

BALANCING A 100% RENEWABLE ENERGY SYSTEM

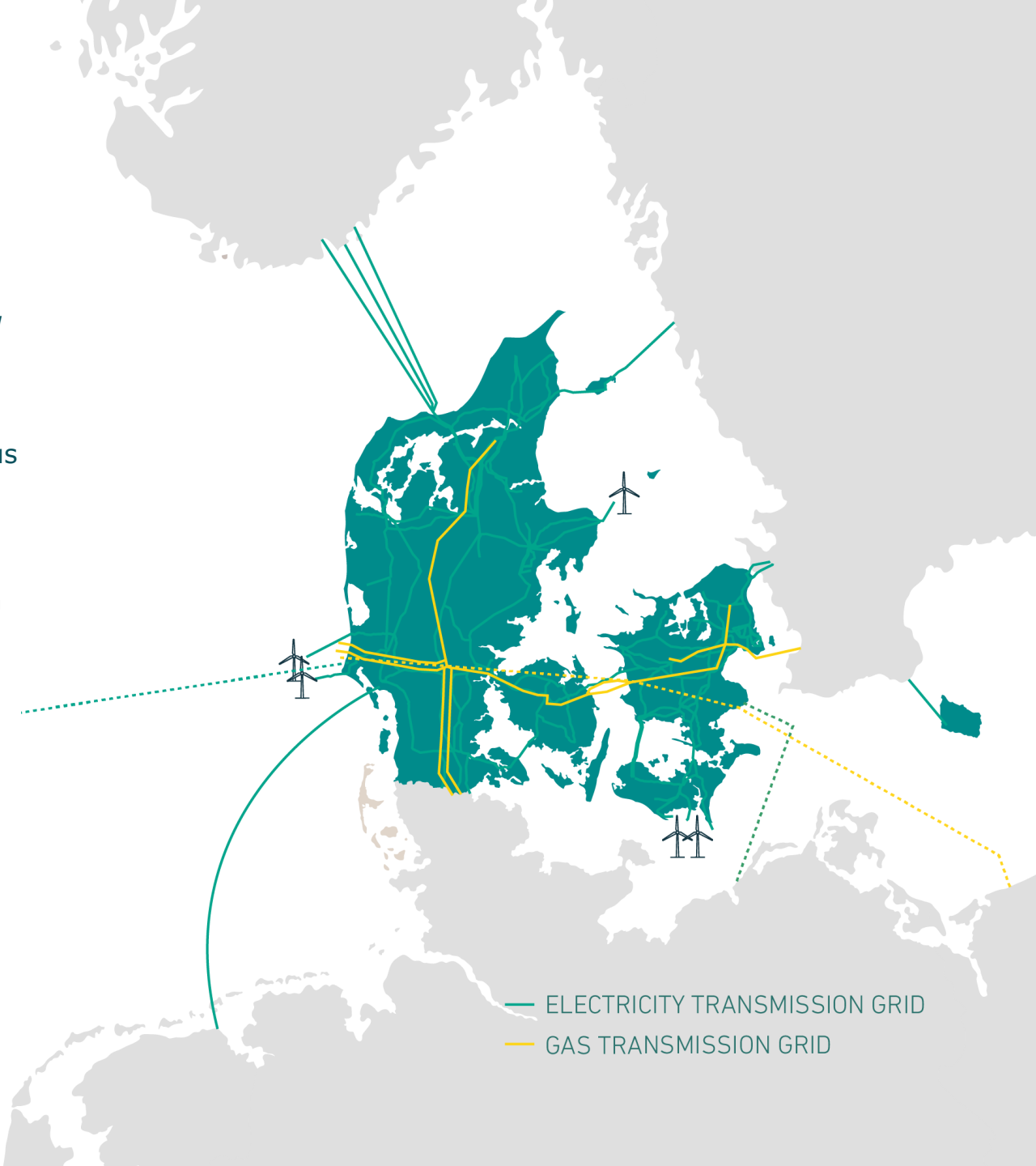
Kia Marie Jerichau

Director, Flexibility and Balancing, Energinet

