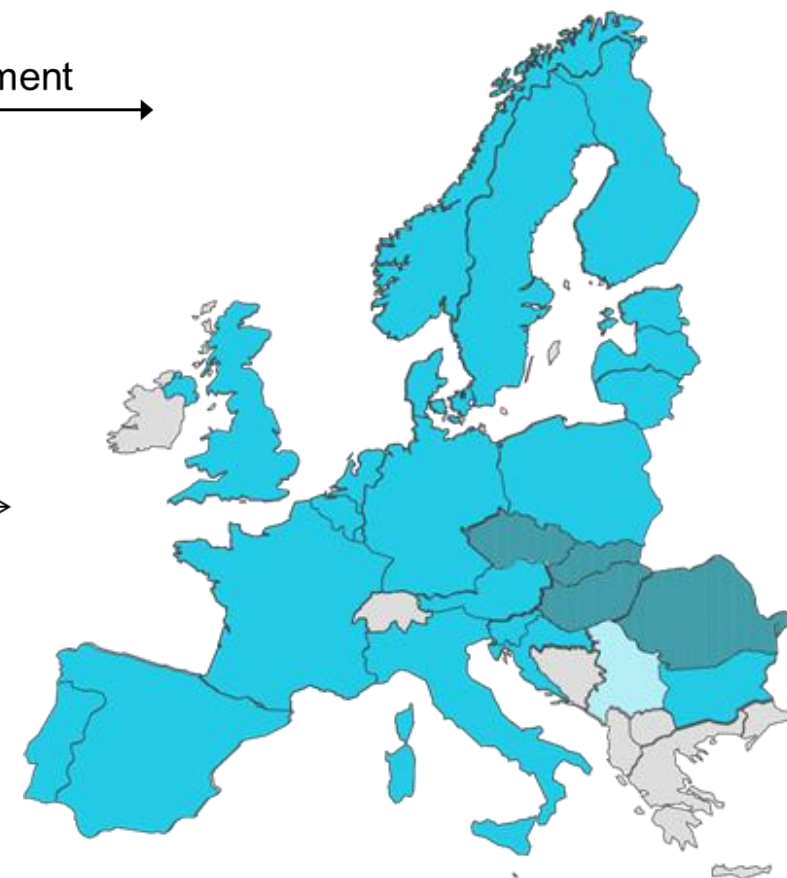
