



What regulations need to be passed to boost whole value chain development?

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Green Power Denmark
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Hydrogen & P2X 2023



Green Power Denmark's PtX-partnership focus on the whole value chain

OEM's
Tech. development

Advisors, construction
and financing

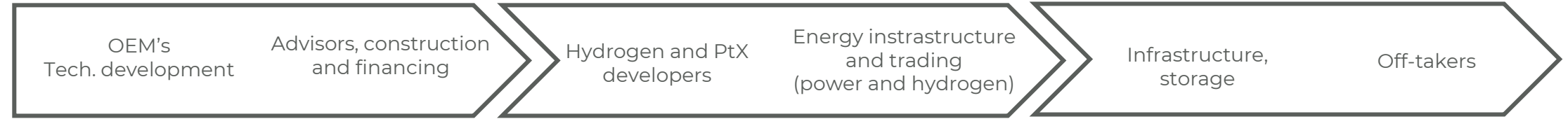
Hydrogen and PtX
developers

Energy infrastructure
and trading
(power and hydrogen)

Infrastructure,
storage

Off-takers

Green Power Denmark's PtX-partnership focus on the whole value chain



Danfoss

H GREEN HYDROGEN SYSTEMS

SIEMENS energy

SIEMENS Smart Infrastructure

TOPSOE

Vestas

plu

A2X

COWI

DNV

EKF

DS DANSK STANDARD

FORCE TECHNOLOGY

NCC

NIRAS

RAMBOLL

CIP Copenhagen Infrastructure Partners

Arcadia eFuels

Crossbridge ENERGY FREDERICIA

EUROPEAN ENERGY

Eurowind Energy.

