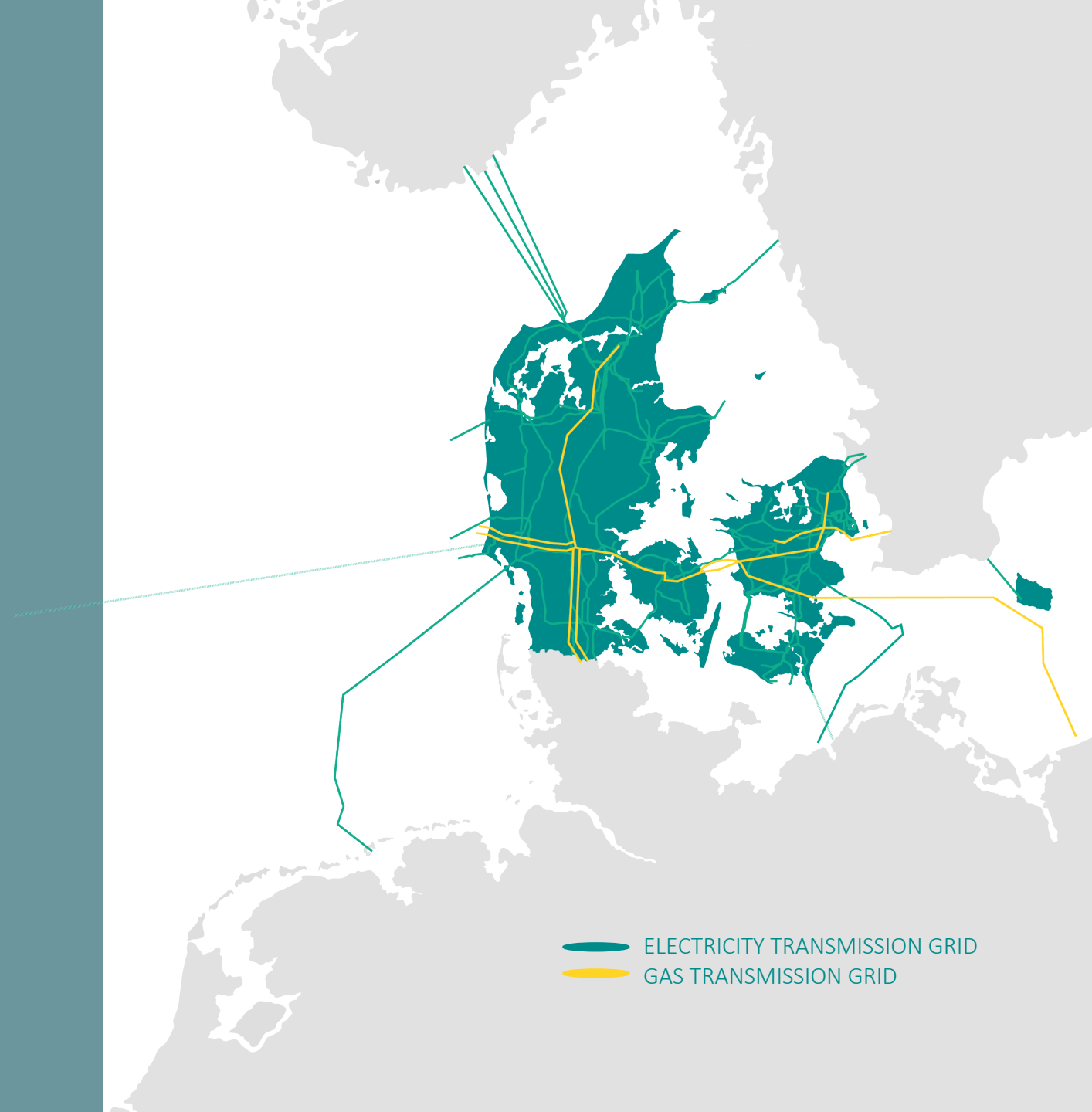


DANISH CONFERENCE ON  
ENVIRONMENTAL ECONOMICS  
24. AUGUST 2023

# ENERGINET'S PERSPECTIVE - CHALLENGES IN THE FUTURE ENERGY SYSTEM

SØREN DUPONT KRISTENSEN  
COO, EXECUTIVE VICE PRESIDENT, ENERGINET

Dok. 23/01513-4 Restricted



— ELECTRICITY TRANSMISSION GRID  
— GAS TRANSMISSION GRID

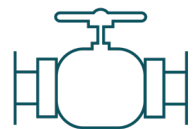


# CONNECTING THE ENERGY SYSTEM



8400

Km electricity transmission grid



1250

Km gas transmission grid



Future