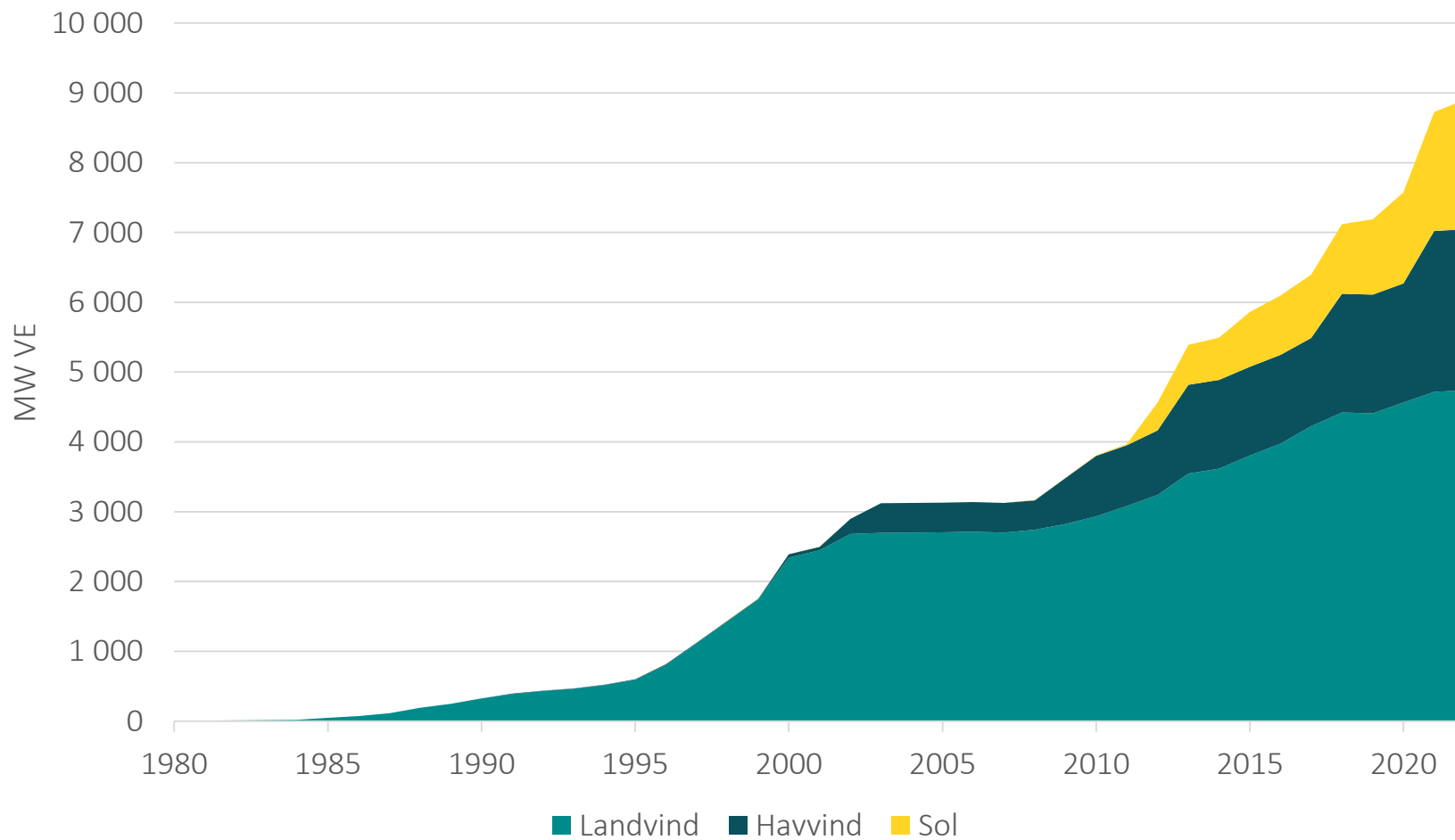
ENERGINET

Social Mission: *A renewable energy system with a high level of security of supply and at an affordable price.*