GreenLab skve

greengo energy

HOFOR

H₂energy

RWE

TotalEnergies

VATTENFALL

Ørsted

andel

centrica

ENERGINET

evida

ADP Billund Airport

CTP COPENHAGEN MALMØ PORT

inter terminals N O R D I C S

PORT OF HANSTHOLM

Københavns Lufthavne CPH

OK

Aabenraa Havn

BASF We create chemistry

CIRCLE K

DCC | **Shell** DCC & Shell Aviation Denmark A/S

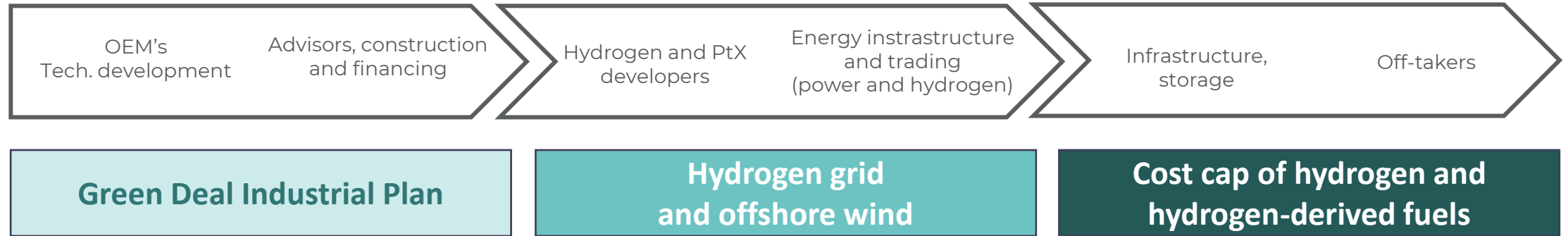
DFDS

DSV Global Transport and Logistics

norwegian

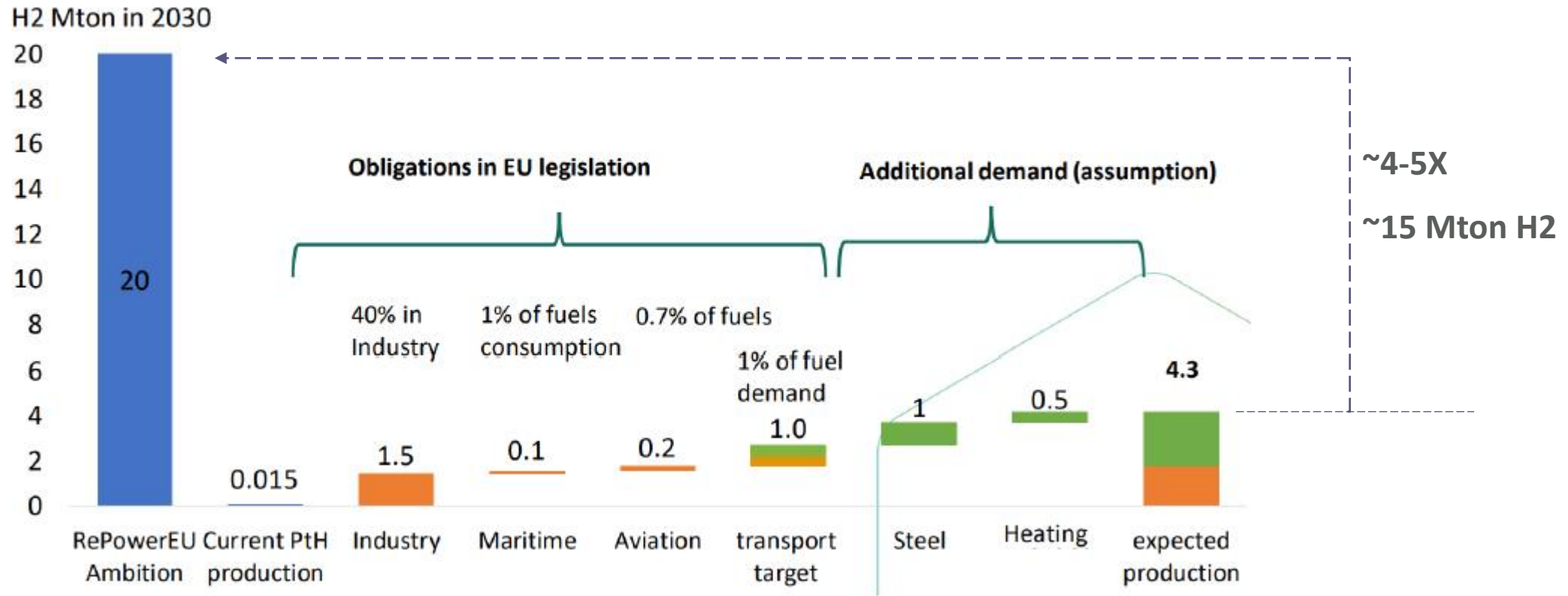
SAS

What regulations need to be passed to boost whole value chain development?



Status in the EU: Gap between policies and RePowerEU ambition

Latest RFNBO targets compared to RePowerEU ambition (ongoing assessment)