Hydrogen transmission grid

# KEEPING THE BALANCE



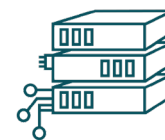
365-24-7

Balancing of the energy system



1.000 MW

Average amount of power procured across markets



130.000.000

Measurements collected everyday – paving the way for digitalization



# A BALANCING ACT

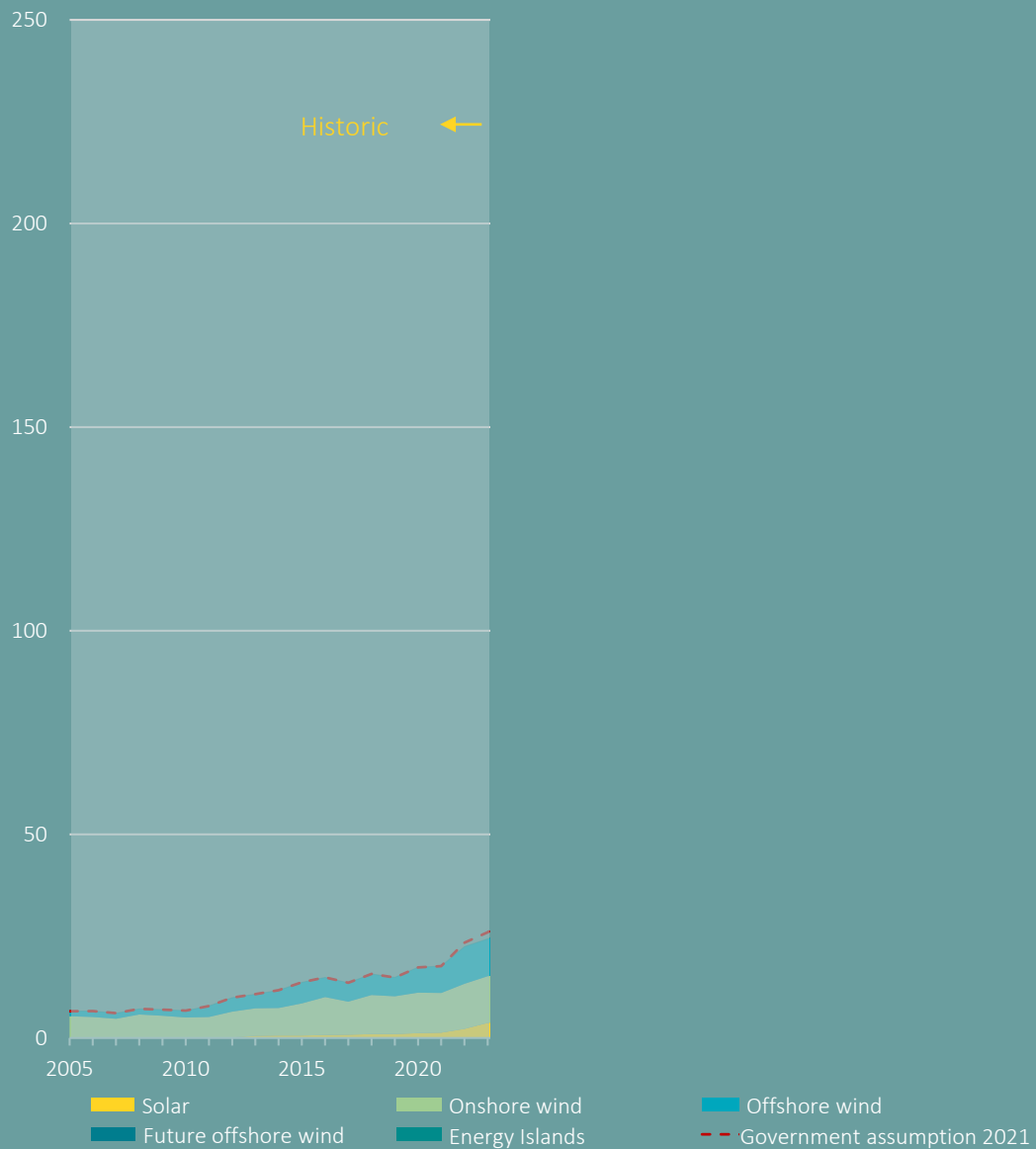
We work to make sure that the green transition is carried out in an economically responsible way without compromising on Denmark's already very high security of supply.





