

UiO • **Department of Technology Systems**
University of Oslo

PriTEM seminar 28Mar2022, Oslo

Grid Resilience and Consumer Empowerment

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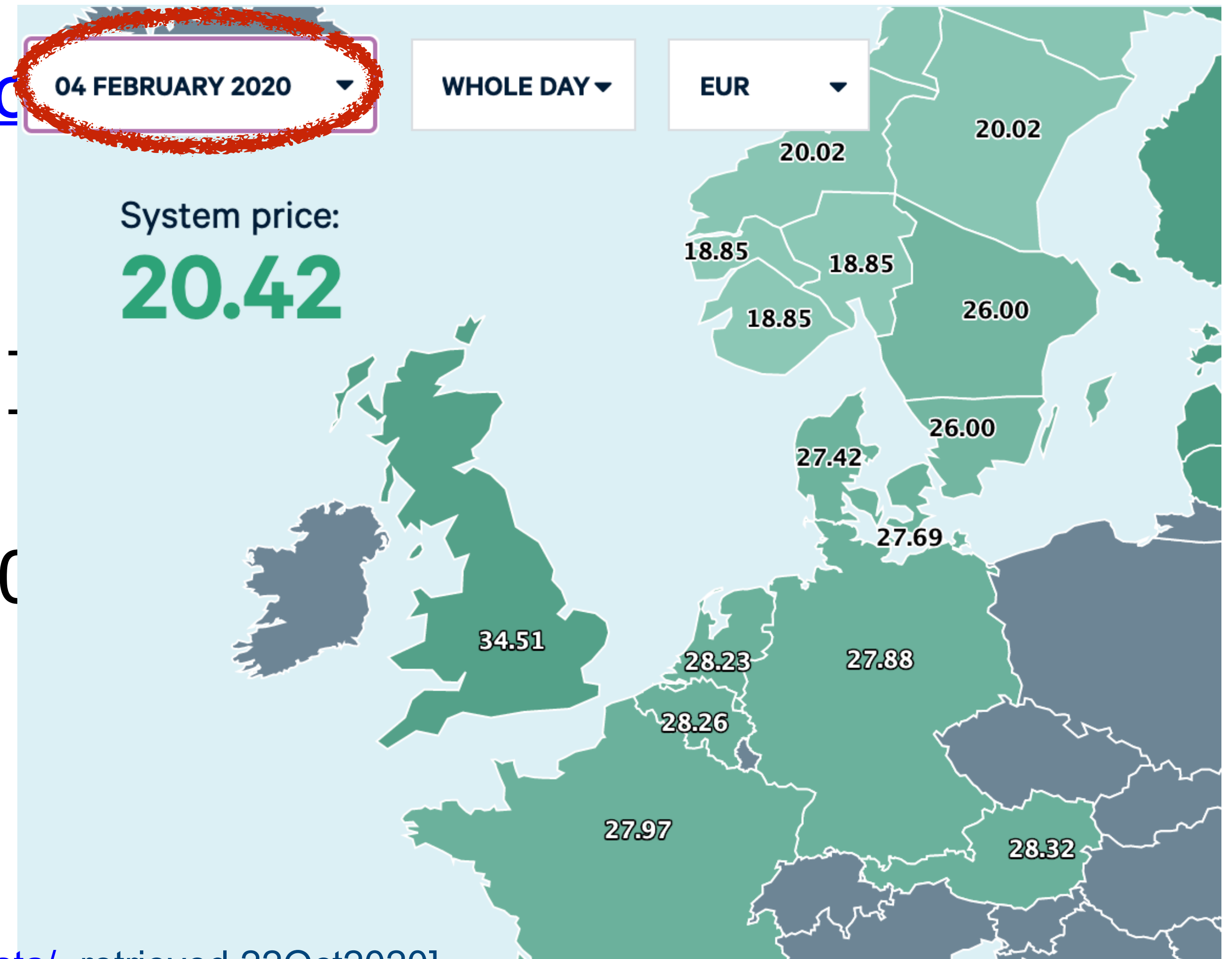
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