

The Danish Power-to-X Potential

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Power-to-X in Denmark
Invest in Denmark 03.03.22



Hydrogen Denmark's members cover the entire value chain for hydrogen and PtX

GreenLab

HYDROGEN VALLEY®

Klimafonden
skive

Clusters

COWI

DGC
Danish Gas Technology Centre

DNV

DTU Management Engineering
Department of Management Engineering

DTU Energy
Department of Energy Conversion and Storage

RAMBOLL

SDU



AALBORG UNIVERSITY
DENMARK

Knowledge

Air Liquide

Crossbridge
ENERGY FREDERICIA

EUROPEAN
ENERGY

Eurowind Energy.

Everfuel

STRANDMØLLEN

Ørsted

Energy
producers

ADVENT

BALLARD®

Electrochaea
Blue World
Technologies

GREEN
HYDROGEN
SYSTEMS

HALDOR TOPSOE

HYUNDAI
ITM POWER
Energy Storage | Clean Fuel

nel
SIEMENS Gamesa
RENEWABLE ENERGY

Swagelok

OEMs

evida

GAS
STORAGE
DENMARK

Infrastructure

The Danish potential for hydrogen & PtX is tremendous

The world-leading capabilities on both renewable energy and PtX-technologies make Denmark a global frontrunner