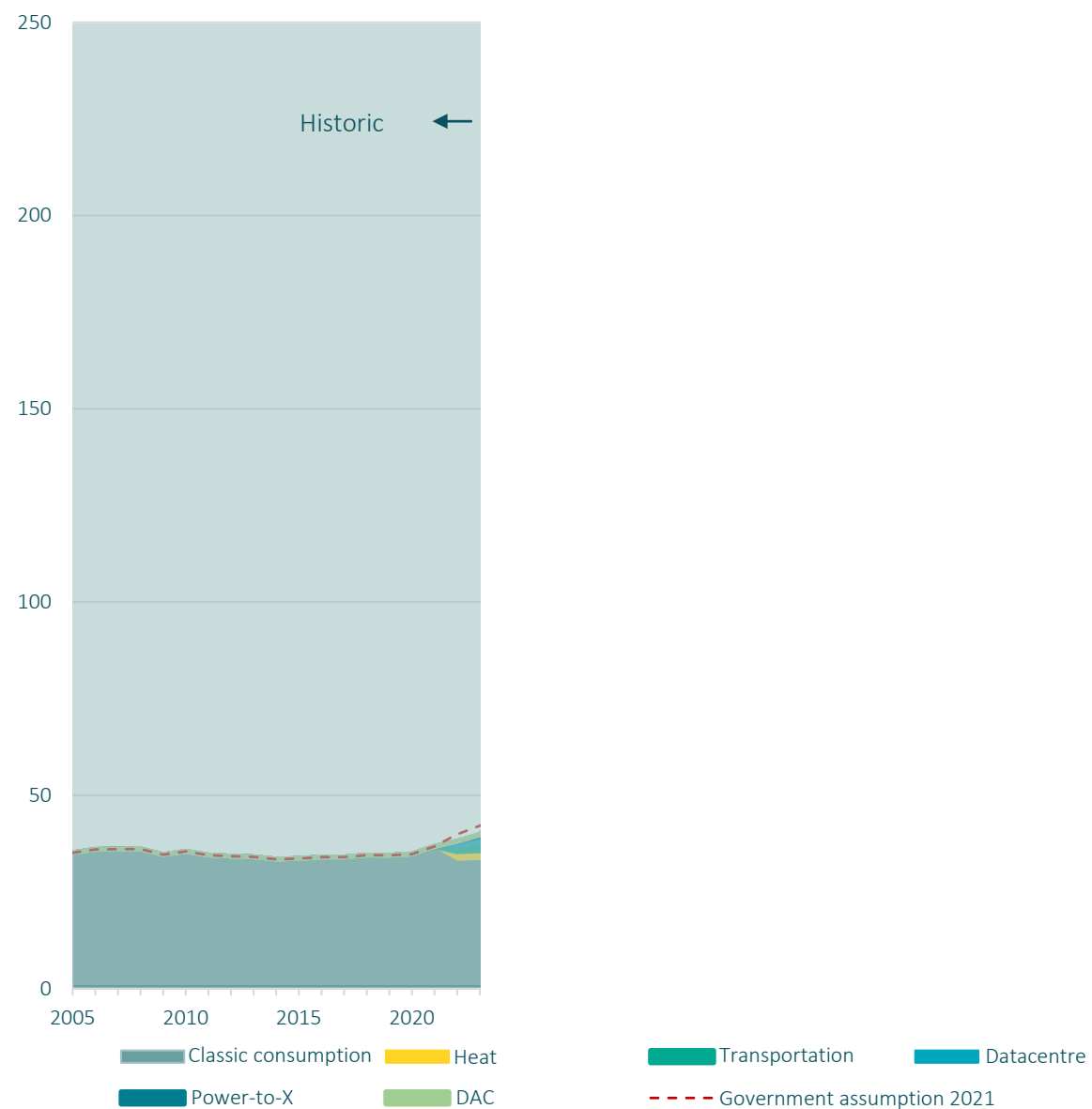
# ELECTRICITY PRODUCTION (TWh)