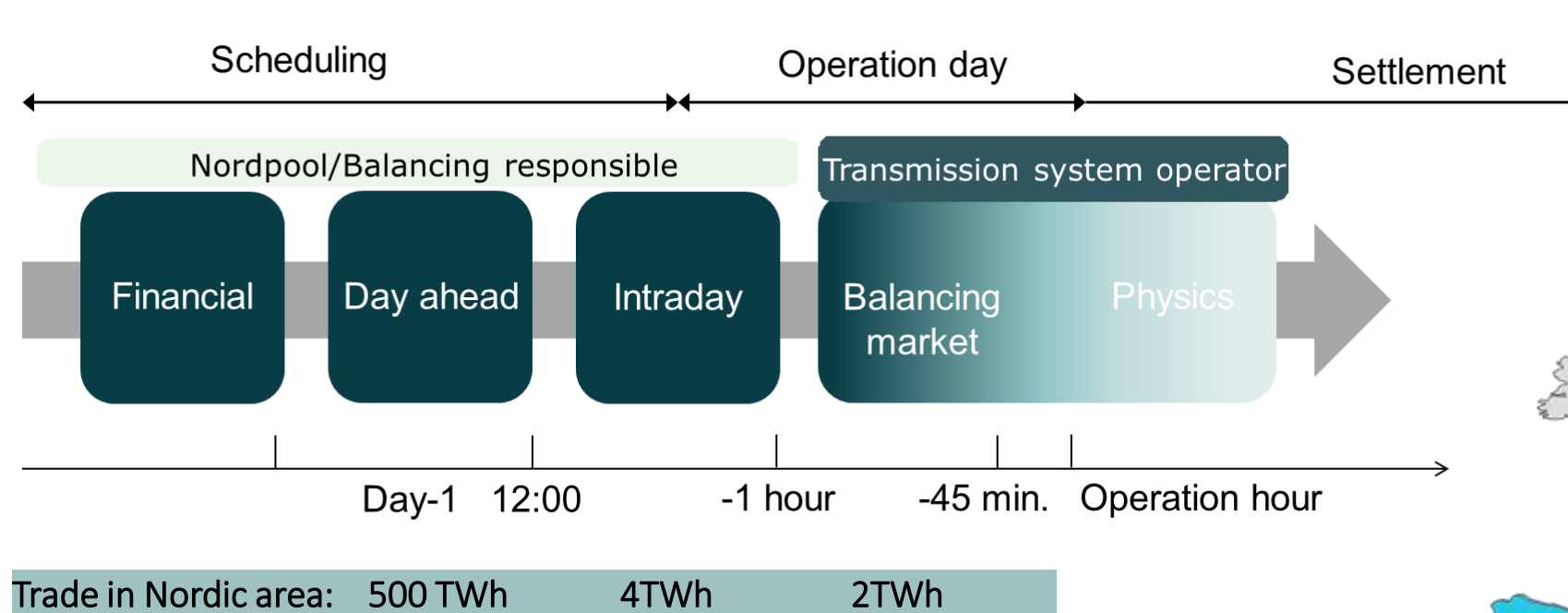


