GREEN ENERGY
EXPORT DAY 2025

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WORKSHOP
Green hydrogen from Spain
AGENDA

10.30 - Spanish hydrogen outlook
- Lars Hedemann, Partner and Senior Advisor, Brinckmann Group

10.40 - Value adding with hydrogen
- Lars Henrik Riis, Business Development Manager, Siemens Energy

10.50 - Adapting to a changing market
- Uffe Winther, Managing Director, Energy Transition Funds, CIP

11.00 - Plenary discussion

Moderator
- Tine Strand Thomsen, Consultant, Green Power Denmark

Danish Energy Agency
MINISTRY OF FOREIGN AFFAIRS OF DENMARK
STATE OF GREEN
GREEN POWER DENMARK
DBDH
SYNERGI
DANSK ERHVERV
DI Energi

Dansk Industri
Green Energy Export Day

Green Hydrogen
August 2025

Lars Henrik Riis
Lars.Riis@siemens-energy.com

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In this market environment,

Siemens Energy is a global leader in energy technology

~1/6
of global electricity generation is based on our technology

101,000
employees work as a team to energize society[1]

>90
We are present in more than 90 countries

€34.5 bn
in revenue[2]

1 Number of employees as of March 31, 2025
2 Revenue FY 2024

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We are a unique player in the Energy Substainability value chain

Siemens Energy AG

Gas and Power ("GP")

Generation

Central | Distributed

Industrial Applications

Transmission

New Energy

- H_2 enabled generation
- H_2 compression and storage
- Renewable connection and integration
- H_2 Electrolyzer Systems
- Power-to-X Solutions
- Hybrid Solutions

>50 Gas Turbines with high hydrogen content in operation

~1500 compressors for H_2 duty or H_2 rich syngases delivered

5 HVDC connections to offshore wind parks realized

PEM electrolysis installed base

First e-Gasoline project Haru Oni

HYFLEXPOWER the power-to-X-to-power cycle

Siemens Gamesa Renewable Energy ("SGRE")

Onshore

Offshore

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Market Overview Spain

Market drivers: Strong Renewable Energy development

Renewable energy penetration mainland Spain

	2019	2025	2030	
	Today: 31 GW		2030 target: 62 GW	6 GW/y
	Today: 25 GW		2030 target: 76 GW	10 GW/y
Battery	Today: 6.4 GW		2030 target: 22 GW	2.5 GW/y
H_2O	Today: 25 MW		2030 target: 14 GW	2.5 GW/y

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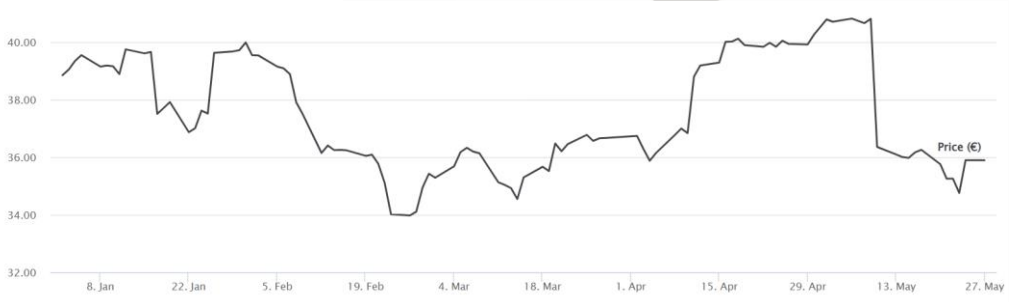
Market Overview Spain
Market drivers. Electricity prices

Current PPA Price

PV: 38.5 €/MWh, Wind: 56,4 €/MWh (1)

Futures market (OMIP)

PPA PV Futures 10y 2025-2034: 34-40 €/MWh (2)



PPA Base Futures 10y 2025-2034: 50-58 €/MWh (3)

(1) LevelTen Energy, April 2024 report
(2) Source: OMIP, FTS PPA 25/34, as of May 27th 2024
(3) Source: OMIP, FTB PPA 25/34, as of May 27th 2024