Government Assumptions 2022



# ELECTRICITY CONSUMPTION (TWh)

Government Assumptions 2022





STRATEGY

# ENERGY IN TIME



# WHAT WE FOCUS ON



INFRASTRUCTURE  
AT A RAPID PACE



SECURITY OF  
SUPPLY IN A GREEN  
ENERGY SYSTEM



ENERGY  
MARKETS FOR  
THE FUTURE



## INFRASTRUCTURE AT A RAPID PACE



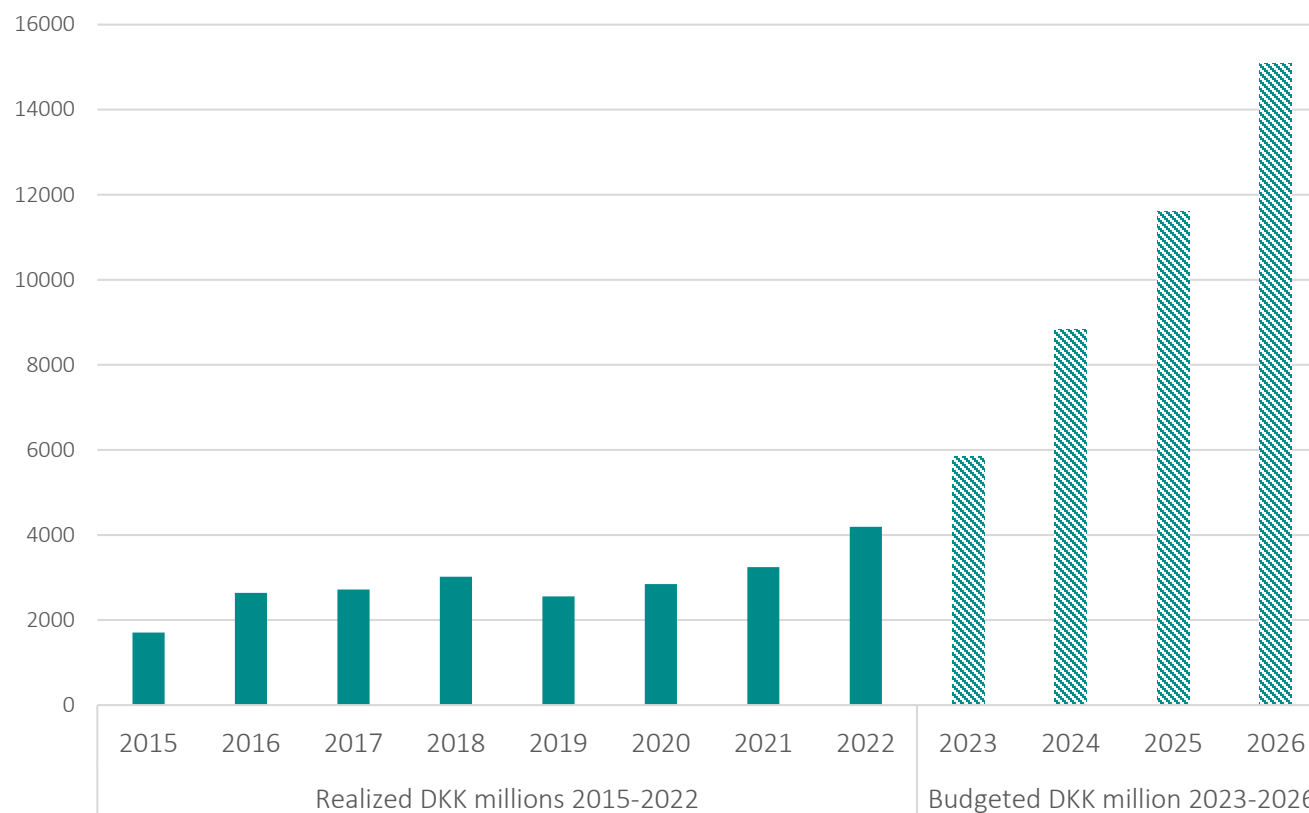
The significant increase in solar and wind power requires a massive expansion of the electricity grid, quickly

Inflexible processes may trip up a speedy green transition

Besides the electricity system, investments will be needed in gas- and hydrogen infrastructure

Essential to maintain a fair and transparent dialogue with citizens affected by the infrastructure