IMPROVING THE ELECTRICITY MARKET – A MARKET DESIGN FIT FOR RENEWABLES

Wind Energy Denmark 2019

*Søren Dupont Kristensen,
CEO Energinet Electricity System Operator*

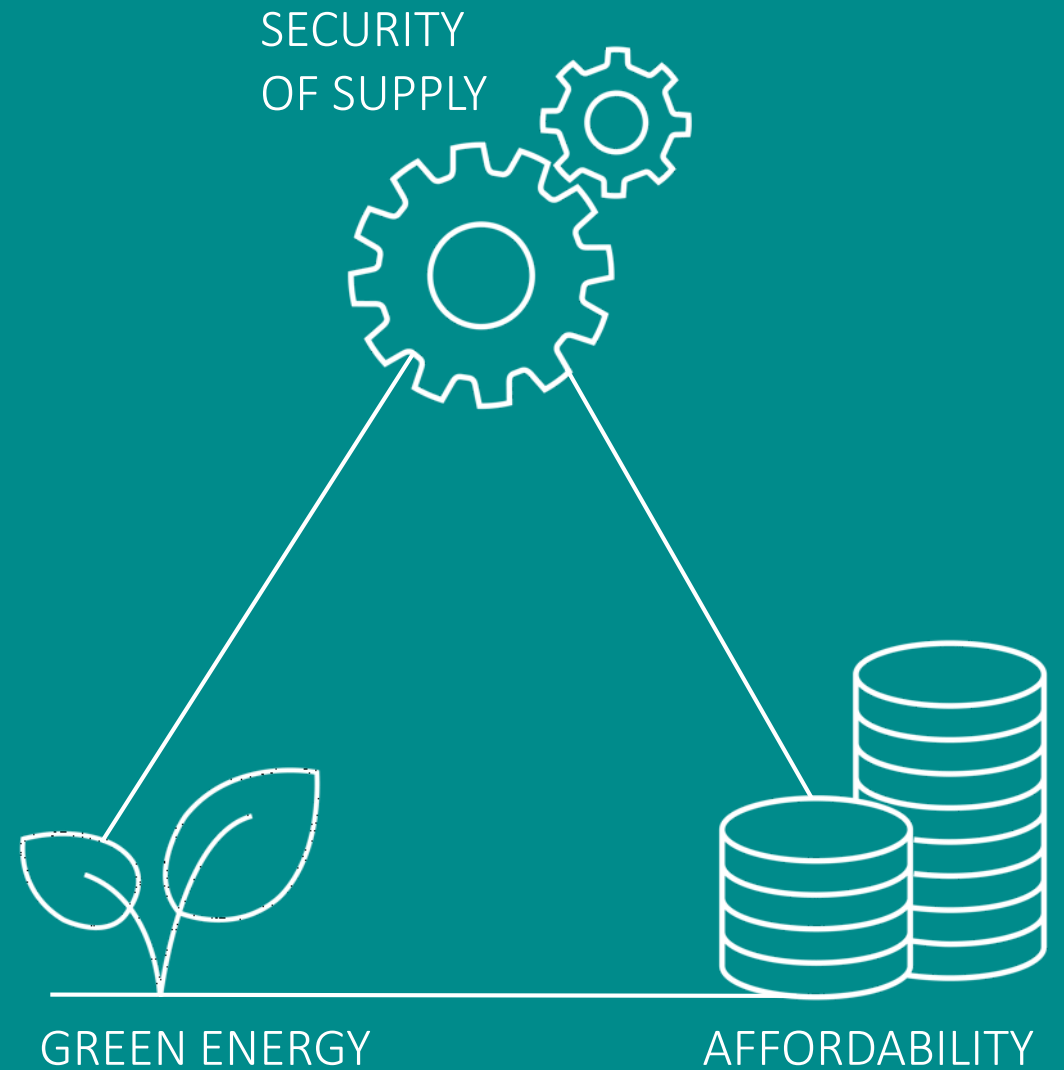
THE ELECTRICITY MARKETS



European market coupling

A BALANCING ACT

Through international and market based solutions Energinet work to release the energy trilemma.



Share of renewables

Integration of the next 50 % of renewables requires a vertical market perspective