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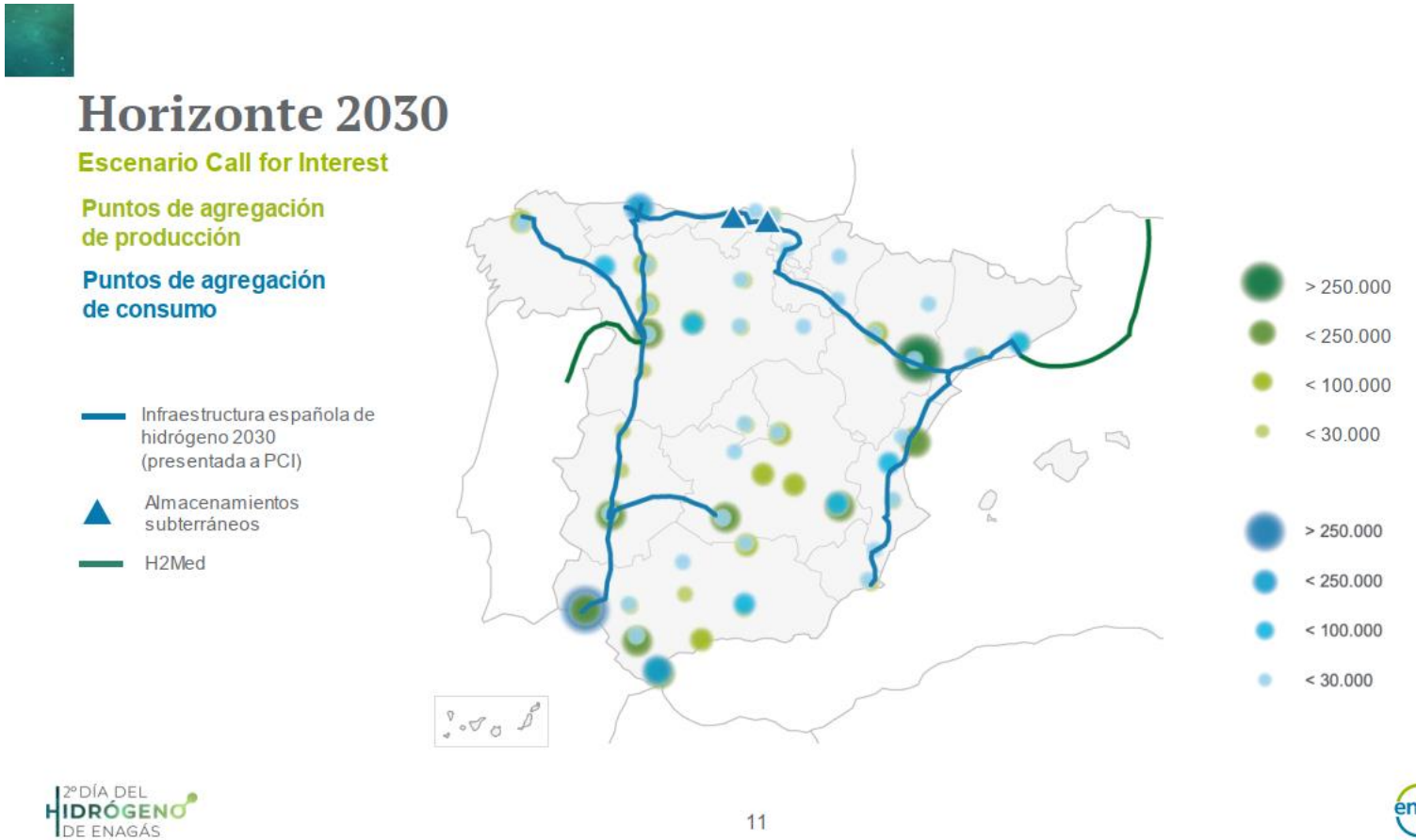
Market Overview Spain
Market overview

Strong development pipeline until 2030 (1)

- **Base case: 13.4 GW for domestic use**
  H_2 production: 1.6 Mton/y
- **Call for Interest: 23.4 G**
  H_2 production: 2.5 Mton/y
- **Max. Potential: 74.3 GW**
  H_2 production: 7.9 Mton/y