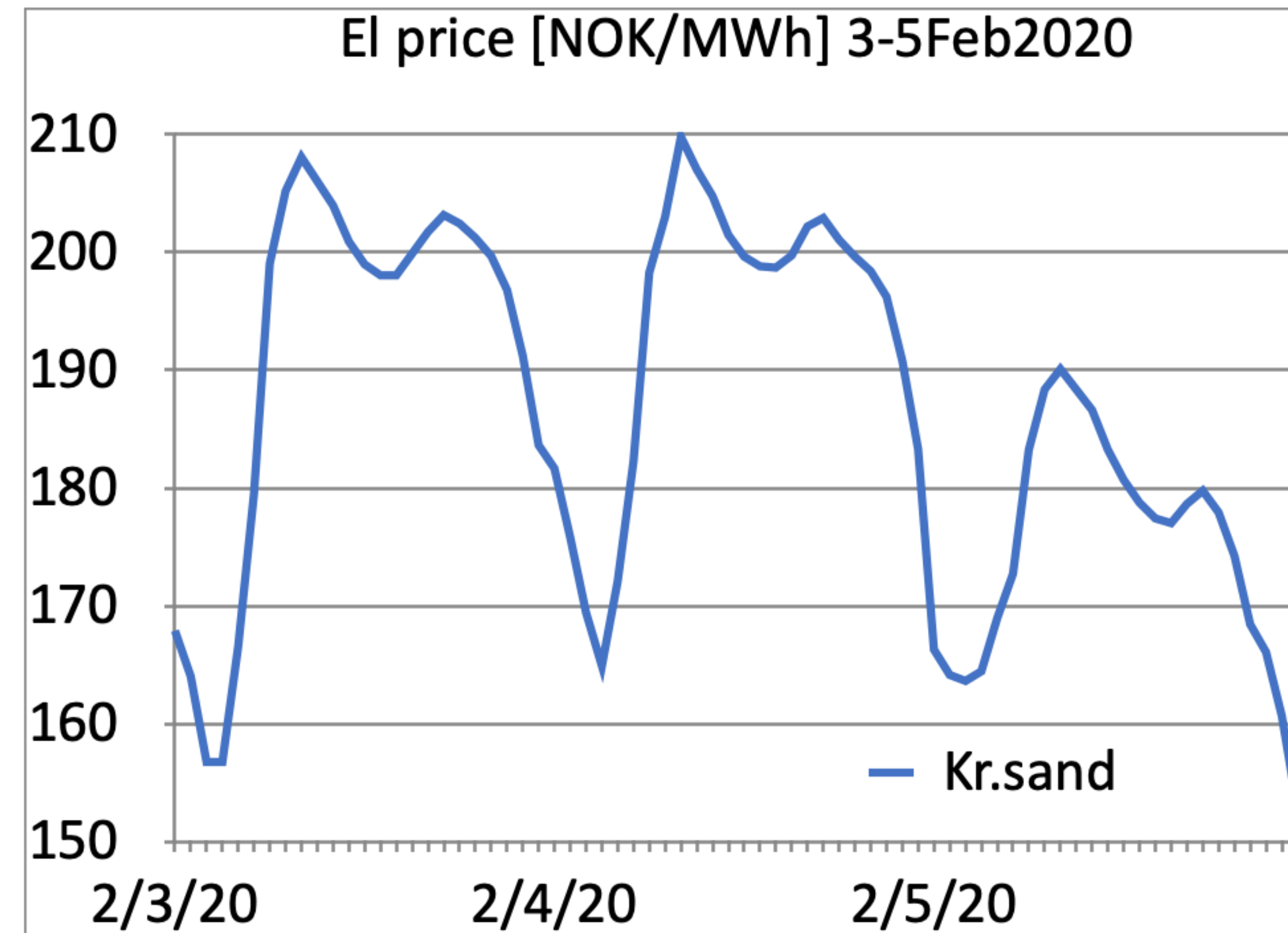
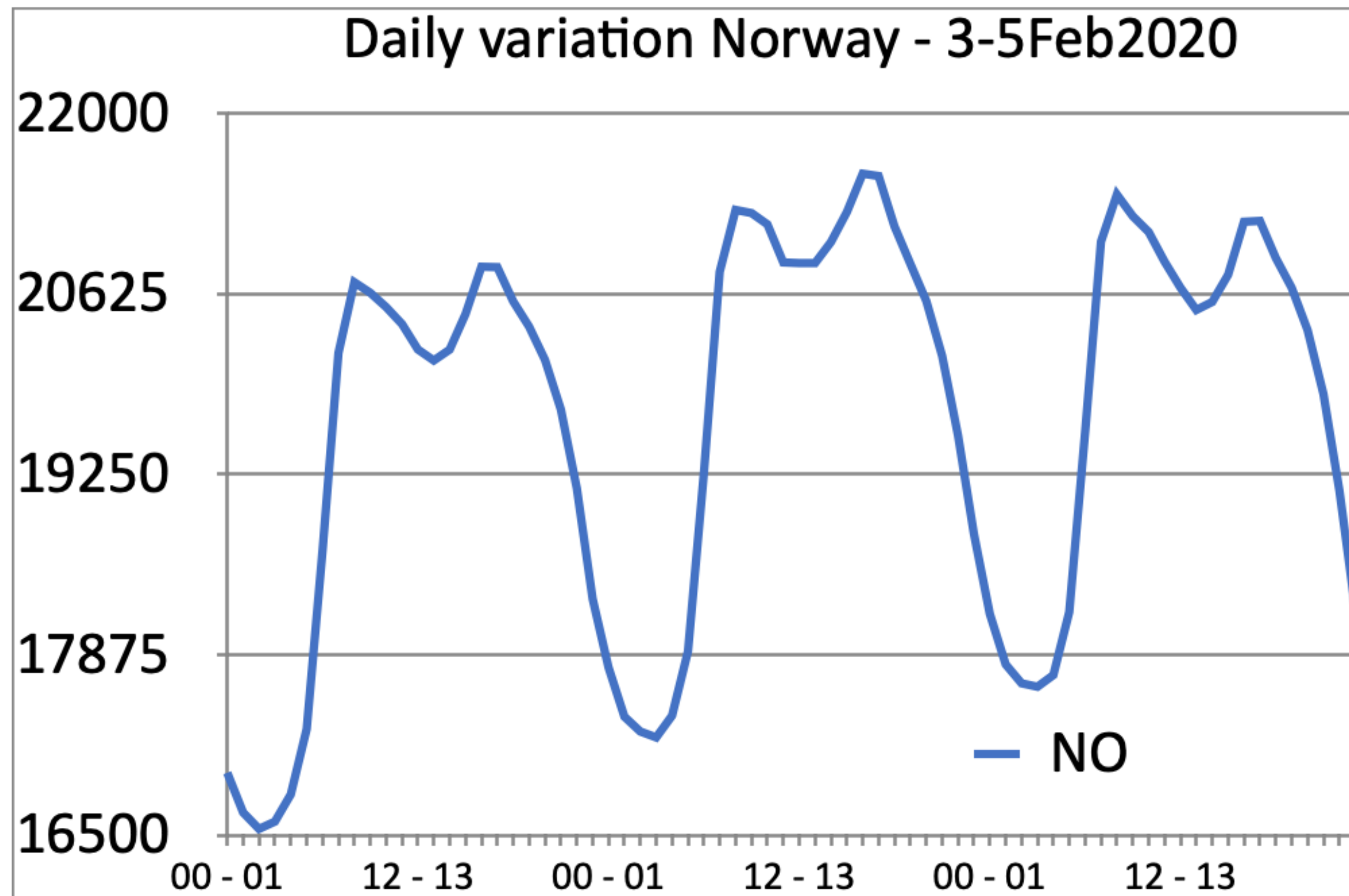
Change of electricity prices