We are on the threshold of a green, industrial revolution

The development is driven by the strong,
Danish hydrogen and PtX industry

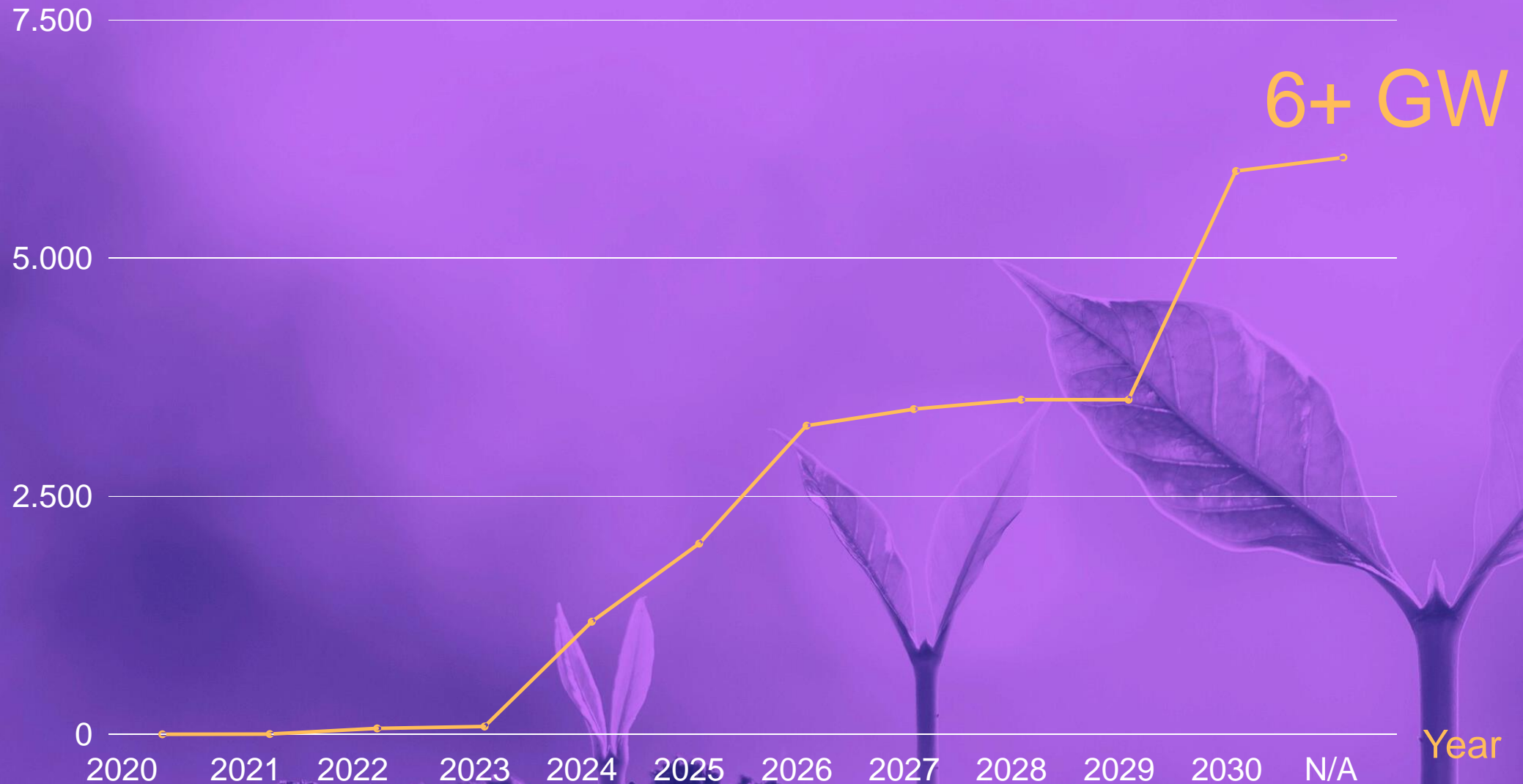


20 active hydrogen projects



The industry is realising the potential

Cum. MW electrolysis



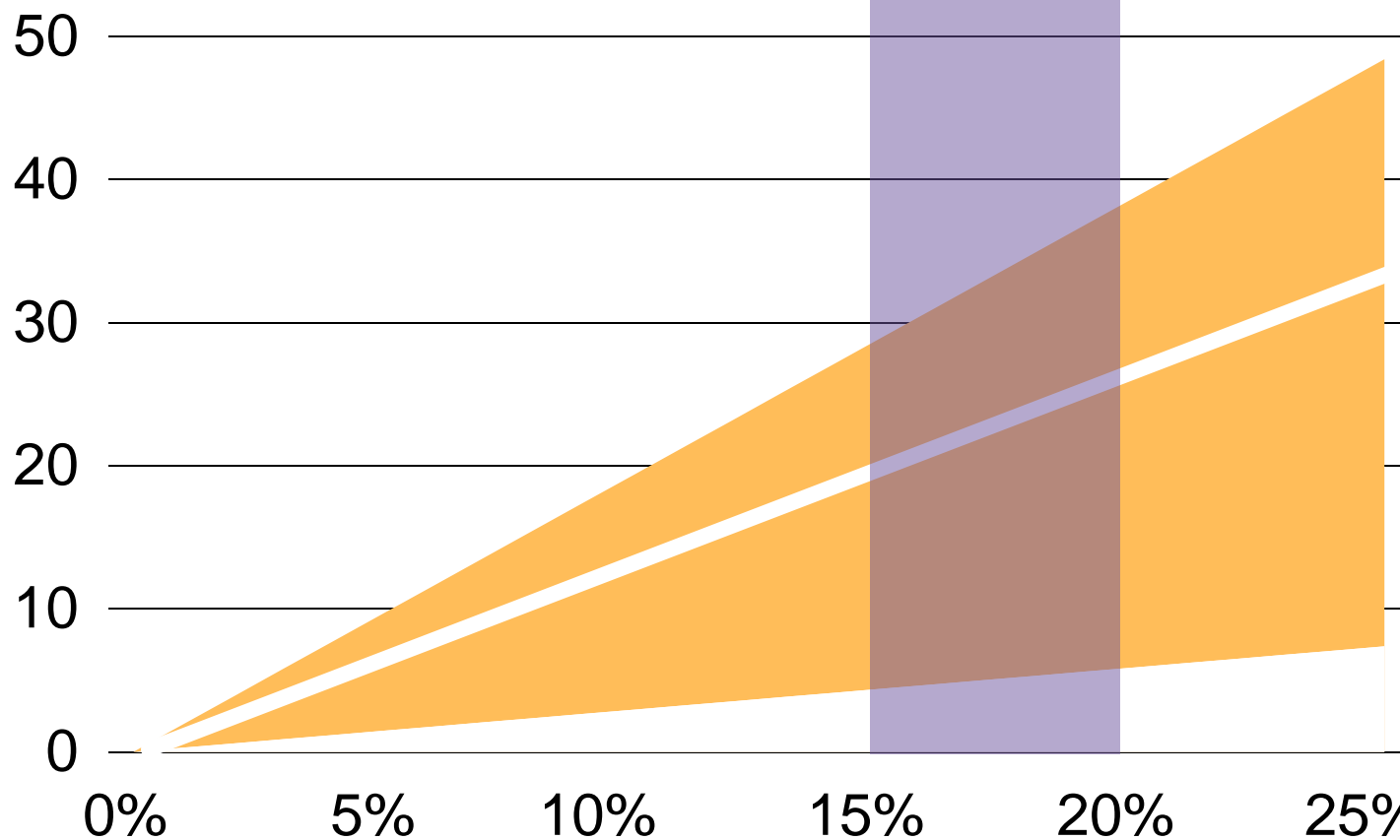


This means thousands of new jobs