(1) Enagas Call for Interest, Nov. 2023

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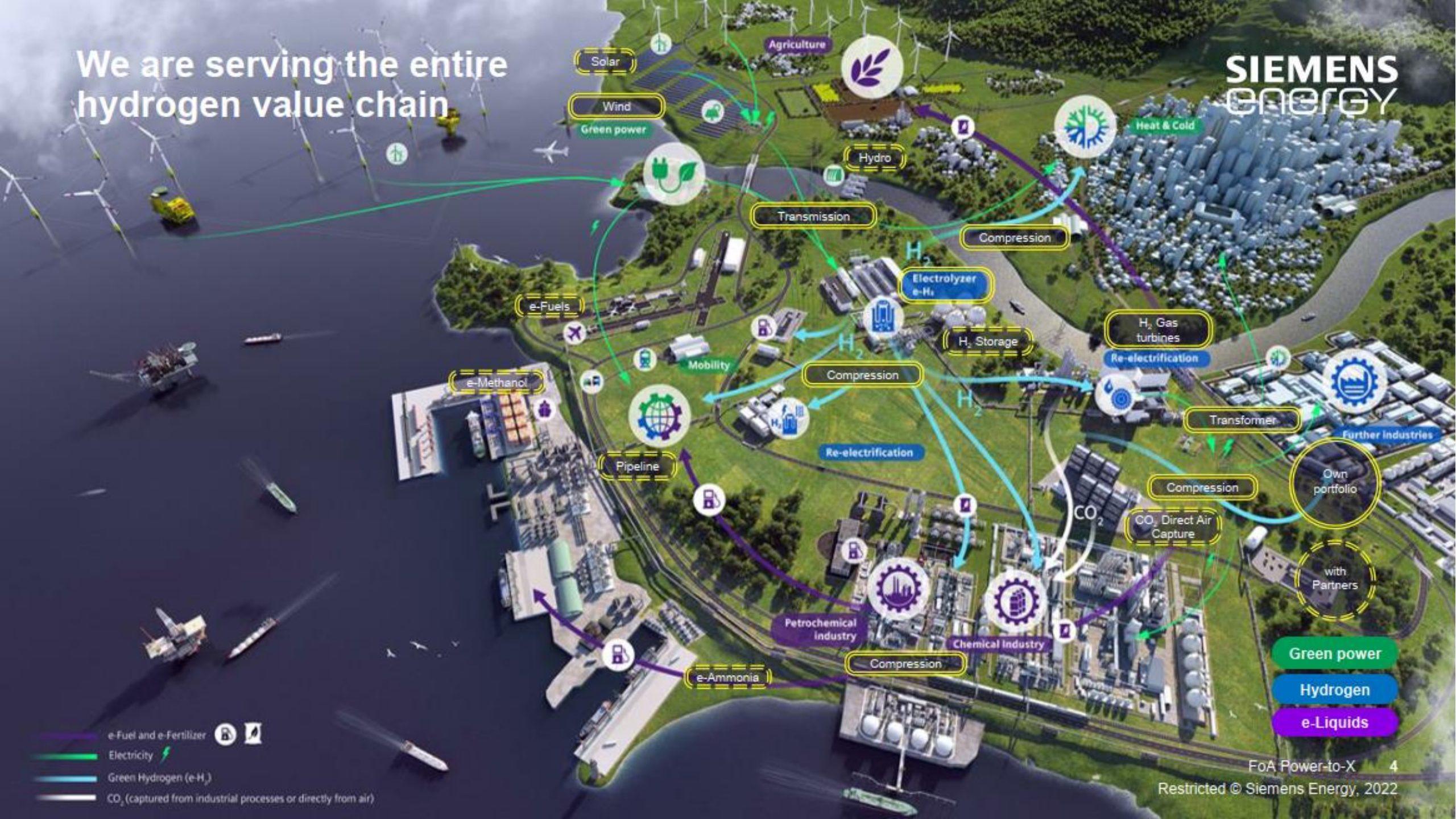
We are serving the entire hydrogen value chain



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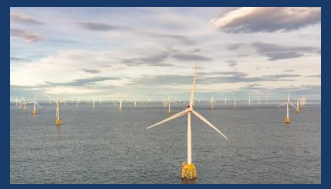
CIP in brief

CIP is specialised in investing in large and complex greenfield renewable energy infrastructure projects

+50 greenfield CIP investments in utility-scale renewable energy infrastructure assets across key markets and technologies



EUR ~32 billion capital raised from ~210 global investors across 12 funds since establishment of CIP in 2012

~16 GW in operation or construction and **~160 GW[1] in development** with a market leading and pioneering investment pipeline of offshore wind[2], Power-to-X, solar PV, onshore wind, and other renewable technologies

Global, fully integrated and scalable platform with +2,300 professionals across five continents, with more than 600 people employed in CIP and more than 1,700 people employed across projects[3]

Solid investment performance across funds with cautious approach to leverage and moderate energy price risk exposure

Dedicated climate impact profile with all funds since March 2021 classified as **Dark Green** (SFDR Article 9)[4]

Focus on **capturing attractive greenfield premium** through early entry, strong origination skills, **industrial value creation** and de-risking approach, and high execution certainty[5]

Notes: 1) Gross capacity including partnership share if CI Fund does not own 100% of asset; **2)** CIP has 50 GW of offshore wind incl. floating wind which equals ~15-20% of expected capacity added by 2035 excl. China according to BNEF 1H 2022 Offshore Wind Market Outlook (Jun 2022); **3)** Including CISC, COP, and employees related to CI Fund projects; **4)** All CI Funds marketed after 10 March 2021 (CI IV, CI ETF I, CI GCF I, CI ABF I); **5)** The terms “de-risking" and “high execution certainty” do not imply that any investment by the Fund will be safe, principal protected, or that an investment in the fund is a safe investment. Investment in the Fund necessarily involves risk, including a risk of loss of the entire investment.

