

Potentials

Power-to-X in Denmark

- Sector coupling and system integration

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THE ENERGY BACKBONE

We operate and develop the large transmission grids, gas pipelines, and gas storage facilities that form the backbone of Danish electricity and gas supply.

- Energinet is 100% state-owned under the Ministry of Climate, Energy and Utilities
- We ensure open and equal access to the Danish highways for electricity and gas



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.



ENERGINET



FROM 50% TO +100% GREEN ENERGY

It is not just about producing the energy – energy must also be used in new ways





WINDS OF CHANGE

The enormous offshore wind resources and the boom in renewable energy on market terms are Denmark's core strengths..

KEY TREND: GREEN ENERGY WITHOUT SUBSIDIES

Previously, green energy had to be adapted to the market. Now, green energy defines the market.



DANISH RENEWABLE ENERGY DEVELOPMENT



BALANCING & CURTAILMENT





ENERGINET

DE

WORLD'S FIRST PRENSY ISLANDS

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The North Sea: 3 GW offshore wind by 2030, later 10 GW.

(40 GW technical potential)

The Baltic Sea: 3 GW offshore wind by 2030.

NEW OFFSHORE WIND FARMS

😑 ENERGY ISLAND

ONSHORE CONNECTIONS, ALTERNATIVES

THE ABUNDANT OFFSHORE WIND (AND SOLAR) RESOURCE

... and the less abundant electricity grid



Potential for at least 40 GW offshore wind at some of the best wind sites in the entire North Sea

Perhaps "only" realistic with a total of 4-6 GW offshore wind (incl. Current offshore wind) through the Jutland AC electricity system

POWER-TO-X

The value of system integration



NATIONAL PTX-AGREEMENT

Highlights





Net export of green energy



Holistic energy system planning

H2-infrastructure

Fundamental reform of electricity tariffs



FLEXIBILITY THROUGH SYSTEM INTEGRATION



ENERGINET

POWER-TO-X LEADS TO MORE RENEWABLE ENERGY

PTX IS AN EFFECTFUL MEAN OF "LIFTING" THE ELECTRICITY PRICE IN HOURS WITH A HIGH SHARE OF RENEWABLE ENERGY PRODUCTION (HEDGING)



... AND INCREASE THE SHARE OF FLUCTUATING RENEWABLE ENERGY INTEGRATED TO THE ELECTRICITY SYSTEM





INTEGRATED ENERGY SYSTEM PLANNING



Access to renewable energy ressources

Reduce the need to strengthen the power grid



Sector coupling, i.e. district heating networks



Consumption



Access to hydrogen infrastructure





PTX-POTENTIALS IN DENMARK

ENERGINET

HYDROGEN PROJECTS IN DENMARK



Political ambitions 4-6 GW in 2030

+10 GW Project Visions for 2030

Home market + exports

DANISH EXPORT POTENTIAL



Danish hydrogen



EUROPEAN HYDROGEN BACKBONE

- Access to hydrogen demand centers in Europe
- 60-75 % of the backbone can be based on repurposed gas pipelines
- Cost savings around 75-90 %



PTX – A GLOBAL MARKET





QUESTIONS