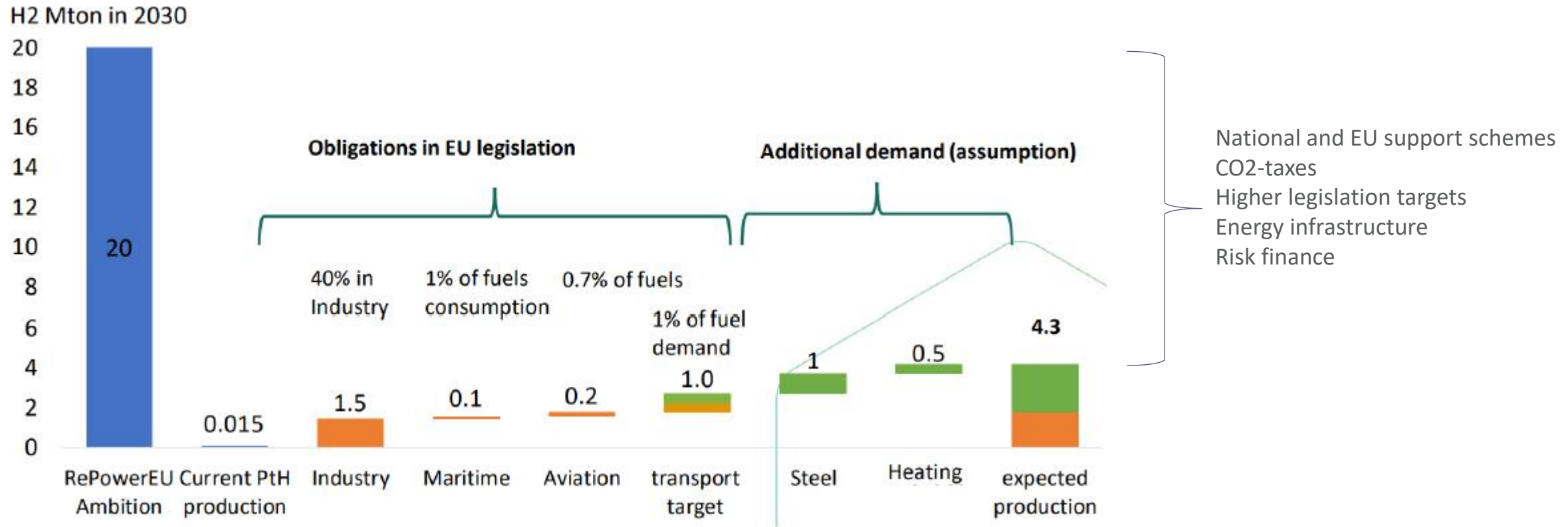


Policies: RED III, REFuelEU Aviation, FuelEU Maritime, Fit-for-55

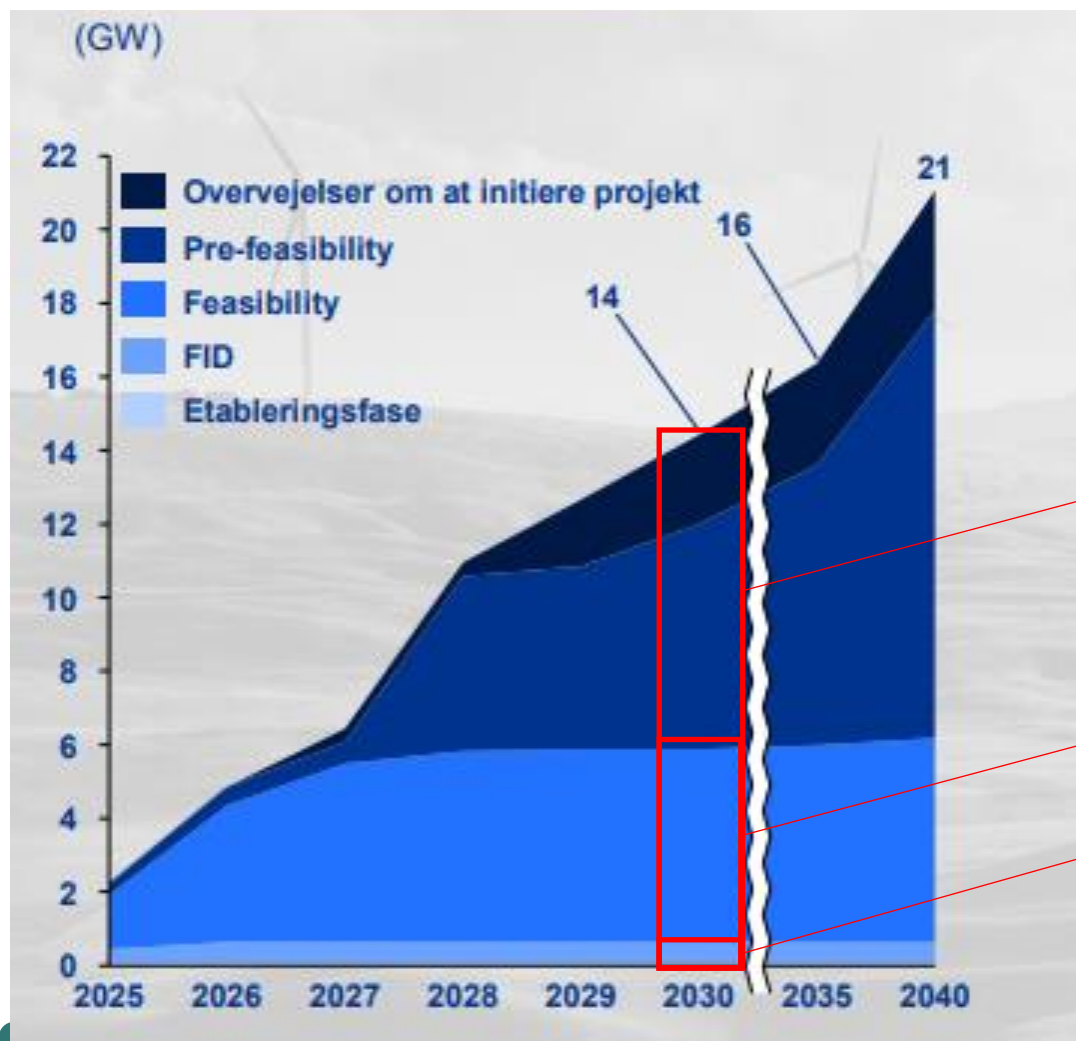