CIP
Copenhagen Infrastructure Partners

FID completed

Early-stage development

CIP's commitment to pursue energy transition in Iberia has resulted in portfolio growth over the last years

Overview of CIP investments and project in Iberia

CIP in Iberia		Phase
Renewables		
Monegros (CI III)	487 MW wind	
Teruel (CI IV)	744 MW wind	
Hydrogen		
Catalina PtX (ETF I)	1.1 GW wind/solar + 500 MW hydrogen	
Nicewind (ETF I)	100 MW wind/solar	
H2 Pillar (ETF I)[3]	47 MW wind/solar + 15 MW hydrogen	
Madoqua PtX	500 MW hydrogen	
Biofuels		
Cobirgy (ABF I)	190 GWh (RNG)	
Credit		
Capital Energy[5]	EUR 70m	

Highlights of CIP in Iberia

High priority market for CIP given our footprint in Iberia and the high levels of renewable potential

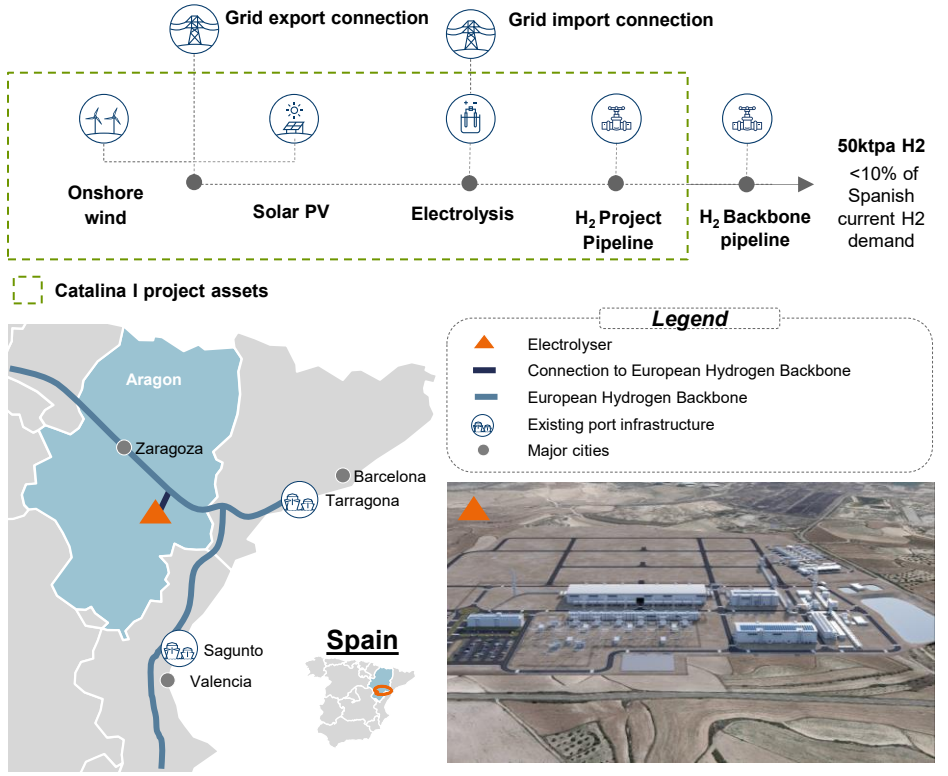
>4 GW capacity in operations, construction and development stage currently in Spain across the various power generation technologies

Cross technology projects amounting to more than EUR 4 billion when fully invested

Introduction to the Catalina project

Large-scale power-to-hydrogen project located in Aragon

Overview of infrastructure assets and project location



Key project facts

Project overview

- Catalina I is the first phase of a large-scale 2GW Power-to-X project in Spain
- Catalina I will consist of ~500MW of onshore wind, ~600MW of solar PV, and 500MW electrolysis producing green hydrogen to be transported to offtakers through a hydrogen pipeline

Location

- Catalina I is located in Aragon, Spain, where CIP is already operating the Monegros onshore wind farm (CI III), and currently developing the Teruel wind farm (CI IV)
- Aragon is an attractive PtX location due to having both good wind and solar resources and the land is not very well-suited for agricultural purposes. Sufficient fresh water resources are available in the area
- The majority of the land for the project has been secured

Support and regulation

- The region of Aragon has granted the project status as a “Project of General interest”, a prerequisite for being able to expropriate land that cannot be signed commercially
- The project has received EUR 245m in grants from Spain
- A draft of the Spanish transposition of RED III has been released in July 2025 substantiating the role for green hydrogen in Spain

Infra-structure and offtake

- The project is depending on the Spanish Hydrogen Backbone which is targeting its investment decision in 2027
- The hydrogen will be shipped to industrial offtakers in Spain

NOW:
MARKET PLACE AND NETWORKING

NEXT WORKSHOPS AT 11:45

GREEN ENERGY
EXPORT DAY 2025

WORKSHOP
Green Hydrogen technology exports
AGENDA

11.45 - The Danish industrial driver for developing green tech
- Kasper Berggren, Segment Lead, Hitachi Energy

11.55 - A competitive Danish value chain
- Henrik Hassing, Technical Vice President, Force Technology

12.05 - Scaling green hydrogen with industrialized electrolysis
- Annike Skovgaard Sørensen, Senior Sales Manager Stiesdal Hydrogen

12.15 - Plenary discussion

Moderator
- Emilie Mørup, Senior Advisor, Danish Industry

Danish Energy Agency
MINISTRY OF FOREIGN AFFAIRS OF DENMARK
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Hitachi Energy

Outlook

Public

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Presenter

Kasper Berggren

Segment Lead New Industry Landscape

Region Europe

Hitachi Energy

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Our Story 1883 - 2022

HITACHI

Namihei Odaira establishes **Hitachi**.