Market based integration of renewables – vertical

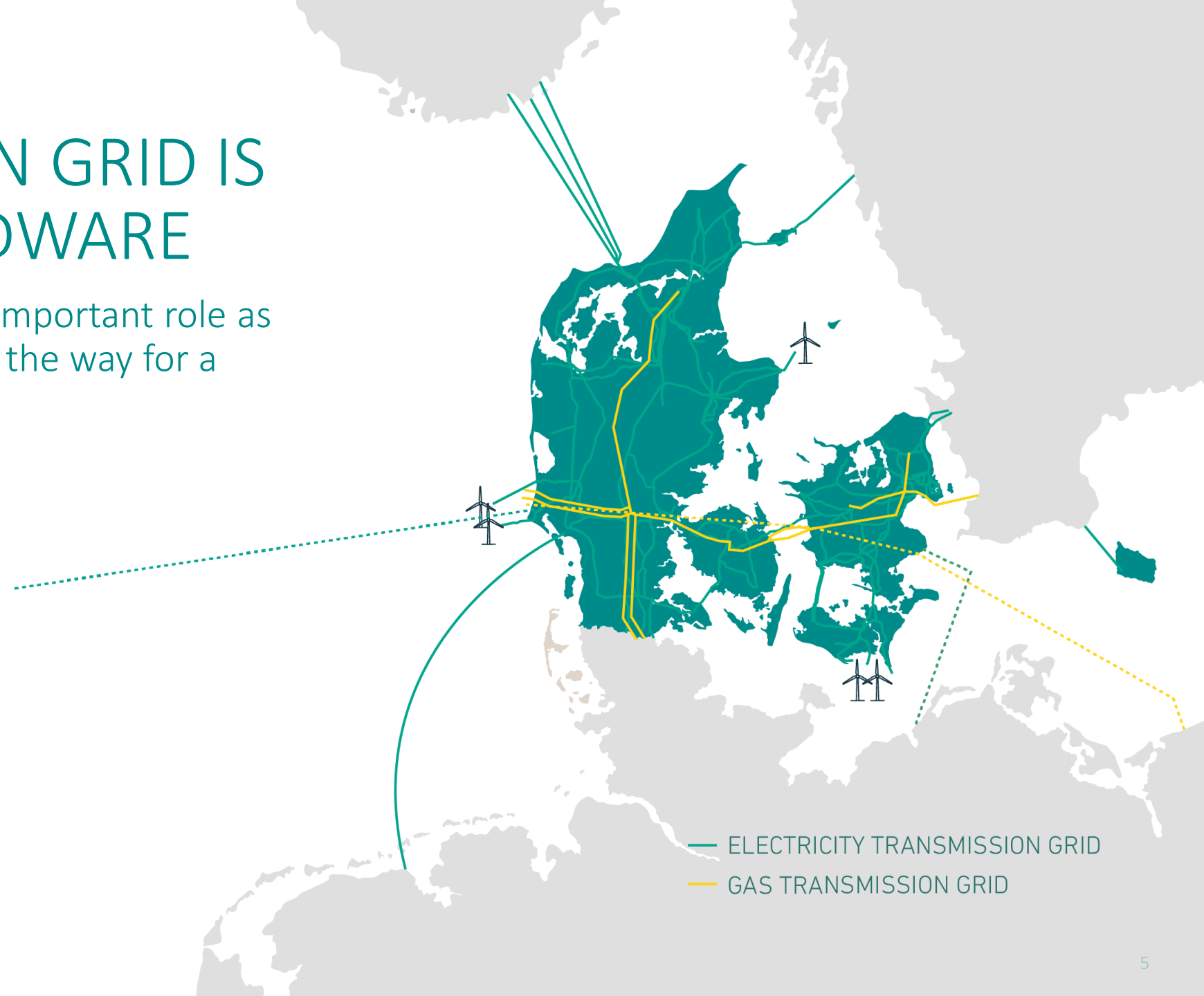
- Sector coupling
- New markets for balancing energy
- Activation of demand for SoS
- New market participants and business models to promote flexibility in the markets

Market based integration of renewables - horizontal

- International markets
- Adjustable production
- Known market participants and business models

TRANSMISSION GRID IS MARKET HARDWARE

Transmission grid play an important role as market enabler and paves the way for a green transition.