- <https://www.nordpoolgroup.com/historical-market-data/>
- Elspot prices 2020 [NOK]
- Exchange NO connections [MWh]
- Consumption prognosis [MWh]
- Data for Feb2020 and Jun2020 available as .xls on Canvas



[<https://www.nordpoolgroup.com/historical-market-data/> -retrieved 22Oct2020]

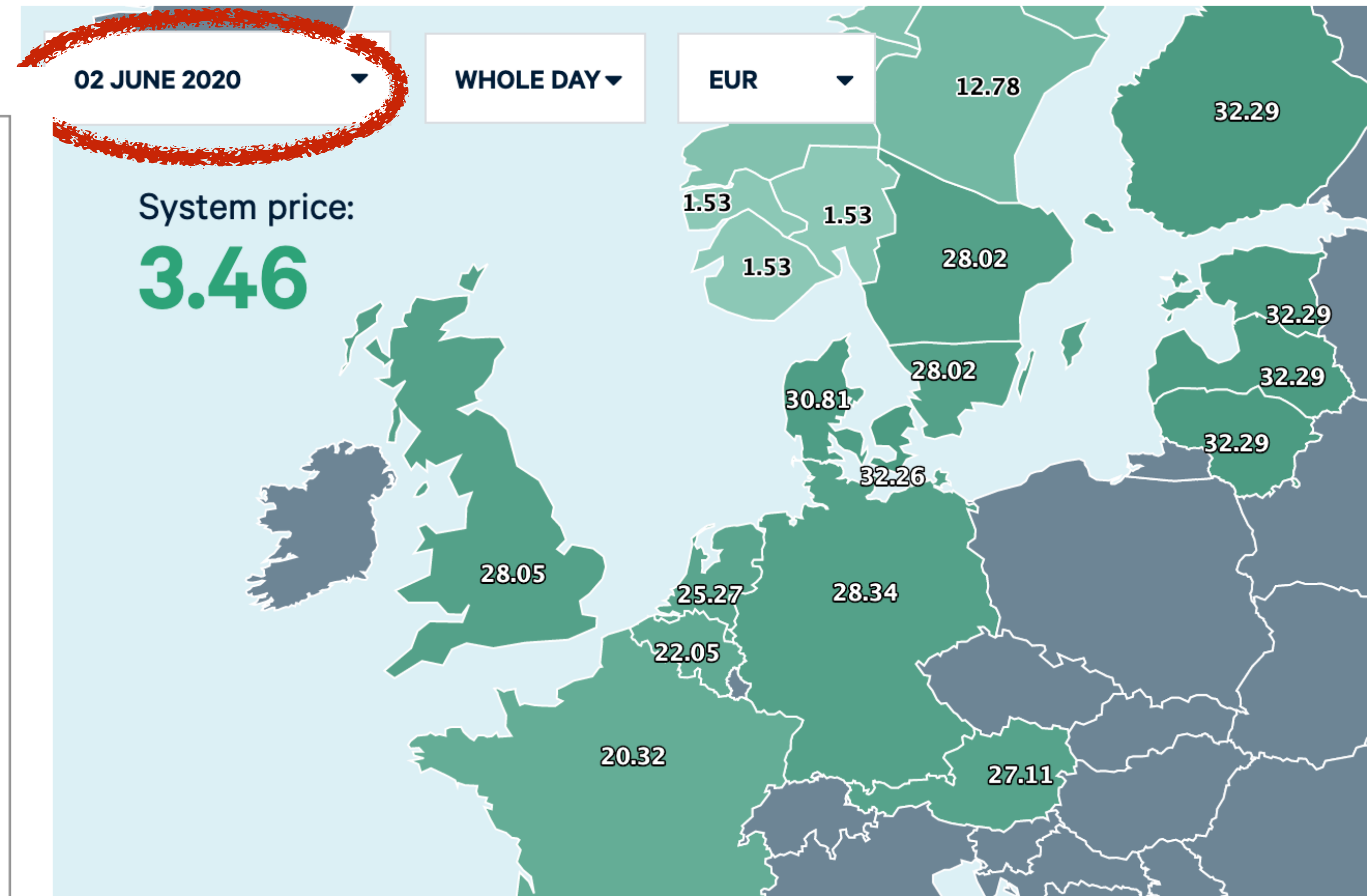
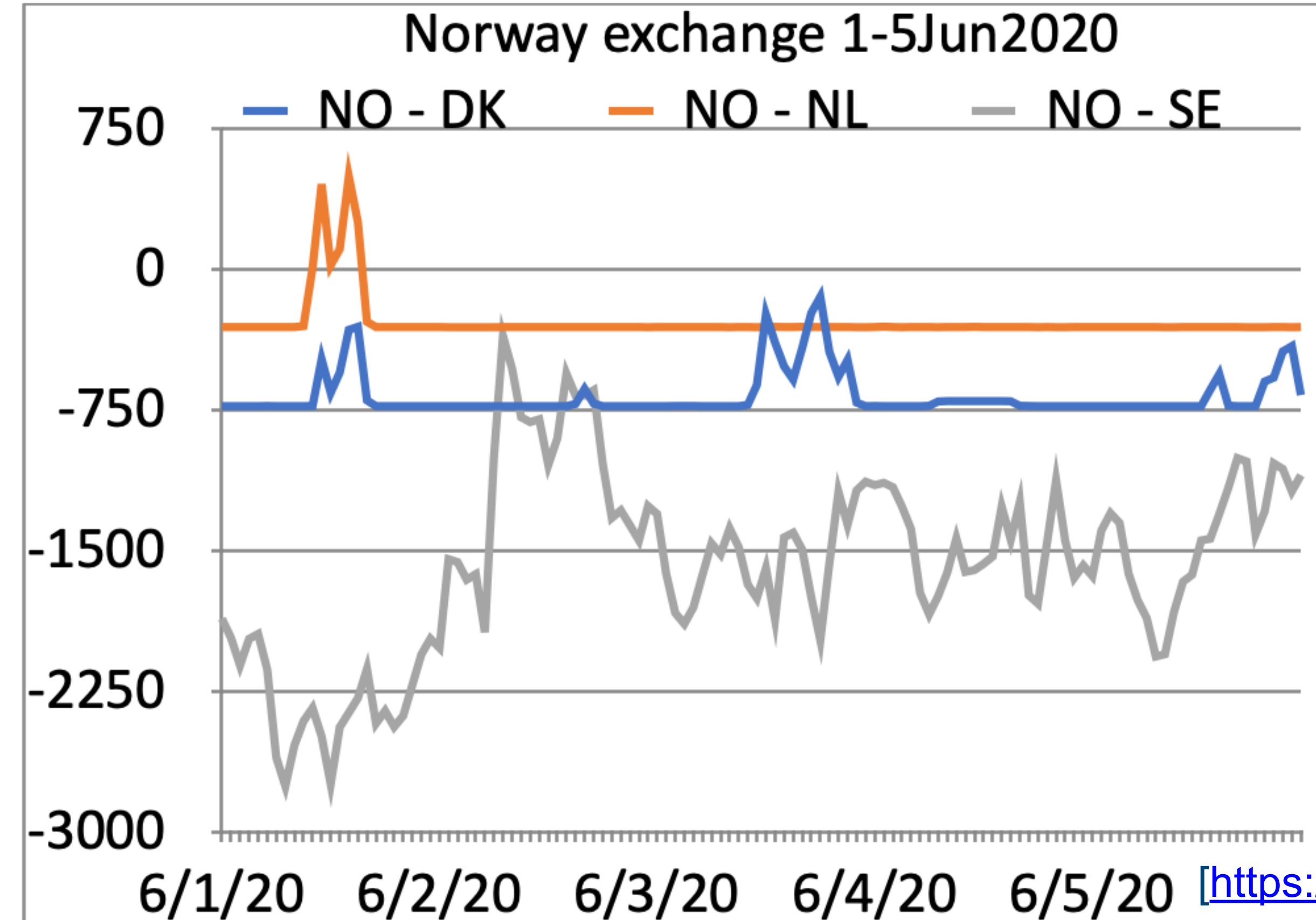
Daily variation and price - Kristiansand Feb2020