Status in the EU: Gap between policies and RePowerEU ambition

Latest RFNBO targets compared to RePowerEU ambition (ongoing assessment)



Status in Denmark: Where is the PtX-industry heading towards 2030?

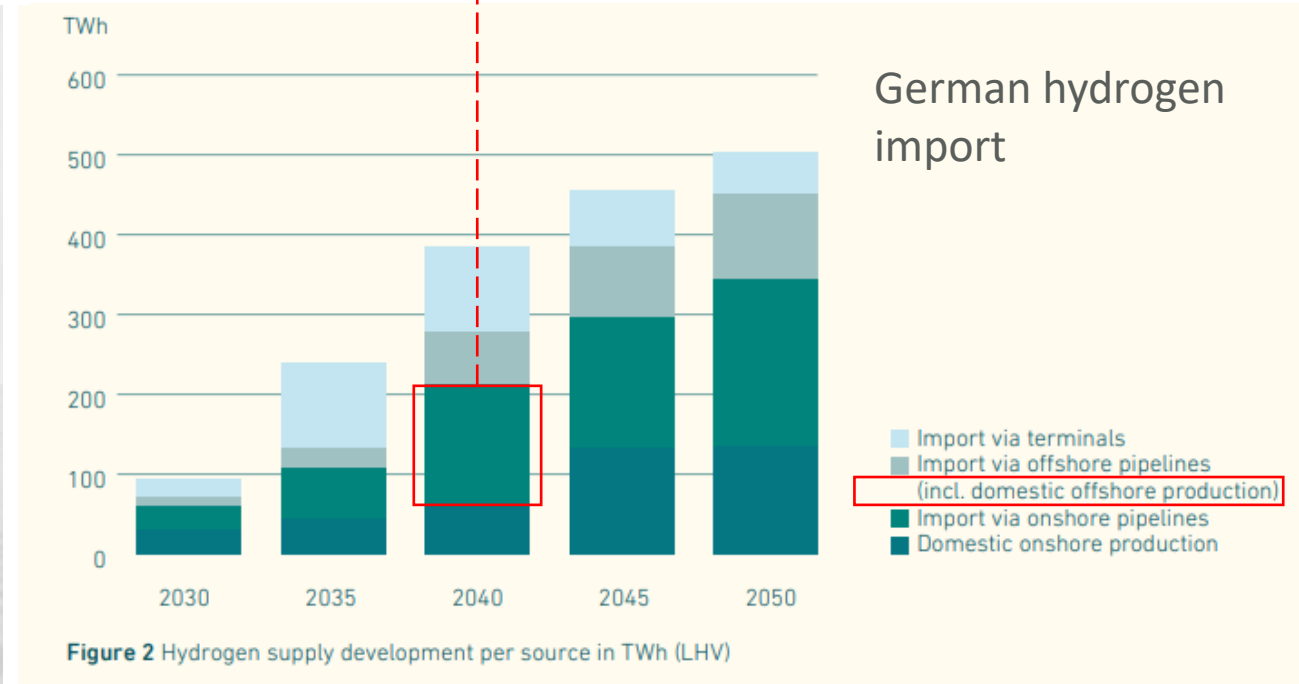
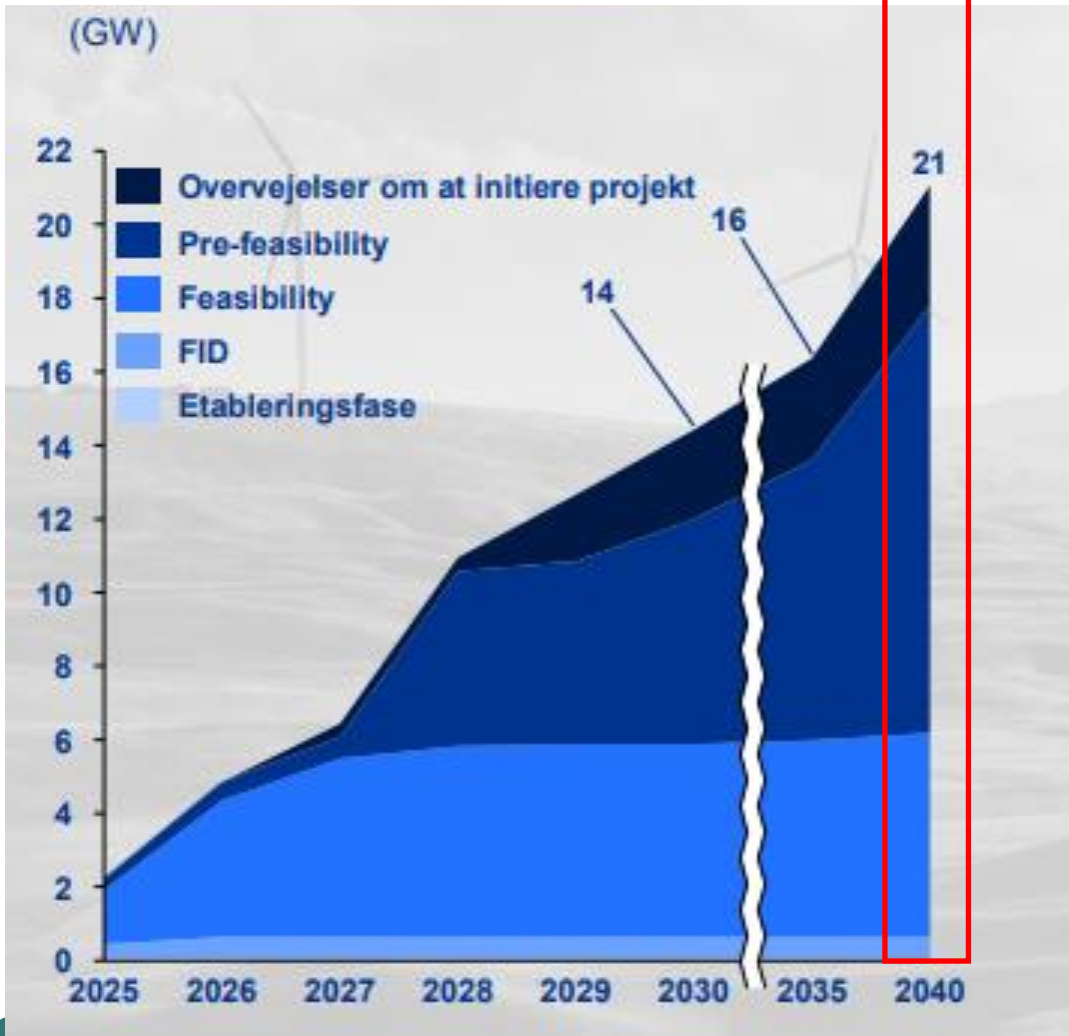