NEW INTERCONNECTORS ON THE WAY

ENDRUP-IDOMLUND

400 kV reinforcement
of the Danish grid



VIKING LINK

Interconnector to the UK



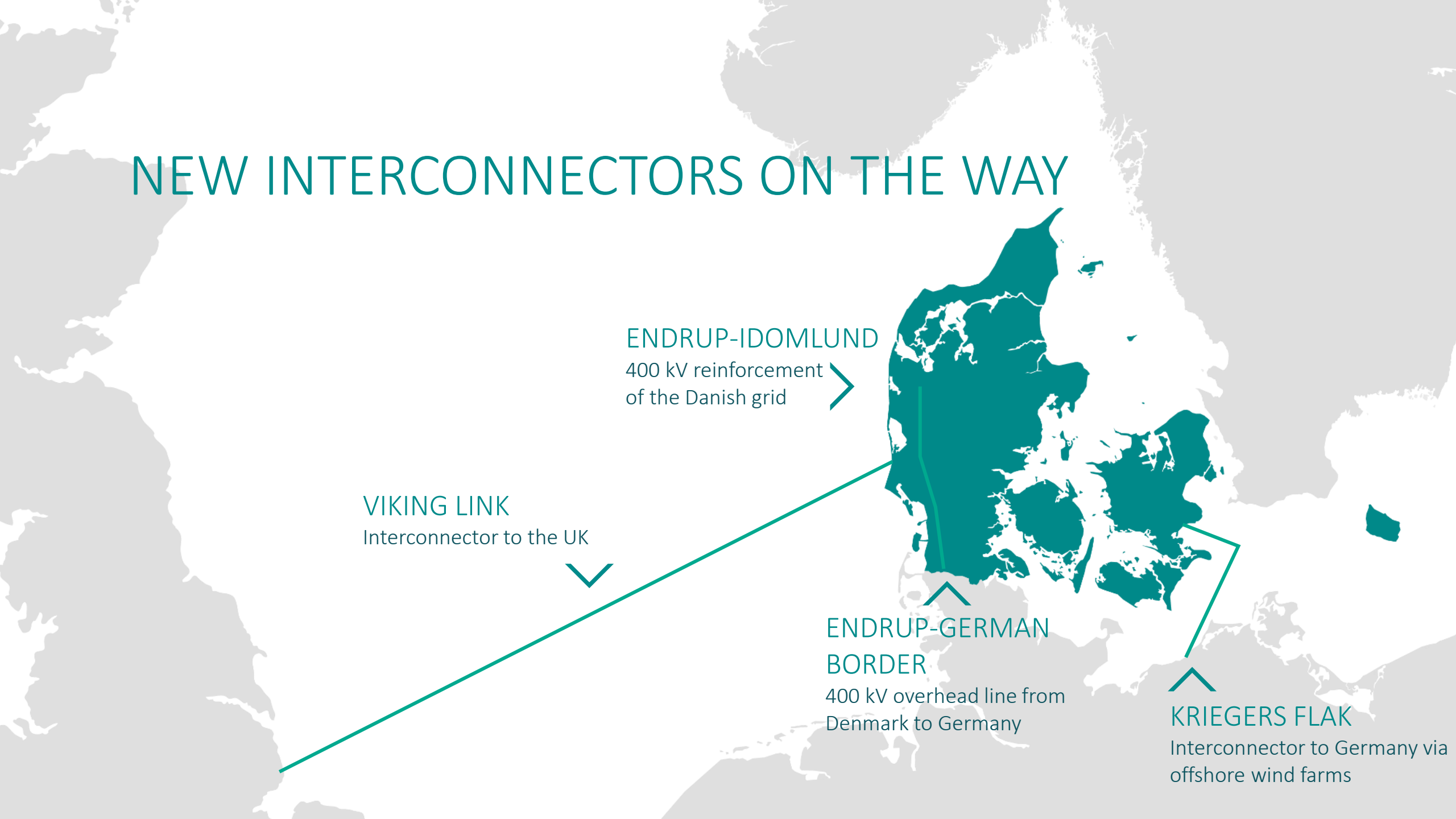
ENDRUP-GERMAN BORDER