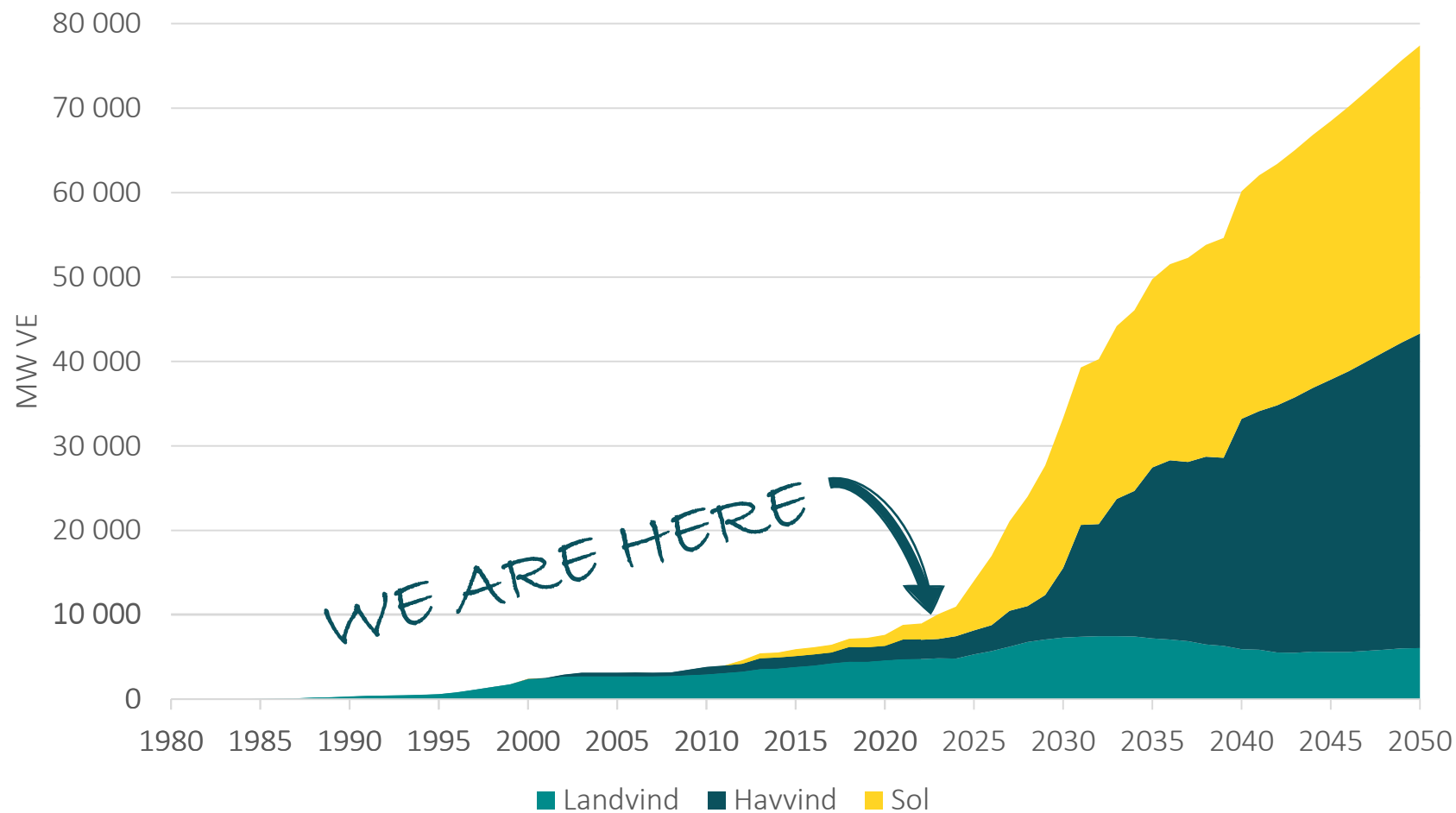
- Balances the Danish electricity system consisting of two synchronous areas (DK1 in Continental Europe and DK2 in the Nordic area) connected through HVDC (600 MW).
- Owns and operates ~7.000 km transmission lines in Denmark.
- Connected to Sweden, Norway, Germany, the Netherlands and soon UK.