Market interest ~14 GW (no FID)

Danish political targets 4-6 GW (no FID)

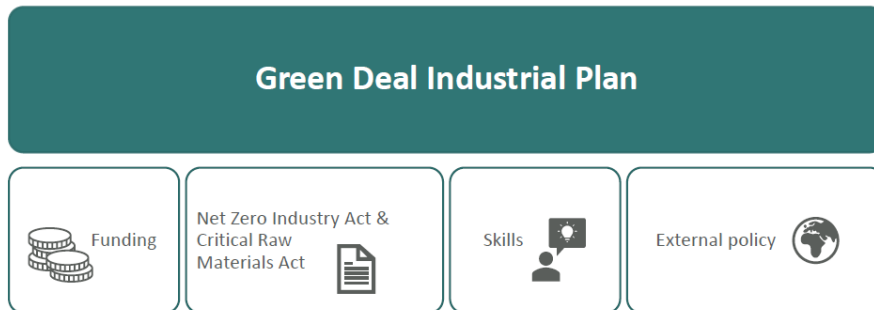
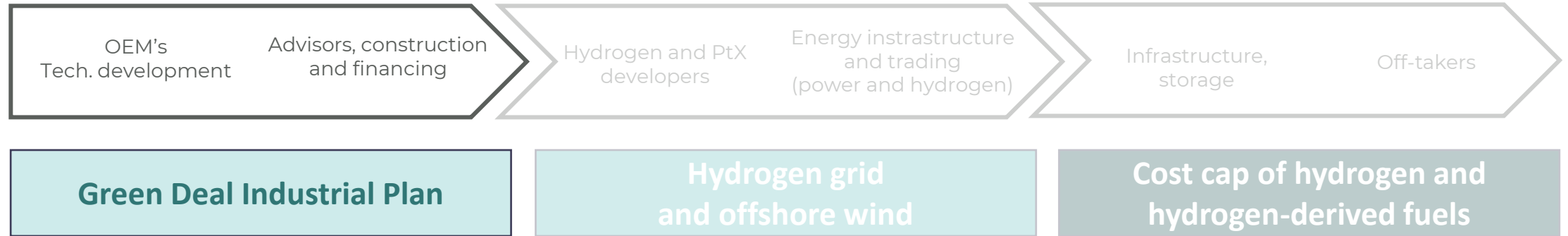
Decided or expected decided (~1 GW)

Status in Denmark: Where could the PtX-industry be heading towards 2040?



Source: "Hydrogen market assesment report for Denmark and Germany", Energinet/Gasunie, 2023

What regulations need to be passed to boost whole value chain development?




Temporary state aid until end of 2025

Green Deal Industrial Plan



State aid matching

Maximum aid limits:

		 Location of the investment ¹			
		Non-assisted areas EUR 150 Million	c-Regions EUR 200 Million	a-Regions EUR 350 Million	
<i>Max. aid amount per undertaking per MS</i>					
<i>Max. aid intensities²</i>	<i>For direct grants</i>	Large enterprises	15%	20%	35%
		Medium sized enterprises ³	25%	30%	45%
		Small enterprises ²	35%	40%	55%
	<i>For tax advantages, loans or guarantees</i>	Large enterprises	20%	25%	40%
		Medium sized enterprises ²	30%	35%	50%
		Small enterprises ²	40%	45%	60%



Strategic net zero technologies need significant investments and public co-funding



Support for new EU-manufacturing needed!

~100 Billion EUR investments to 2030, ~20 Billion EUR in support

Large scale up of offshore wind capacity in 2030



"Jutland Hydrogen backbone" funding decision needed in 2023 and FID in 2024



~20 Billion EUR

~2 Billion EUR

Optimise overall society value of public and private investments!