400 kV overhead line from
Denmark to Germany

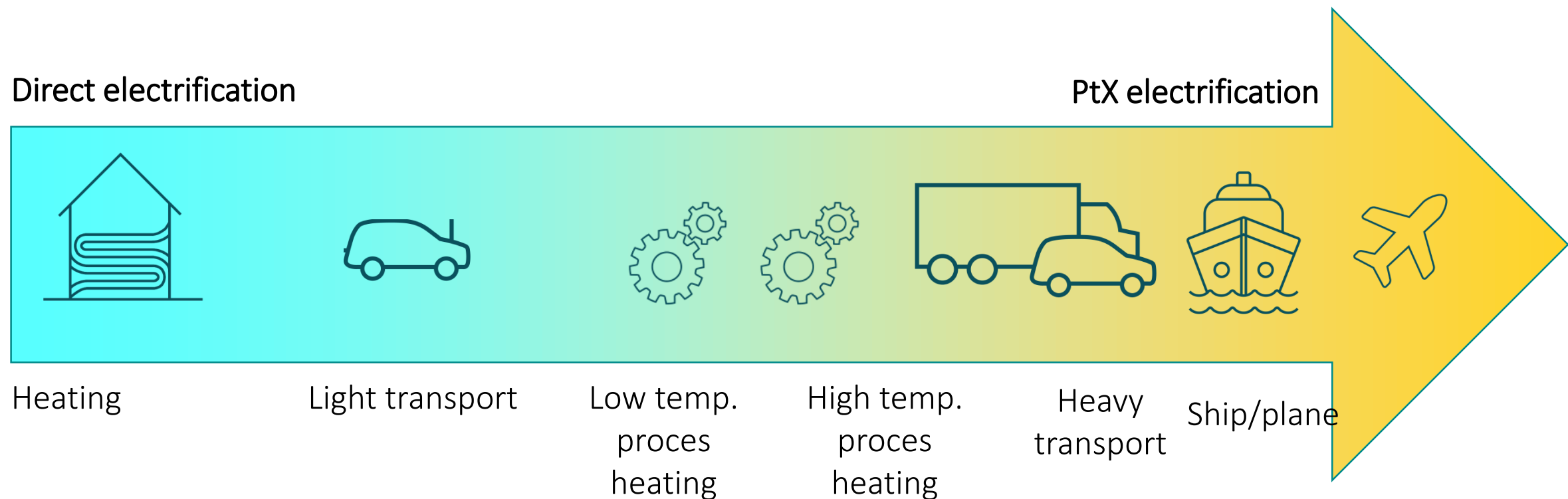


KRIEGERS FLAK

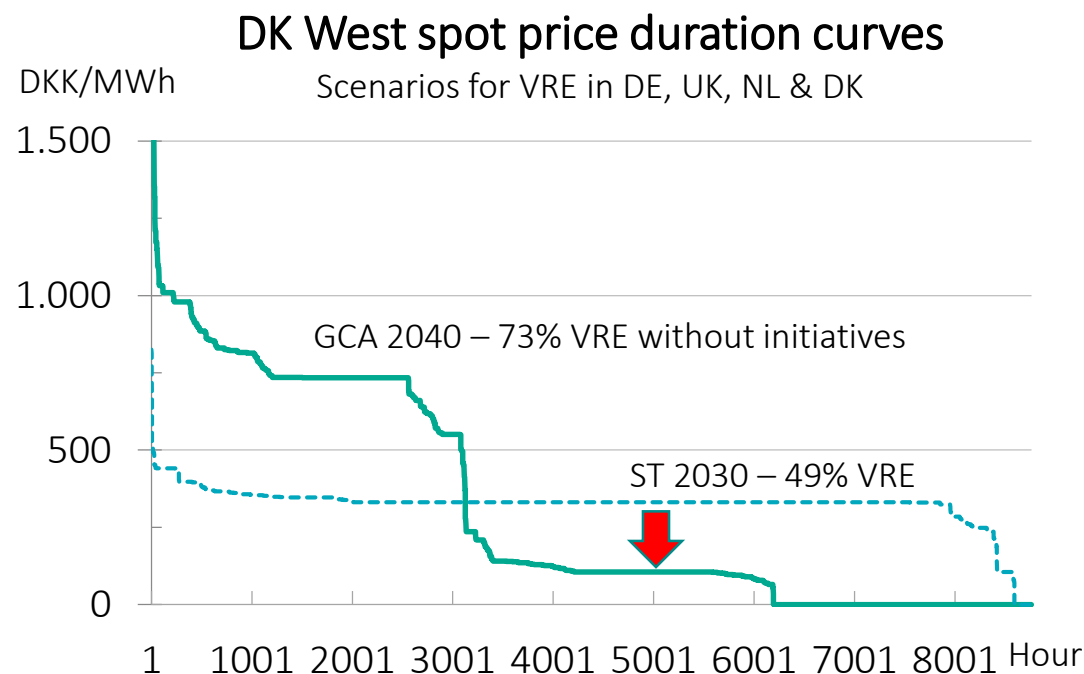
Interconnector to Germany via
offshore wind farms



