



Accelerating Scotland's Clean Hydrogen Opportunity

**Craig Hodge
Project Engineer
Hydrogen and Energy System Integration**



33

Commercialised
technologies

26,500+

Industry guests and
visitors to the centre

45

Start-ups
accelerated

1,450+

Technologies
screened

306

Approved
projects

120+

Field trials complete, planned or
underway



64

Partnerships



£192Mn

Invested with industry



£121Mn

Leveraged from industry partners

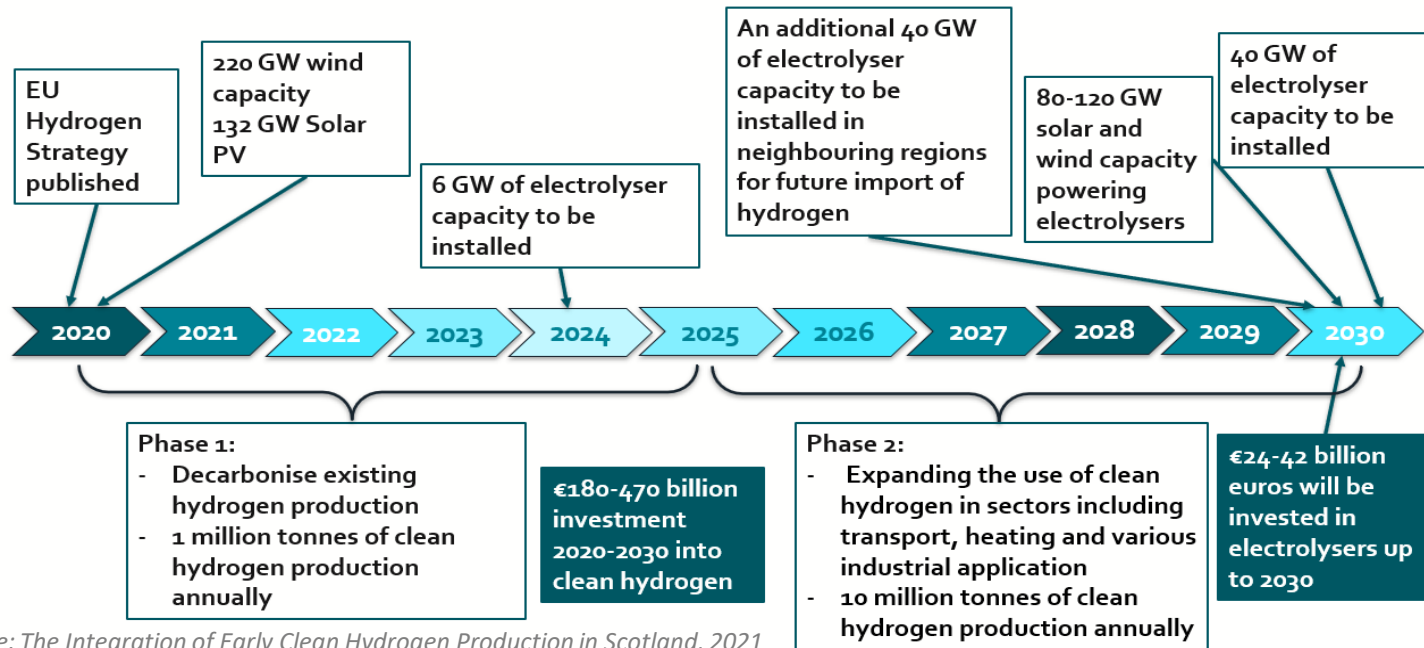
NZTC - Thought Leadership



Client	Report
Scottish Enterprise	Development of early, clean hydrogen production in Scotland
ScotGov & Industry	Closing the Gap – Technology for a Net Zero North Sea
NZTC & OREC	An Integrated Energy Vision for 2050
OGA/OGUK/NZTC	Digital Maturity Survey
The Crown Estate	CCUS & Offshore Wind Overlap Study
Orsted	Hornsey Four Overlap Case Study
OWIH	Sustainable Wind Turbine Decommissioning
OWIH	Floating Wind to Hydrogen – Supply Chain Opportunities
InnovateUK	SNZR - Industrial Decarbonisation Technology
NZTC	Feasibility of Offshore Geothermal Heat Extraction
NZTC	Pipeline Change of Use Methodology
NZTC/FTNZ	Financing technology to Net Zero - Offshore Europe
NZTC/OREC - ETA	UKCS Offshore Electrification: A Tech. Roadmap
NZTC/RGU	Best practices for the introduction of new tech
NZTC/OREC - ETA	UKCS Offshore Electrification: A Technology Roadmap