in a new industry and energy sector

New jobs, export and economic growth in Denmark and globally

Market value for technology export in 2030

Billion DKK



Danish market share

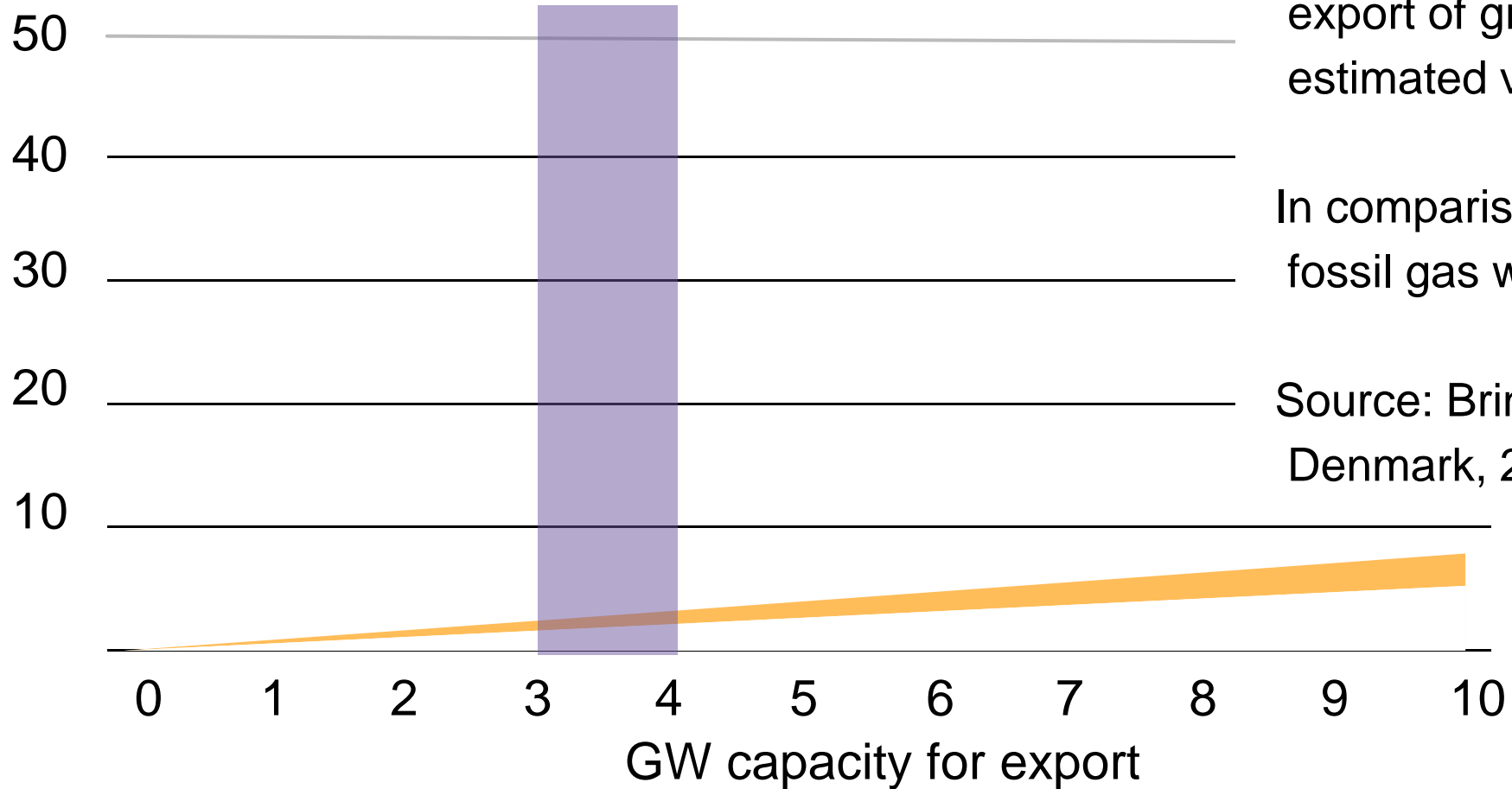
A 15-20% Danish market share of the EU's 40 GW electrolysis-capacity is estimated to represent an export value of 4-33 billion DKK.