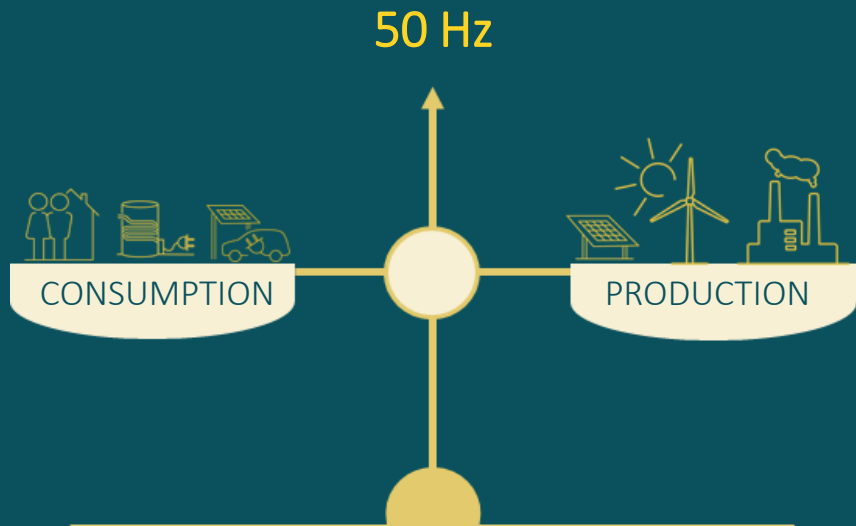
DANISH RES-INTEGRATION PREVIOUS 40 YEARS