1910

1920

The company fully transitions into **Hitachi Ltd.** and becomes Japan's first general electric machinery manufacturing business.

Hitachi starts production of pole-top transformers.

1930

Hitachi releases the HIPAC MK-1, a parametron computer that calculates sag and tension in overhead transmission lines.

1957

Hitachi and ABB establish joint venture company, Hitachi ABB HVDC Technologies, Ltd., for high voltage direct current (HVDC) transmission in Japan.

2015

Hitachi

Ludvig Fredholm establishes Elektriska Aktiebolaget in Stockholm as manufacturers of electrical lighting and generators.

1883

1890

Elektriska Aktiebolaget merges with Wenströms & Granströms Elektriska Kraftbolag to form **ASEA**.

1932

ASEA builds the world's largest self-cooling transformer rated at 2,500 kVA (kilovolt ampere).

ASEA installs the world's first HVDC transmission line, providing 20 MW, 100 kV to the Isle of Gotland over a distance of 96 km.

1954

ASEA

Hitachi ABB Power Grids evolves to become **Hitachi Energy**.

Hitachi and **ABB** enters joint venture to form **Hitachi ABB Power Grids**.

2020

2021

2022

Hitachi Energy fully transitions under **Hitachi Ltd**.

ABB launches the worlds first Hybrid HVDC breaker, enabling the vision of DC-grids to be realized.

1997

2012

The first HVDC Light test connection between Hällsjön and Grängesberg in central Sweden marks the start of a completely new power transmission technology.

ASEA and **BBC** merges to form **ABB**.

1988

1891

Charles E. L. Brown and Walter Boveri establish **BBC** in Baden, Switzerland.

BBC builds the first steam turbine in Europe.

1901

1933

BBC obtains the patent for turbine rotors constructed from individual steel disks that are welded together.

1968

BBC installs the first 170 kV gas-insulated switchgear in an underground substation in Zurich, Switzerland.

1971

BBC builds the most powerful transformer in the world at 1,300 MVA (megavolt ampere).

BBC

1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020

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About Hitachi Energy

HITACHI

50,000+ employees

150
nationalities

60
countries

100+
years of heritage

1,800+
field engineers

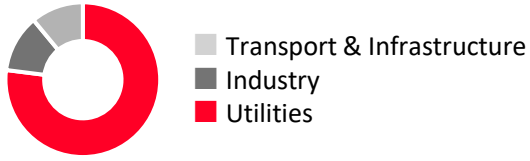
2,600+
R&D experts

~$16 billion USD business revenues

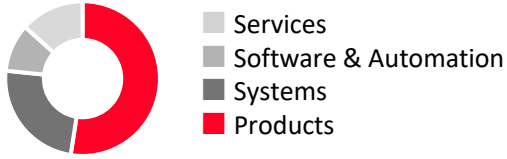
Business Units

- **Grid Automation**
- **Grid Integration**
- **High Voltage Products**
- **Service**
- **Transformers**

Customers



Offering



Geographies

Business mix by revenue FY2023

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Expanding the Footprint Across the Globe

HITACHI

Investments[1]