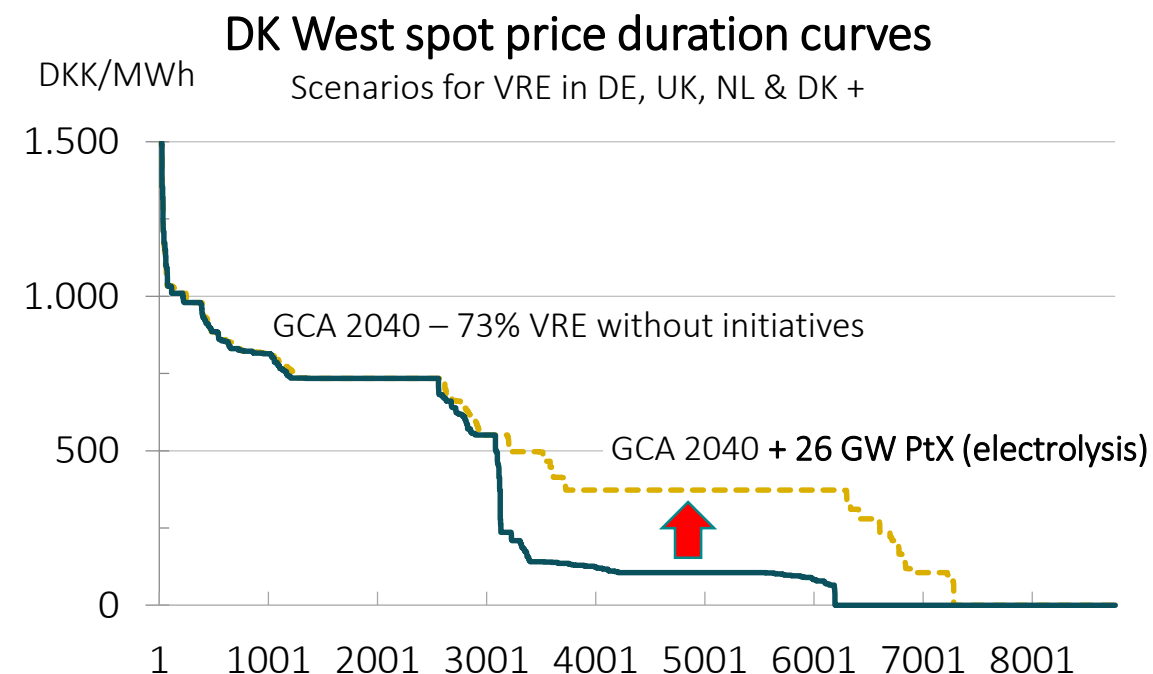
MARKETS TO PROMOTE SECTOR COUPLING



WIND POWER AND PV SUPPRESS ELECTRICITY VALUE – PtX RESTORES VALUE



Average market value for wind power and PV
reduced from 0.04 €/kWh to 0.02 €/kWh



Average market value for wind power and PV
increased from 0.02 €/kWh to 0.04 €/kWh

RENEWABLES IN THE ANCILLARY SERVICE MARKETS

- Economic potential for Energinet and producers of renewable energy to enhance RES participation in the ancillary service markets.
- Reserve markets – obligations to support the system if called upon - is the next place to look.
- But how can we ensure that Energinet has the contracted resources available at all times when it is delivered from renewables?
- Can digital solutions help ud her?

=> I think yes!