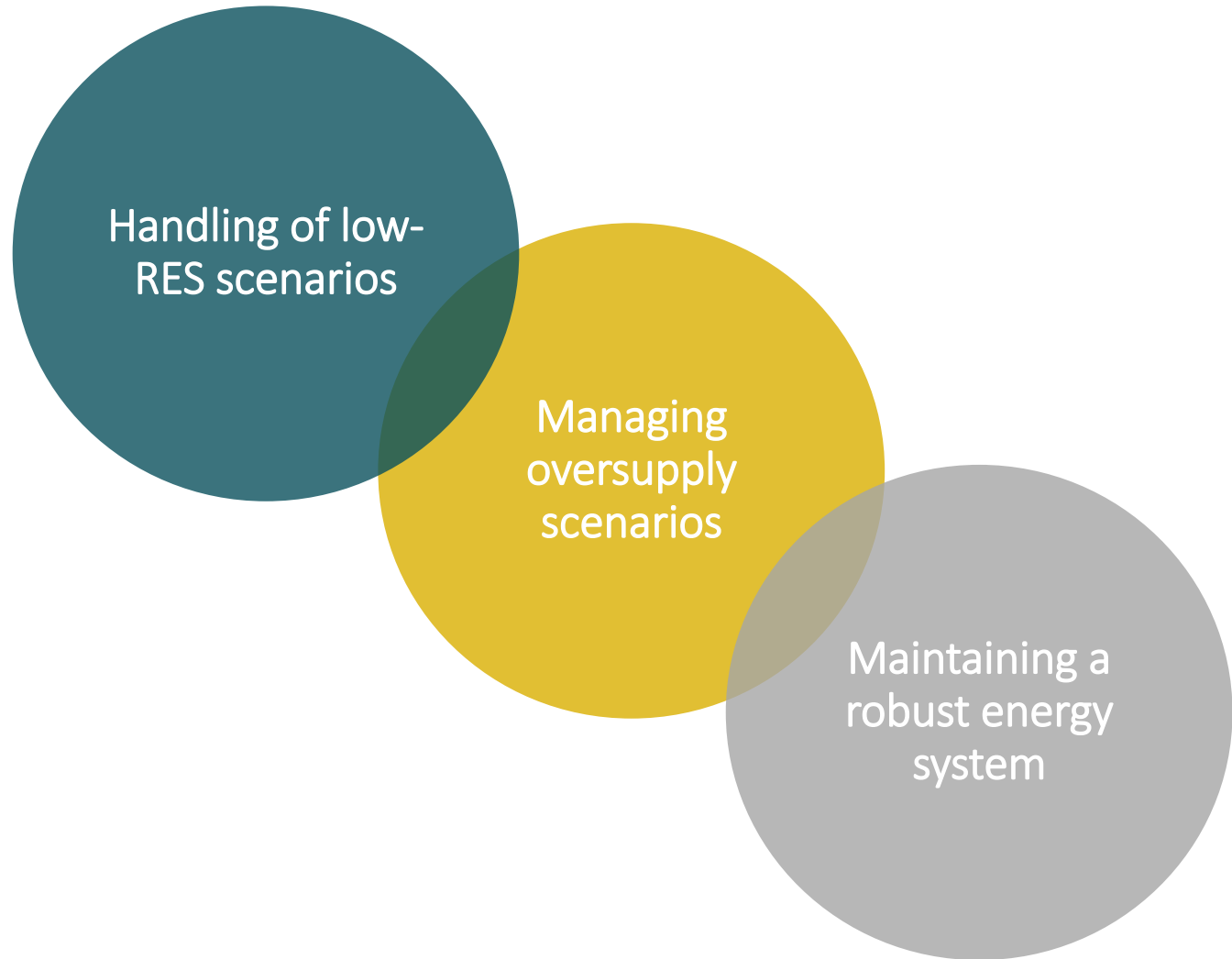
## Investments in electricity transmission grid 2015-2026



## SECURITY OF SUPPLY IN A GREEN ENERGY SYSTEM

The thousands of new green generation facilities, such as PV plants, cannot stabilise the electricity grid in the same way as conventional power stations do today.

In order to ensure a high level of security of supply in an energy system, where renewable energy constitutes the backbone of the energy system, new solutions are needed.