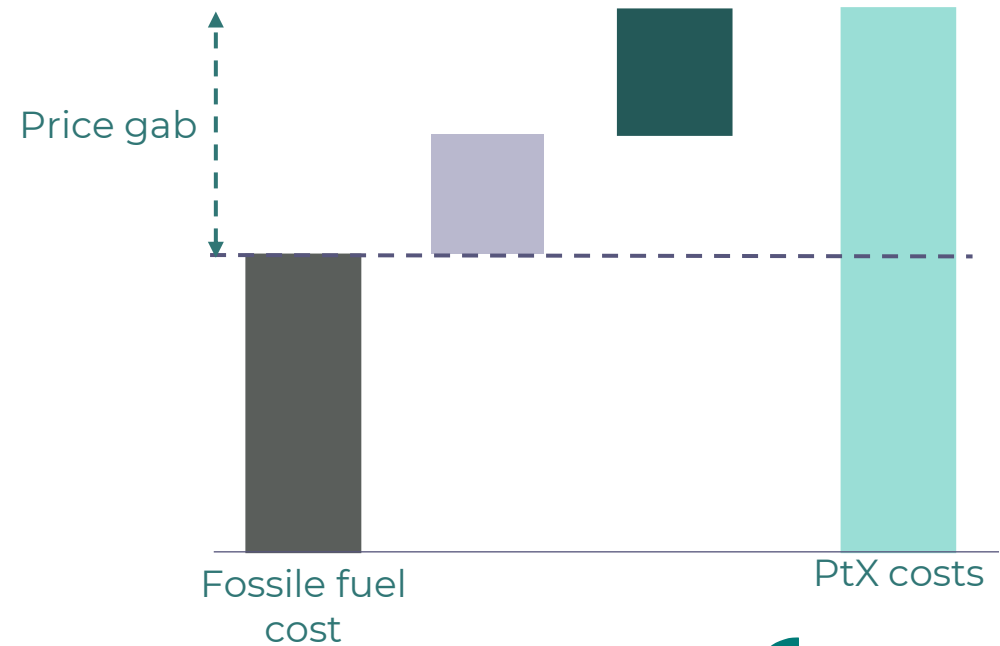
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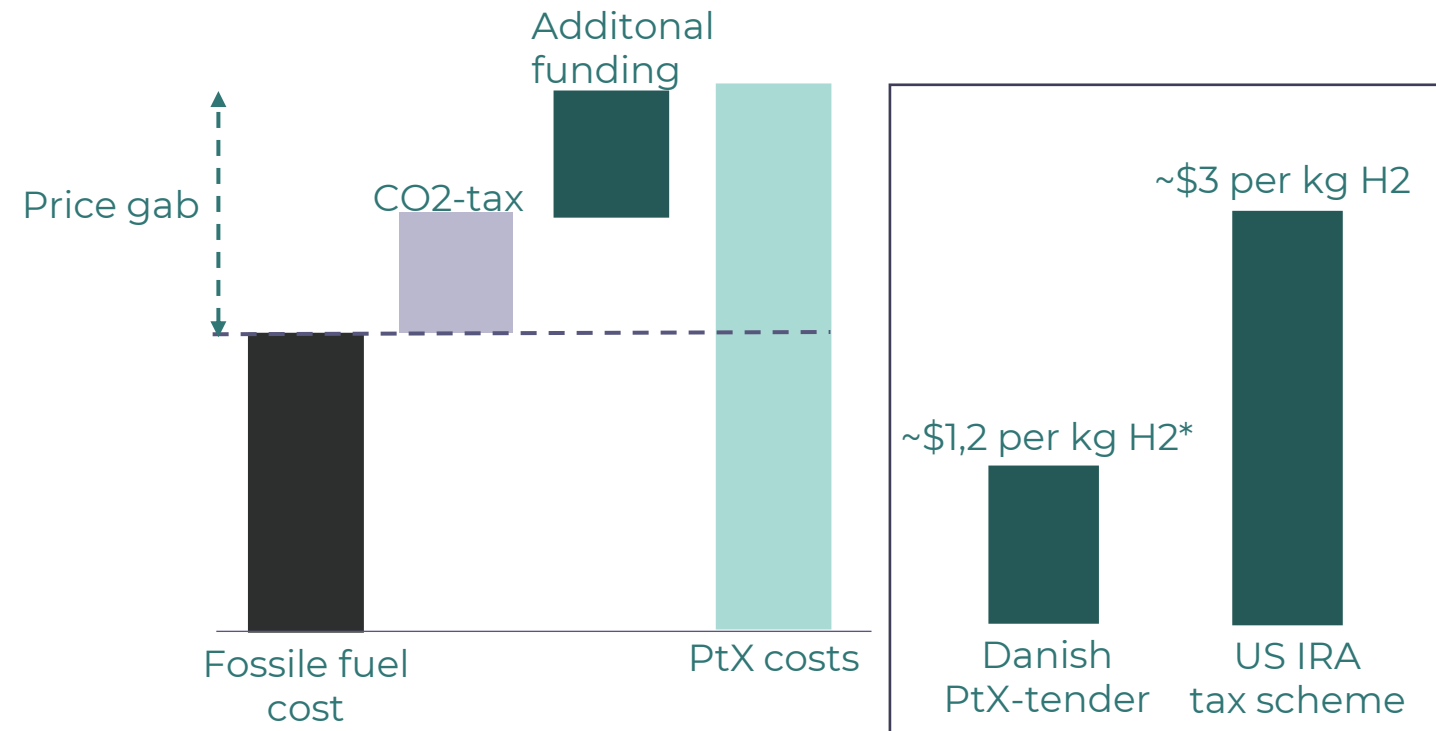
Green Deal Industrial Plan