In comparison: today Danish companies' export within green technologies and services is worth 90 billion DKK.

Source: Brint i Tal, Hydrogen Denmark, 2021.

Market value for energy export 2030

Billion DKK



A capacity of 3-4 GW dedicated to export of green hydrogen has an estimated value of 1.7-3.5 billion DKK.

In comparison: the Danish export of fossil gas was worth 1.5 billion DKK.

Source: Brint i Tal, Hydrogen Denmark, 2021.



Green alternatives for fossil energy are imperative

This is a matter of urgency in dealing with the climate crisis, as well as in ensuring energy independence, job creation and new growth markets

Danish technology can help decarbonise Europe

Gas-grid, industry, transport, agriculture and other hard-to-abate sectors can be decarbonized with green hydrogen



Renewable energy outside the electricity grid

Hydrogen substituting fossil gas
easing European dependency



A map of Ukraine and surrounding regions, including parts of Poland, Romania, and the Sea of Azov. Major cities like Kiev, Kharkiv, Rivne, L'viv, and Dnipro are labeled. The word 'UKRAINE' is prominently displayed across the center of the map in large, bold, black letters. The map is overlaid with a semi-transparent purple filter.

Ukraine was central in the European transition,
now we must deliver for them

Ukraine was key in the European transition as the country was set to contribute to the 40GW outside the EU by 2030. Given the atrocious war the need for fossil independence has become a matter of absolute urgency. We must do more faster to deploy VE-based Hydrogen solutions.



*But in the long run, it is our
switch to renewables and
hydrogen that will make us
truly independent.*