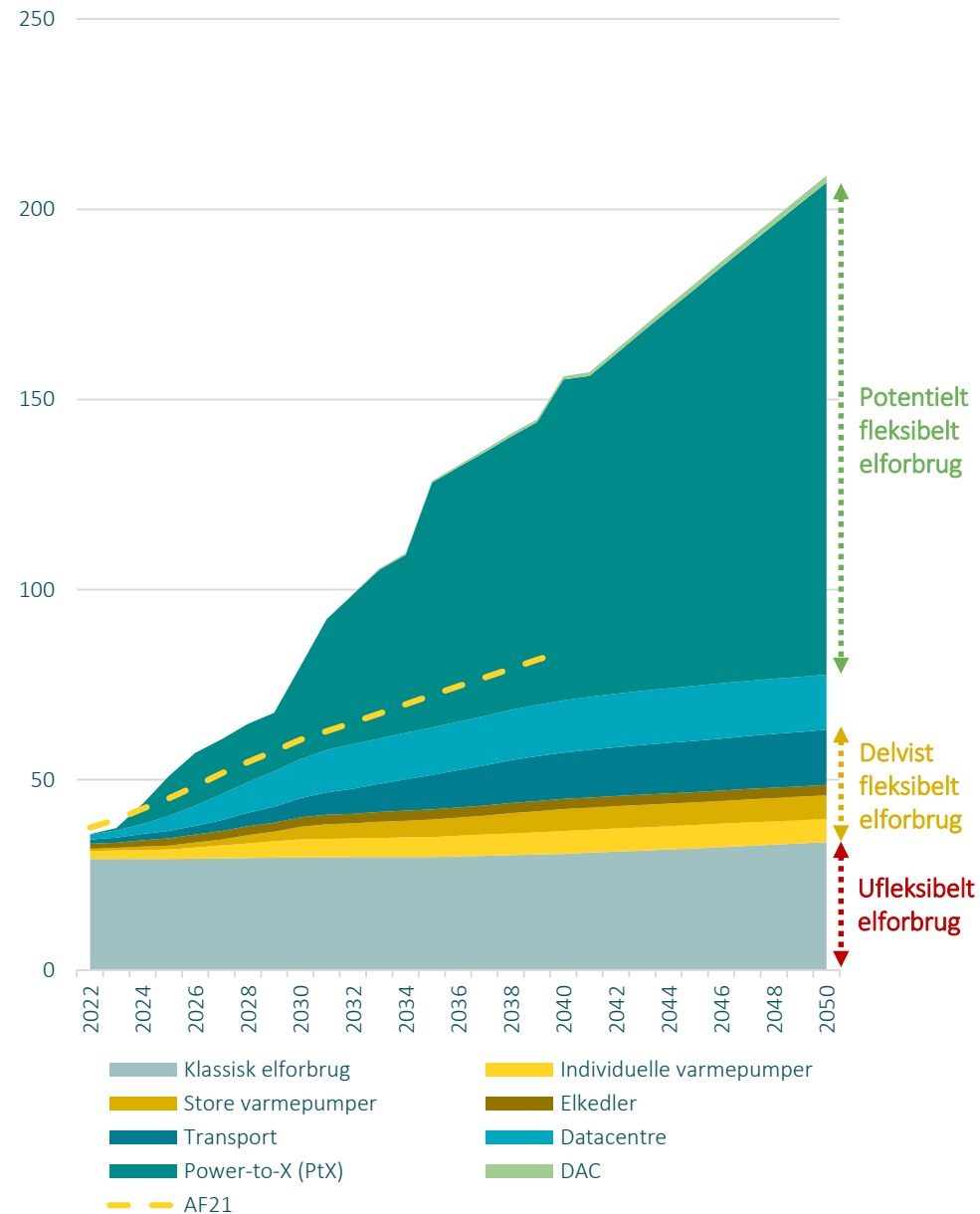
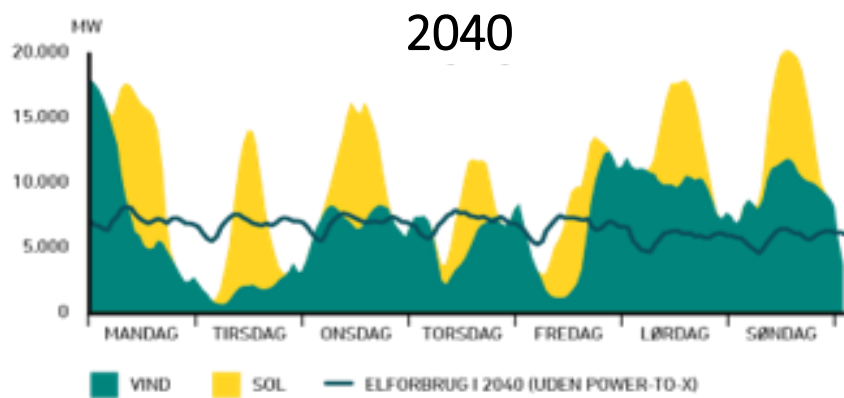
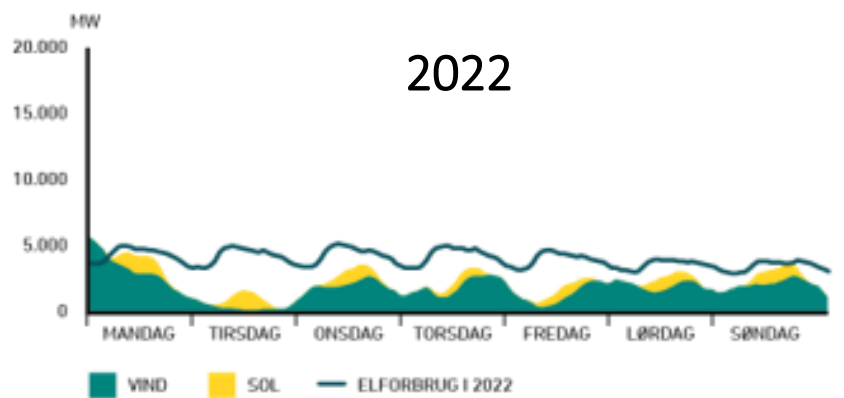
DANISH RES-INTEGRATION PREVIOUS 40 YEARS