[<https://www.nordpoolgroup.com/historical-market-data/> -retrieved 22Oct2020]

What has happened on 3-5Jun2020?

→ See: SE-NO, DK-NO

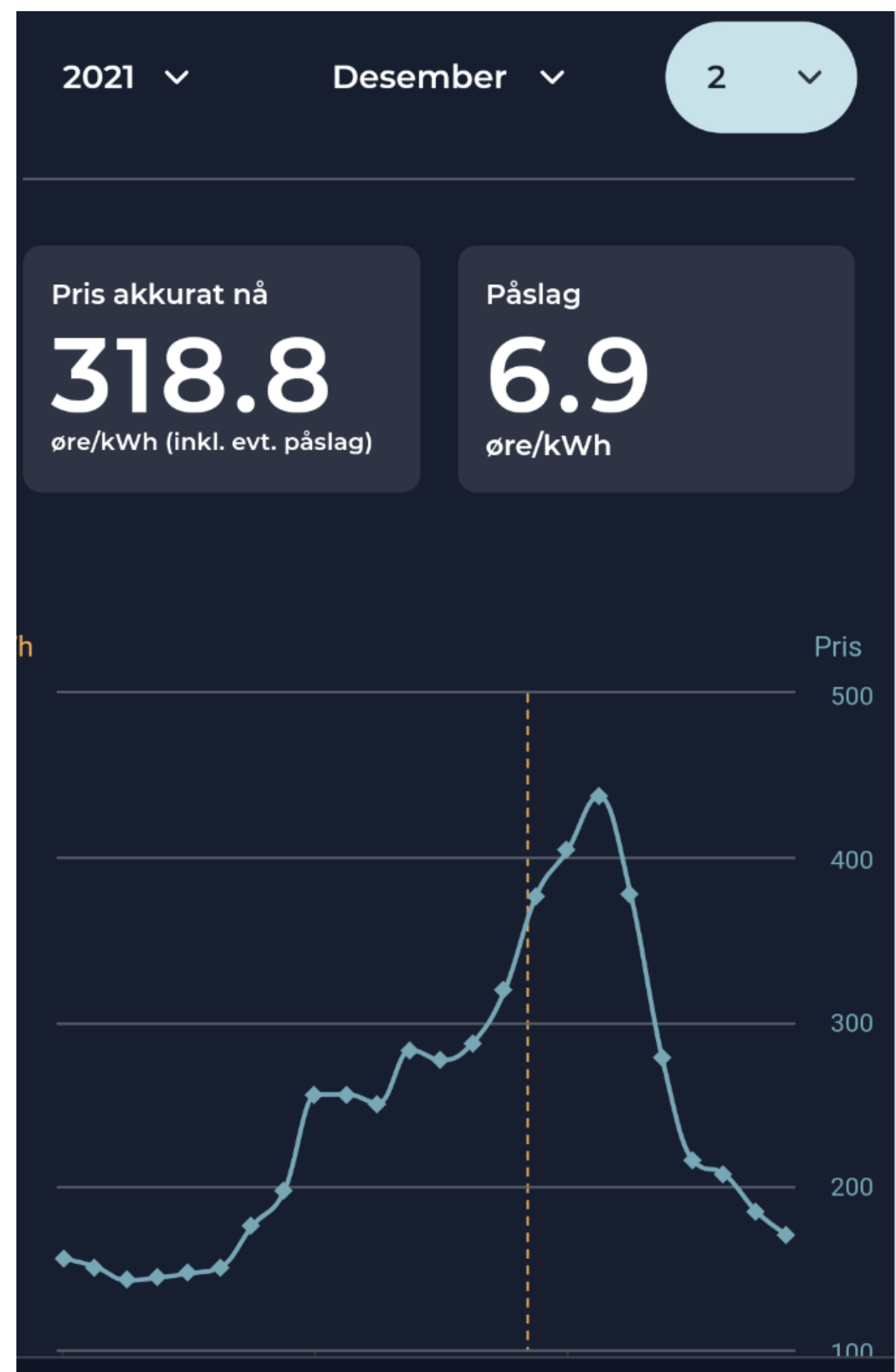


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The “new normal”