$9B
2020-27

$3B 2020-23

$6B 2024-27

Workforce Expansion

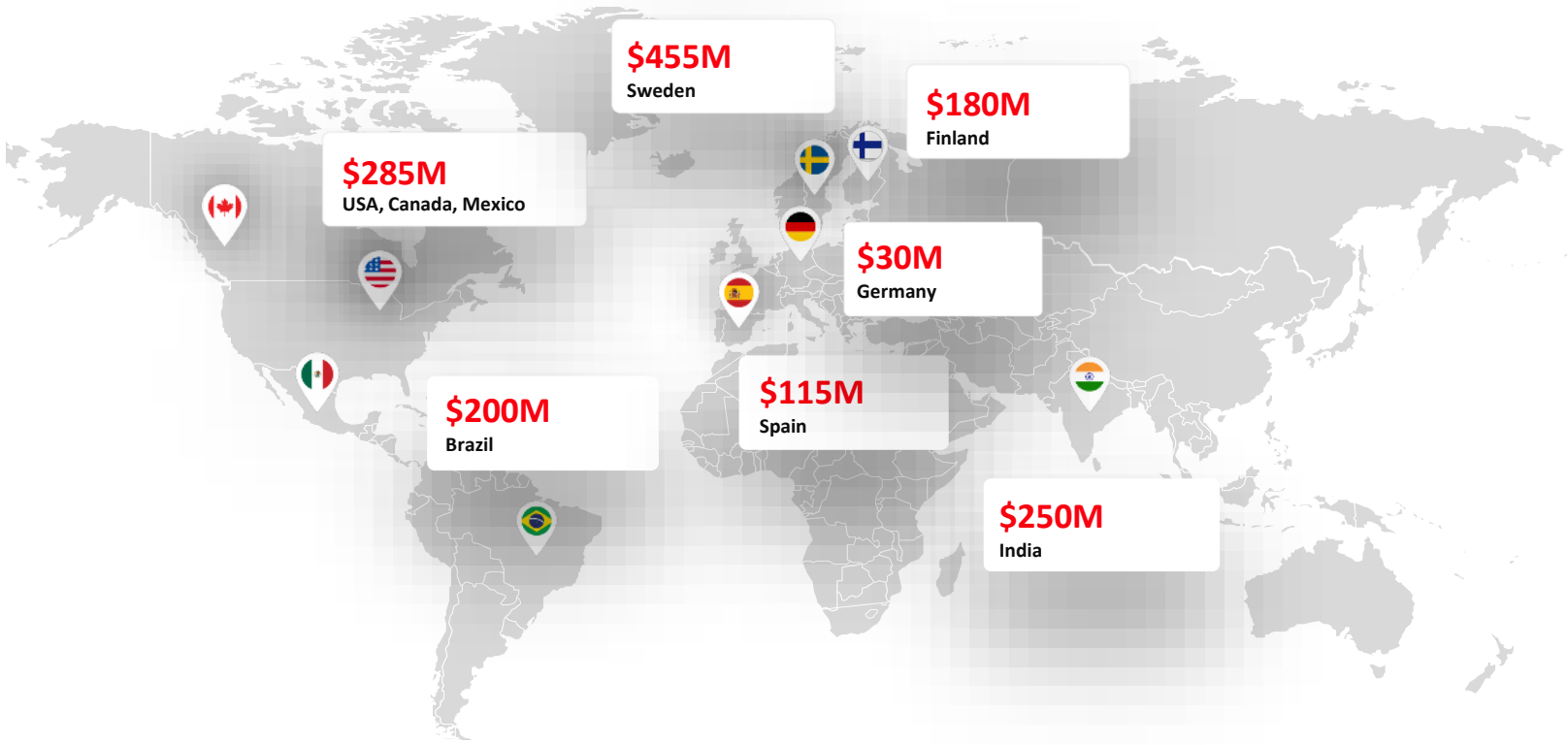
>20%
2020-23

+15,000
2024-27

Order backlog

>3X
(Baseline 2021)

$43B
2024



1. Investments in manufacturing, engineering, digital, R&D and partnerships across all major markets. This includes investments to ramp up Hitachi Energy's global transformer manufacturing capacity. The investment amounts in the world map are based on FY2024-2025 announcements. All figures in USD.