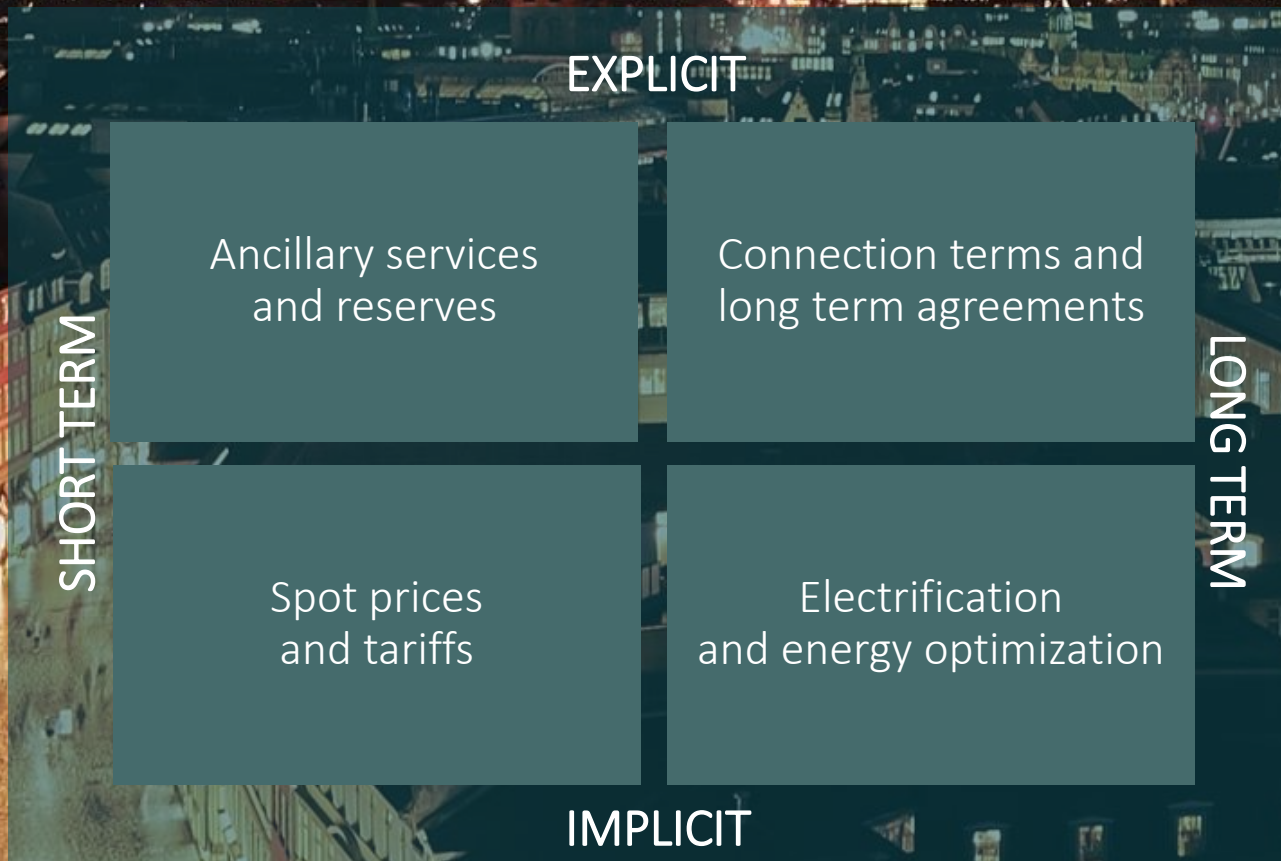
BALANCING A SYSTEM WITH 100% RENEWABLE ENERGY