Hydrogen grid and offshore wind

Cost cap of hydrogen and hydrogen-derived fuels

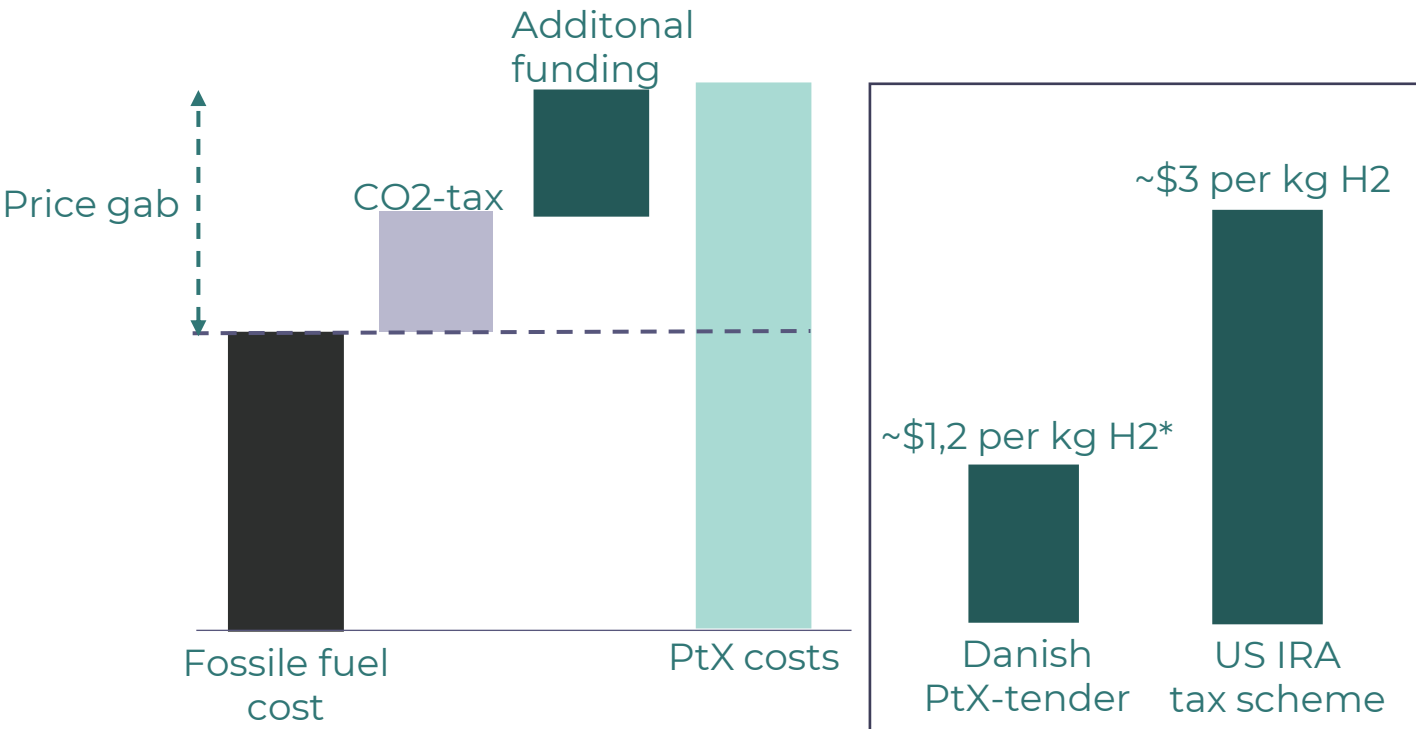


Close the cost cap of hydrogen and hydrogen-derived fuels



*assuming support of 70 DKK/GJ – 1,25 BDKK

Close the cost cap of hydrogen and hydrogen-derived fuels



More EU H2/PtX support needed!

Example: 5 Mton H2 @ \$2 per kg H2
~9.000 million EUR support

European Hydrogen Bank

800 million EUR, opens in 2023
10 years production subsidy



More Danish H2/PtX support needed!

Danish PtX/H2-tender

170 million EUR in 2023
10 years production subsidy

Danish CCUS tender (part 2)

+1000 million EUR in 2023/24
20 years subsidy

Level playing field CCU vs. CCS needed!

Foundation for hydrogen-derived fuels needed!

Support for green aviation and shipping fuels
eg. based on CfD-mechanism



*assuming support of 70 DKK/GJ



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