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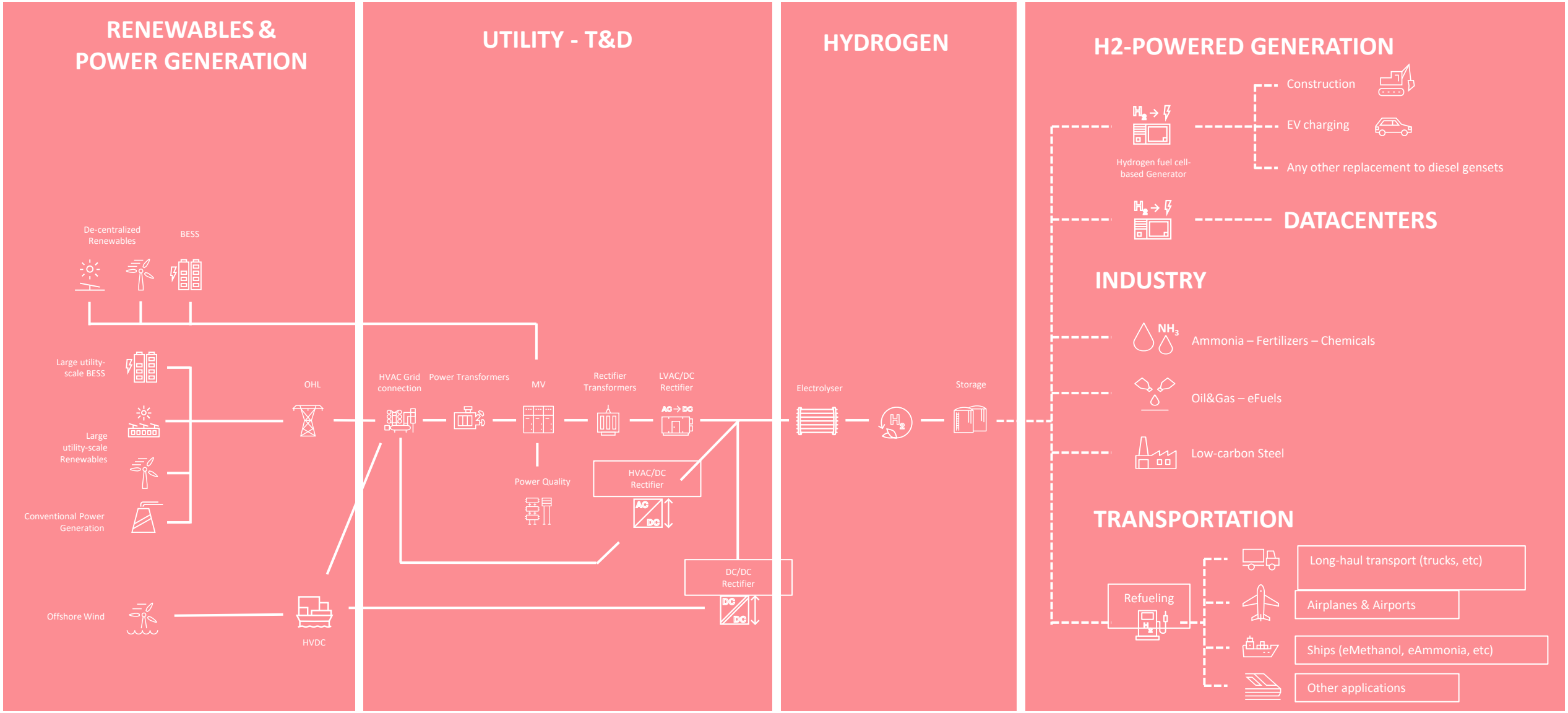
Hydrogen is linked to many on-going businesses and new applications

HITACHI



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Let’s take some examples

Arcadia eFuels, Denmark

Consulting partner for world’s first commercial eFuels facility

The plant will use 360 megawatts (MW) of renewable electricity, water, and CO_2 to produce net zero carbon fuels that can be used in existing engines and infrastructure.

The eFuels plant will generate around 100 million liters of eFuels per year.

Ovako, Sweden

20MW alkaline electrolysis solution

A consortium lead by Ovako together with Volvo, Nel, H2GS and Hitachi Energy was formed to develop a 20MW alkaline electrolysis solution.

The equipment on site benefits from APM’s predictive maintenance guidance, maximizing the plant availability and reducing operation costs.

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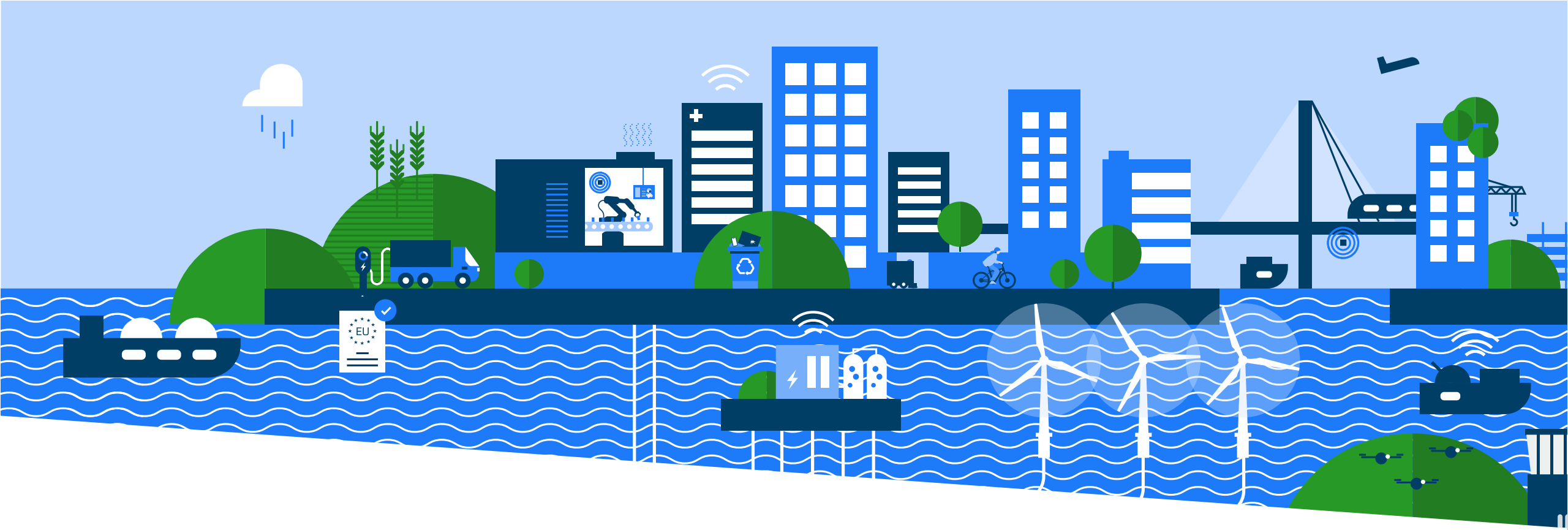
HITACHI

