholesale and retail (end-consumer) level

Emergency Measures taken on gas

- Intervention in the gas market: price caps/ LT contracts and oil and gas "contribution"
- In theory may not impact the electricity market design as such, but indirect effects on the merit order and prices are likely

CACM 2.0

- EU announced that CACM 2.0 would be put on hold until next year due to energy crisis reprioritisation. We have expressed clear views on what we support & disagree with in ACER's proposal. Level playing field issues should not be delayed

Unit bidding instead of portfolio bidding

- Significant complicating impacts on market procedures, systems, algorithms, and bidding behavior
- In theory may enable better handling of technology price cap (IMR), but unclear how to cope with demand response, re-sale of contracts, and arbitrage trades?

Pay as bid instead of pay as clear (Uniform Pricing) in e.g. SDAC?

- Market participants will in a pay as bid setup bid on marginal price expectations, thus this does not give lower prices, and in general pay as clear is a basic principle of how prices are formed in any commodity market as well as in financial markets
- Likely severe impacts on the bidding behavior, market procedures and systems without any clear benefits
- Issues with stability of the market and market prices

Government controlled with central dispatch and grid focus

- Complete change of market design where free supply/demand markets via PXs (as well as OTC/bilateral) are replaced by a central entity (an EU ISO or other regulated entity?) running spot markets dictated by essentially only TSO/grid needs
- Likely to reduce incentives to be in wholesale markets since then focused mainly on grid management issues and not on liquid and competitive facilitation of trading, risk management and contracting in the wholesale and retail markets
- Would be a major overhaul of the market design in Europe, with unknown consequences and unclear merits

Nord Pool’s views on marginal pricing and market interventions

We firmly believe that the **current market design based on marginal pricing** remains the **most efficient** means to allocate scarce resources and provides the correct price signals for the green transition.

In the short-term **exceptional circumstances**, however, market interventions will have to be tolerated to reduce social & economic damage.

These measures must be designed in the least distortive way possible, i.e. be

- Limited in time
- Non-discriminatory
- Fair across the different Member States

Furthermore, it is important that these emergency market interventions <u>are not mixed</u> with the process to evaluate re-design of competitive EU energy markets and suitable amendments of framework rules and legislations to support such changes

NORD POOL

THERE IS A TREMENDOUS EFFORT TOWARDS A MORE SUSTAINABLE ENERGY SUPPLY AND AFFORDABLE PRICES

Targets are here to stay	Required Responses
Security of supply	*Short-term economic measures to reduce the price shock*
Affordability	*Accelerate renewable production capacity*
Net Zero society	*Transmission capacity*
	Demand-side management and flexibility
	Innovation and technology enablement

FUTURE MARKET DESIGN

- EVOLUTION OR REVOLUTION

Todays Market Design handles the current situation

- Today's market design handles the current situation
- Fundamental reasons for the high prices
- Gas is today an important part of the merit order
- Focus from EU commission to be independent from Russian gas and more rapid advancement of the green shift in supply

Locational pricing and time granularity – grid investments

- Zonal pricing – key to continue its' development
- Nodal pricing – added value? For what?
- Location is a requirement for future local flexi markets
- Time granularity for trading++ is key to evolve to fit future needs; what and how to shift from e.g. 60 to 15 Min trading, scheduling & economic settlement in wholesale & retail markets is an on-going process

RES implementation requires demand flexibility

- More efficient use of electricity and "sector" coupling with cooling/heating, transportation, (gas),…
- More Demand flexibility is needed to support handling potential energy shortages, shaving of peak load and handle congestion management on TSO and DSO level

Hedging opportunities – price signals for investors

- Huge need for more RES to support the green shift
- Electrification, new green industry requires more green production
- Key with combination of more cross zonal grid capacities and more local electricity production to support more (changed) local consumption
- Design and framework conditions to ensure liquid and competitive forward wholesale markets is key enabler for standardised and tailor-made long-term hedging and investment needs of market parties