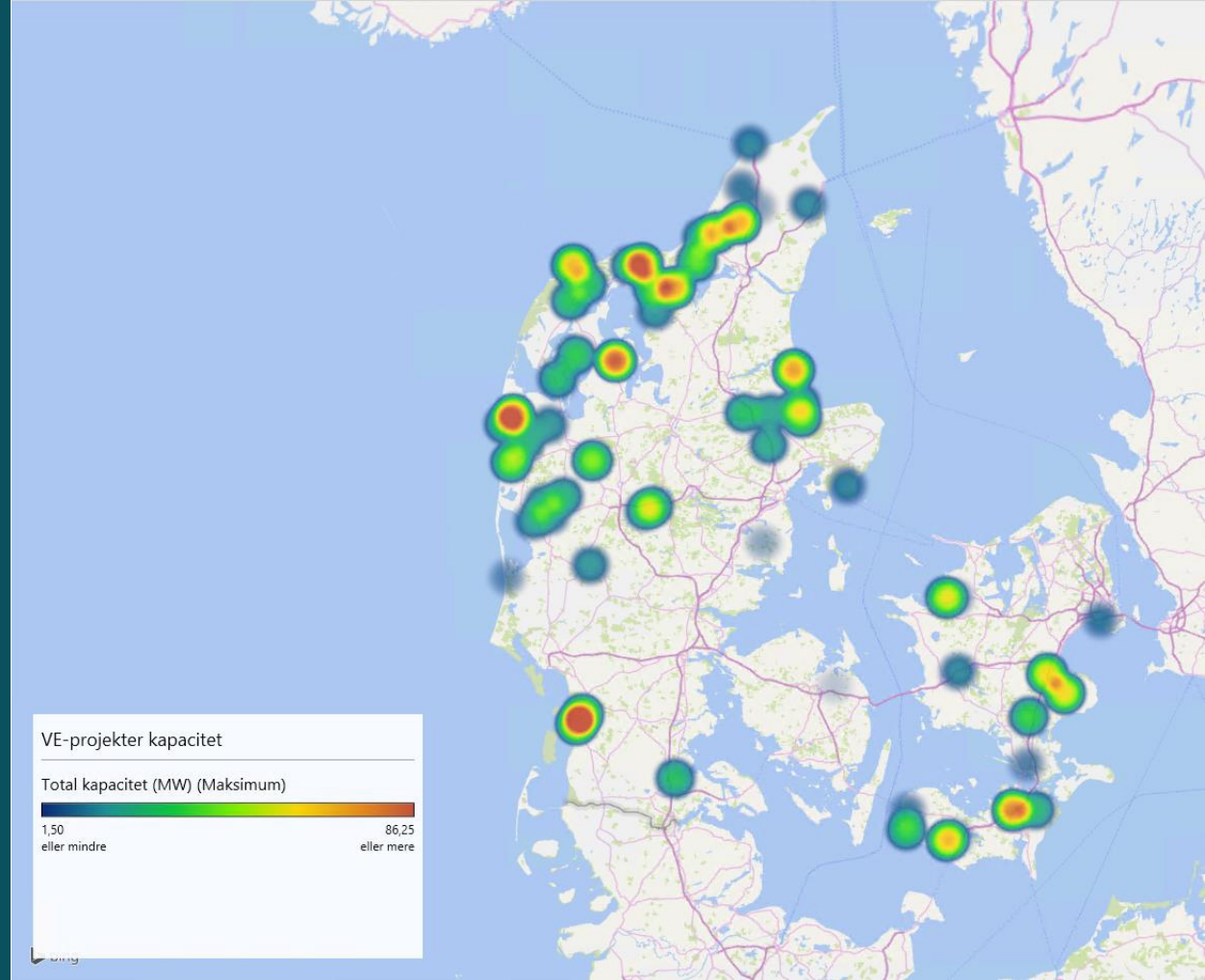


LOCATIONAL SIGNALS ARE PROVING INCREASINGLY NECESSARY...

... in order to ensure that the market reflects the locational value of the renewable energy production

Possible solutions

- Increase the number of bidding zones
- Nodal pricing
- Feed-in zones
- Tariffs



The map shows possible renewables projects smaller than 100 MW including both projects with and without a bank guarantee.

The projects amount to 1,700 MW in total.

THANKS FOR YOUR
ATTENTION!

Søren Dupont Kristensen

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