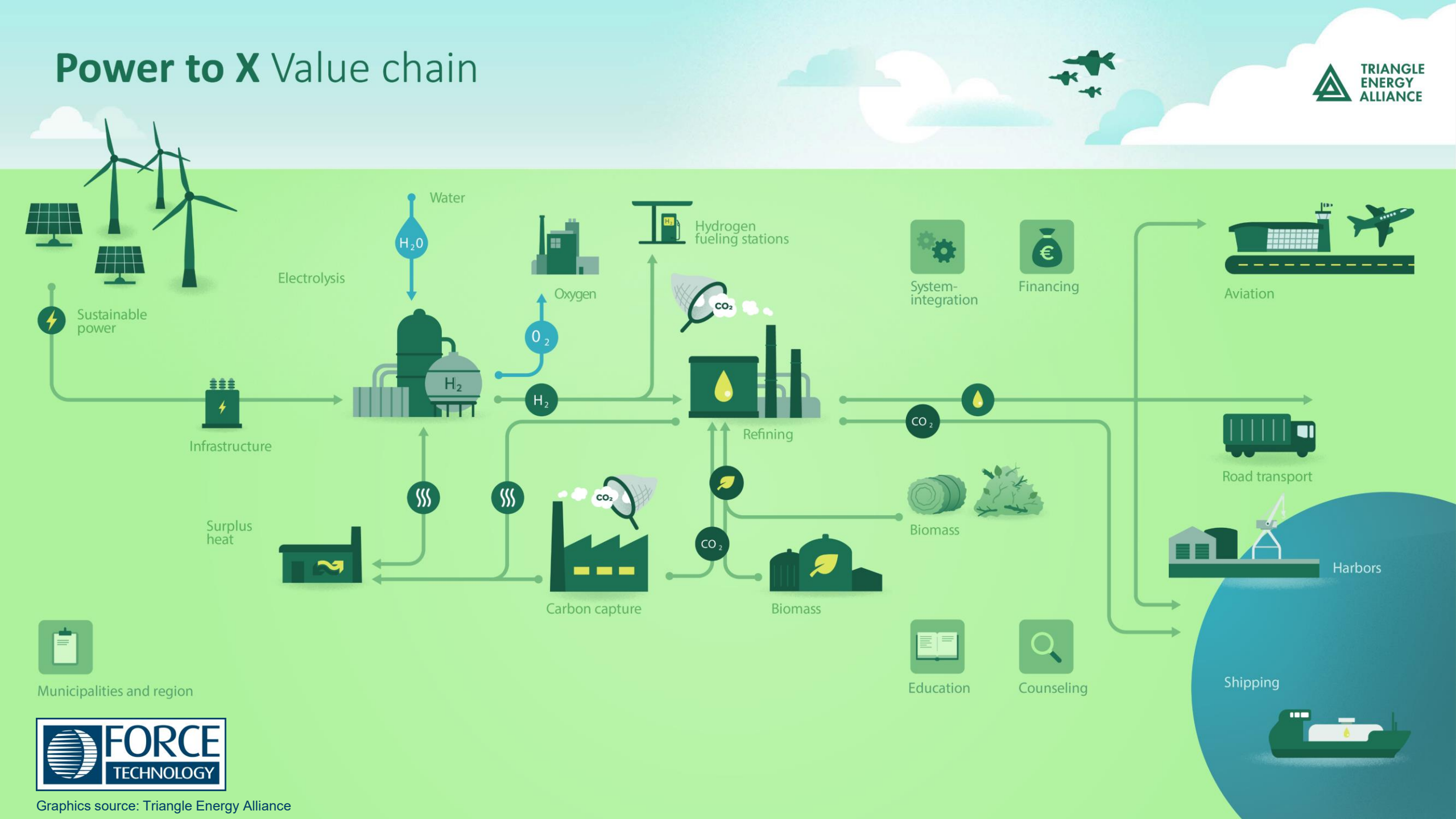


A competitive Danish Value Chain

Green Energy Export Day, August 27, 2025

Henrik Hassing, Technical Vice President

Power to X Value chain



Graphics source: Triangle Energy Alliance

Q1: What is the major obstacle to overcome before the technologies can achieve full commercialization?

Q2: In the current market, there is a lot of potential, but many projects are still not within FID. What is needed in the regulatory framework for projects to reach FIDs?