## ENERGY MARKETS FOR THE FUTURE

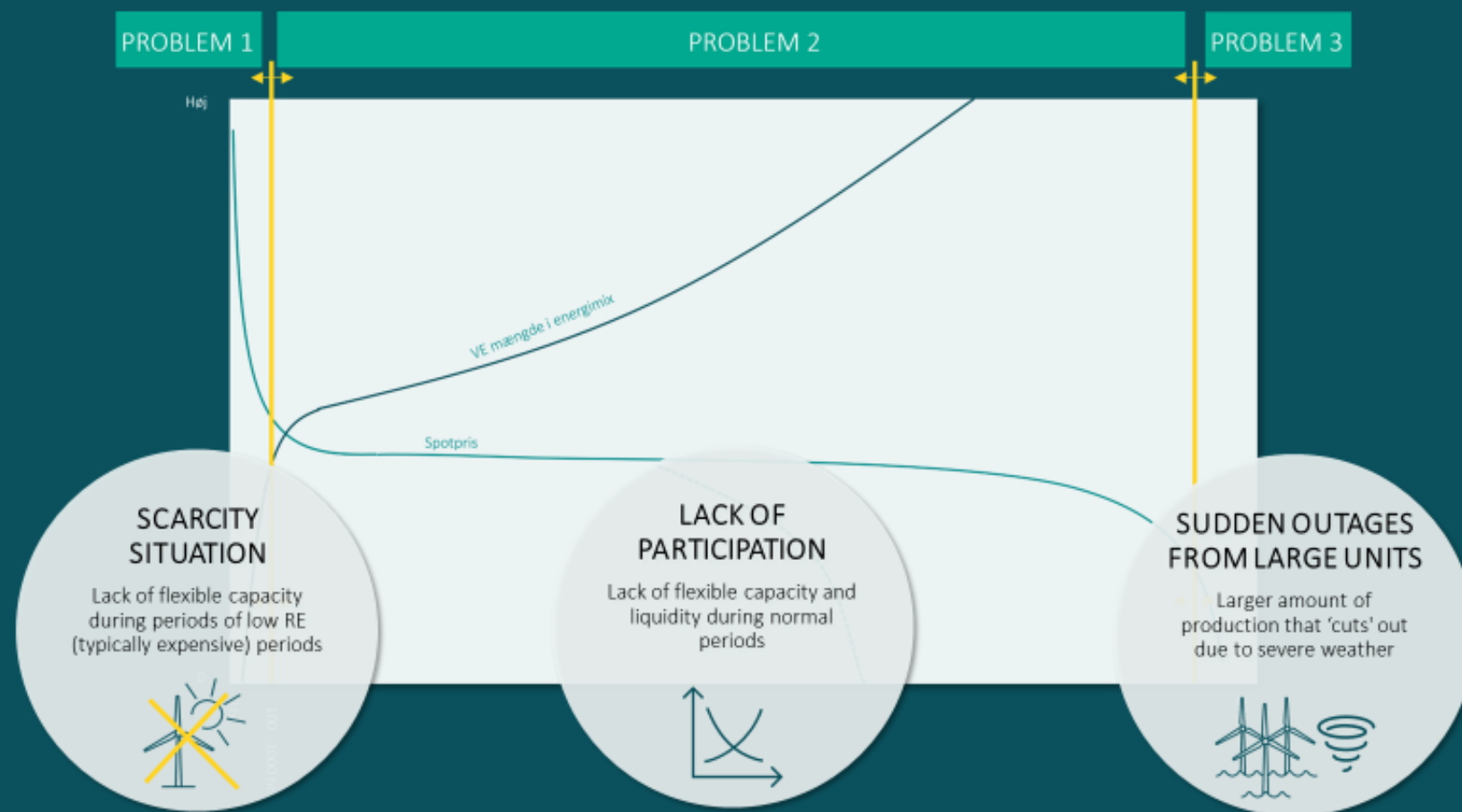


A rapidly increasing need for ancillary services requires new marketplaces.

There is a need for flexibility from consumers and producers that do not currently have knowledge of the need and opportunities.

There is a large untapped potential for sector coupling.

Net-zero ambitions (probably) call for redesign of markets.





# TAKEAWAYS

1

TRANSITION TO 100% GREEN POWER IN 7 YEARS REQUIRE SIGNIFICANT AND FAST INVESTMENTS IN RE AND GRID

2

PHYSICAL BALANCE MUST BE ENSURED TO MAINTAIN SECURITY OF SUPPLY DURING (ALMOST) 8760 HOURS

3

RE-CONFIGURATING MARKETS TO BE READY FOR NET-ZERO