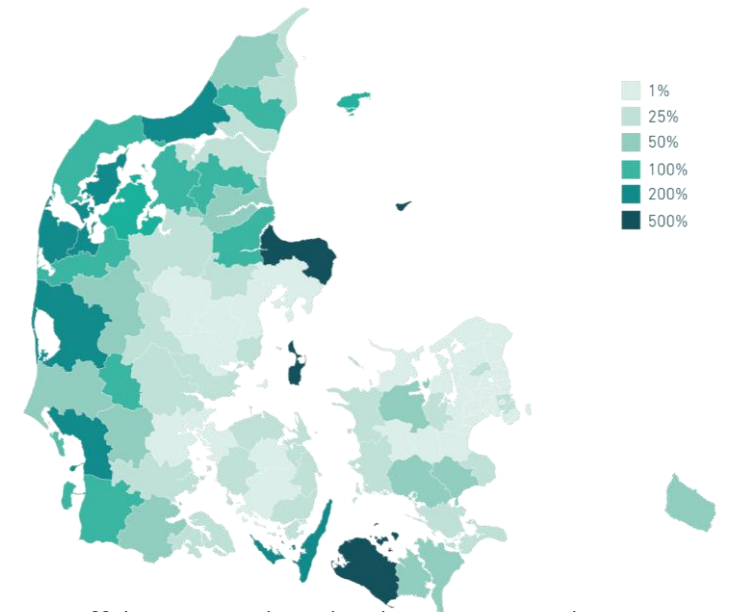
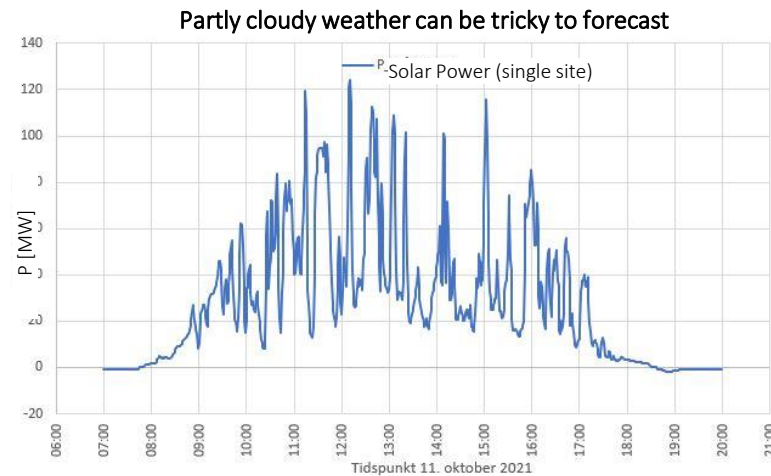
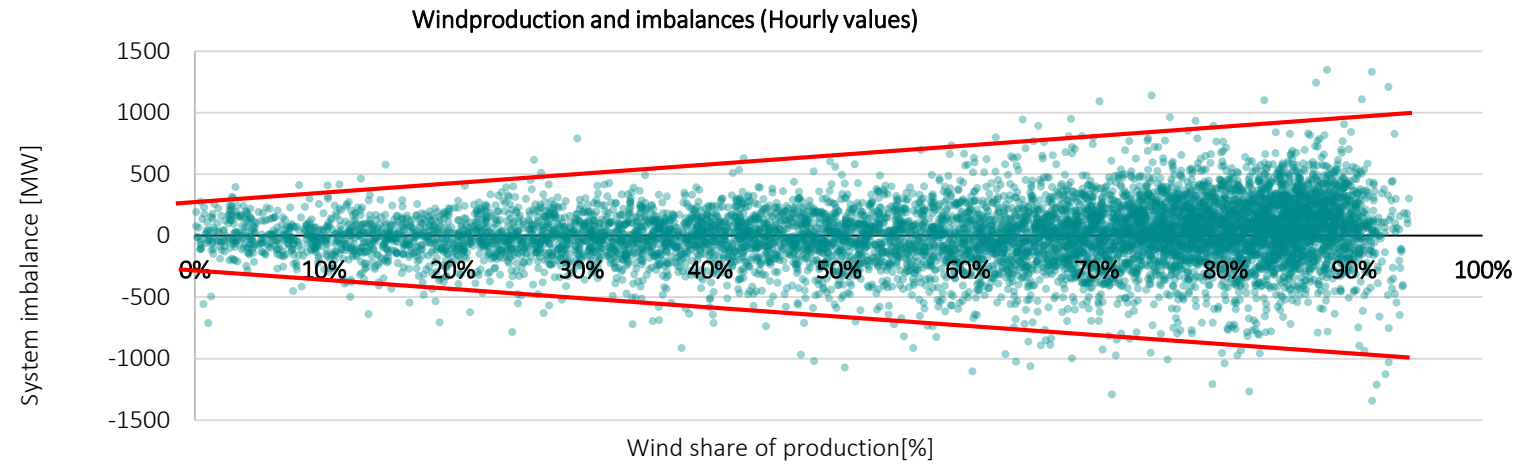
TOWARDS A NEW REALITY



FLEXIBILITY IS KEY



The need for balancing is rising with the share of renewable energy



Offshore wind and solar compared to electricity consumption per municipality

WORK IN PROGRESS INITIATIVES IN ENERGINET



PTX PARTICIPATION IN
ELECTRICITY
BALANCING



STORAGE
REGULATORY
FRAMEWORK



CONSUMER
FLEXIBILITY



WEATHER PATTERNS
AND PROGNOSIS



MARKETBASED
DIFFERENTIATED
SECURITY OF SUPPLY



PUBLISHING OF REAL
TIME IMBALANCES



BALANCING
MARKET
GEO-TAGS



DYNAMIC
DIMENSIONING



LOCAL FLEXIBILITY
TSO-DSO



REGULATORY
FRAMEWORK FOR
DE-RISKING

QUESTIONS