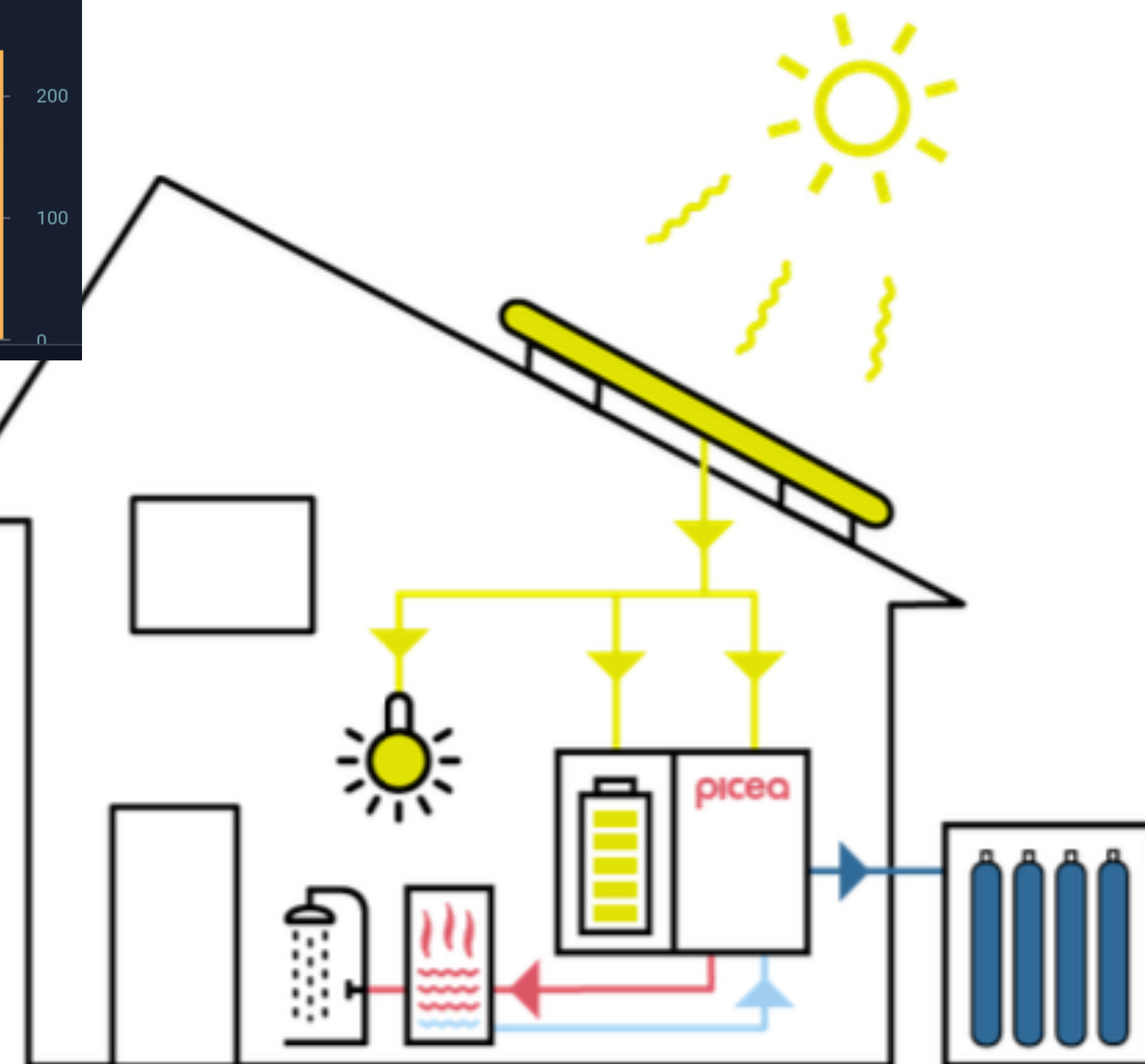
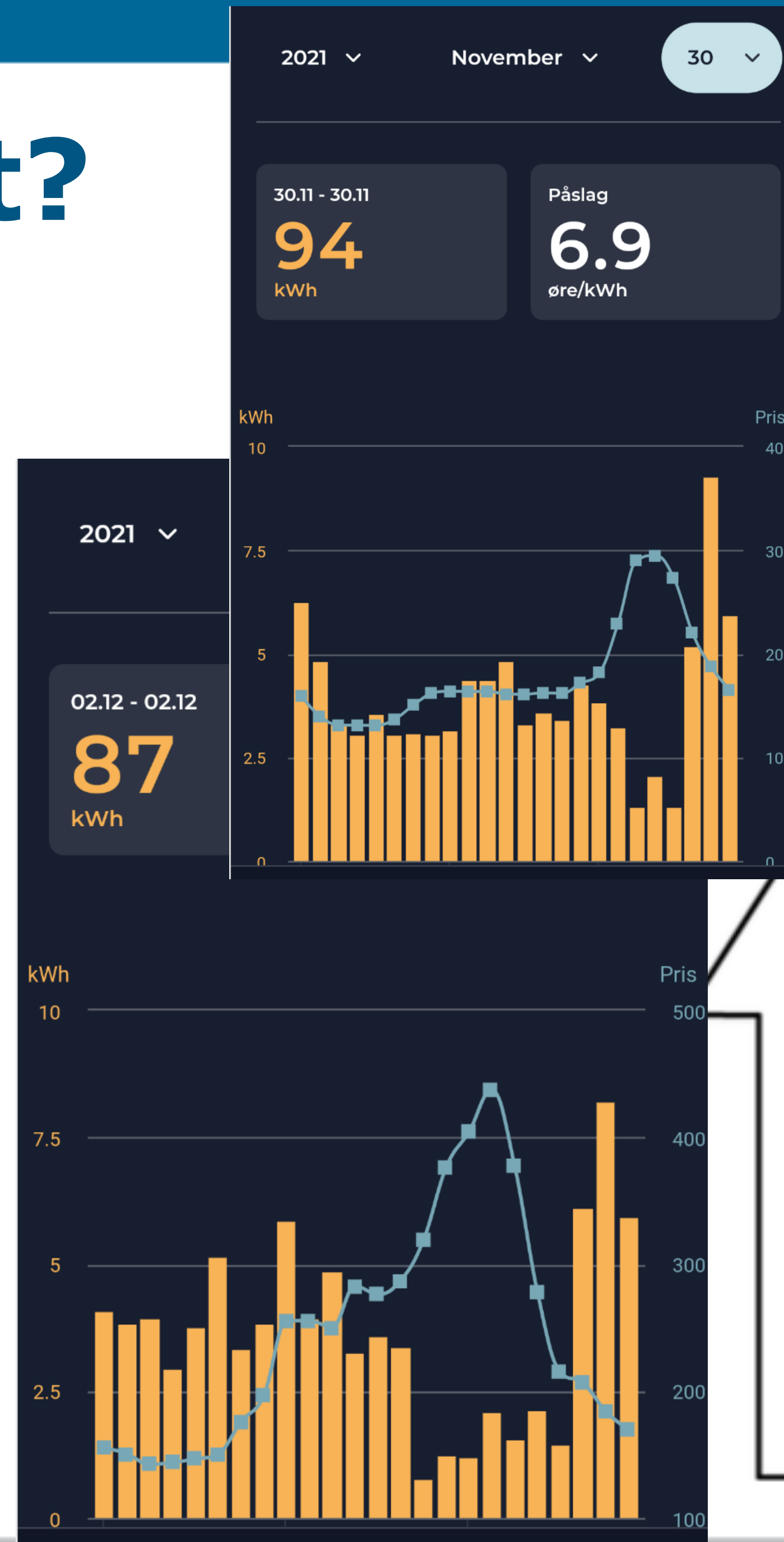
- ➔ Growth of Renewables
 - variability
- ➔ Gas prices
 - war, climate crisis
- ➔ Climate Crisis
 - unpredictable weather

- ➔ **High variation of electricity prices**



How can we adapt?

- Empower the customer
 - capability to adapt
 - decentralised solutions
 - distributed grid
- Upgrade houses
- Neighbour-networks



Research Topics

- High-resolution database for energy usage
 - per fuse, 1/10 s
 - Goal: 100 households
- Resilience
 - Grid adaption
 - Graceful degradation
- Customer empowerment
 - decentralised solutions