President Von der Leyen, March 1st 2022



96% of the European gas grid
can be used for hydrogen

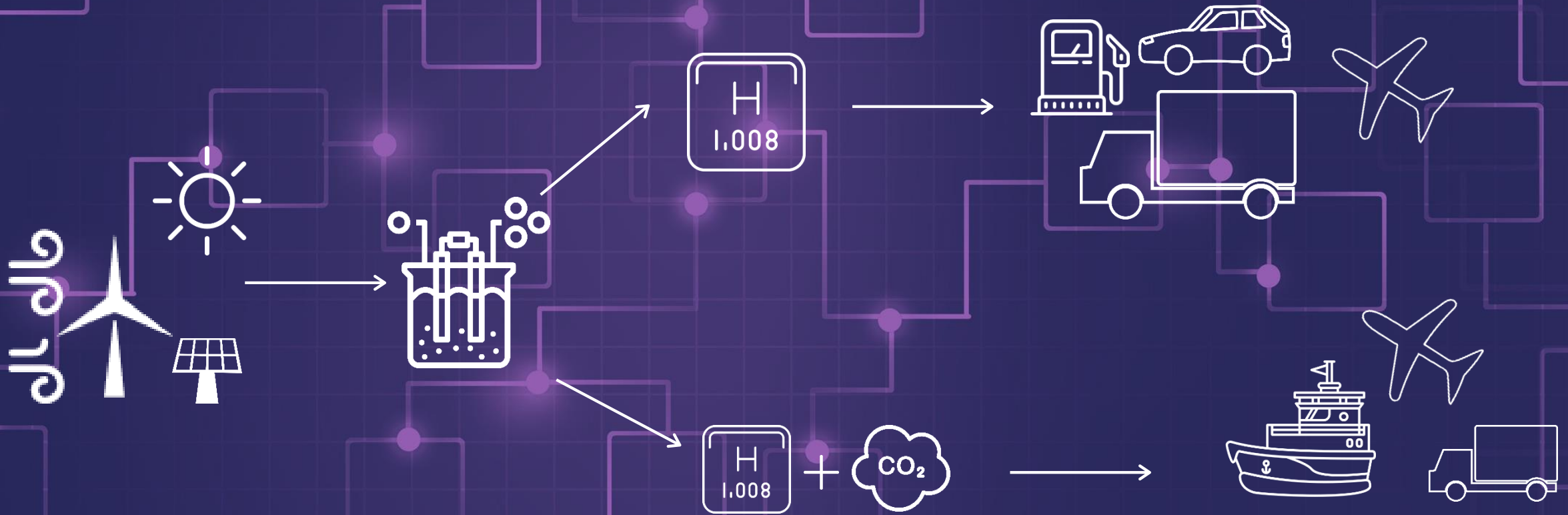


Hydrogen and PtX for transportation is a vital part of the green transition

Hydrogen and hydrogen based fuels can shift all parts of the transport sector to green fuels

H₂

Hydrogen and PtX fuels ensures efficient utilisation of renewable energy





Hydrogen and PtX can ease the dependence on fossil fuels

Hydrogen and PtX can not only decarbonise land-based transport but also shipping and aviation

This requires investments and a massive scale-up in production

If Denmark is to realise the potential for hydrogen and PtX we need to act now: investments, scale-up and a strategy for industrialisation and export



The basis of the potential is enough renewable energy

We need a massiv expansion in the Danish production of renewable energy to ensure both direct and indirect electrification



Expanding renewable energy and electrolysis capacity rapidly

Speed is of the essence for both the planned expansion of renewable energy, new projects and the implementation of national electrolysis goal

The image features a solid purple background. Five incandescent light bulbs are suspended from the top by black cords. The four bulbs on the left hang straight down, while the fifth bulb on the right is tilted at an angle. The text is overlaid on the image, with the main message in a large, white, sans-serif font and a smaller line below it.

We have the capacity and the capabilities
to play a key-role in the global transition

But we must act now!



Denmark can become the epicenter of the green industrialisation

Buidling on the heritage from the wind turbines we can ensure that
hydrogen and PtX become the next Danish export success

The background is a dark purple gradient. It features faint, stylized gear patterns in a lighter purple shade. Overlaid on these are thin, light purple lines connecting small, semi-transparent purple spheres, creating a network or molecular structure effect.

Thank you for your attention!

www.brintbranchen.dk