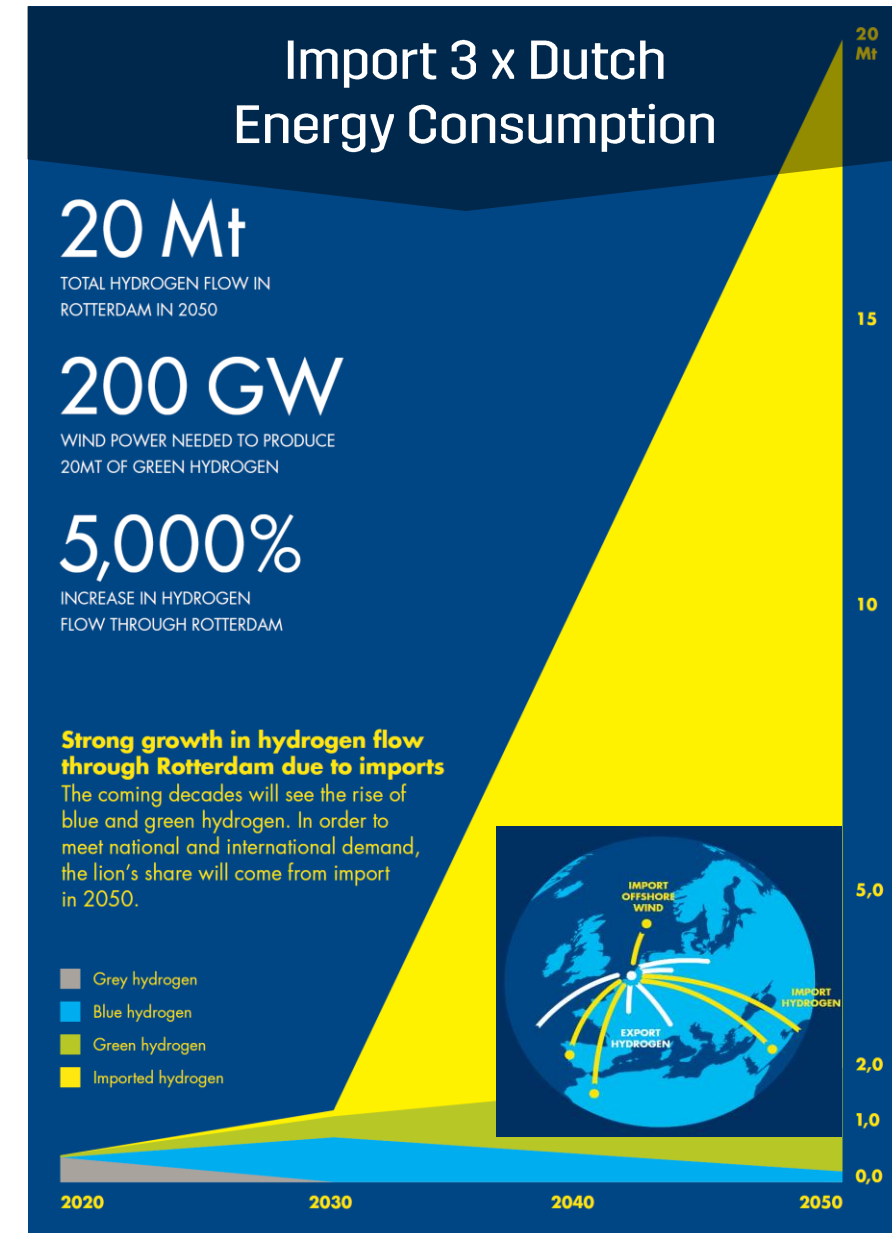
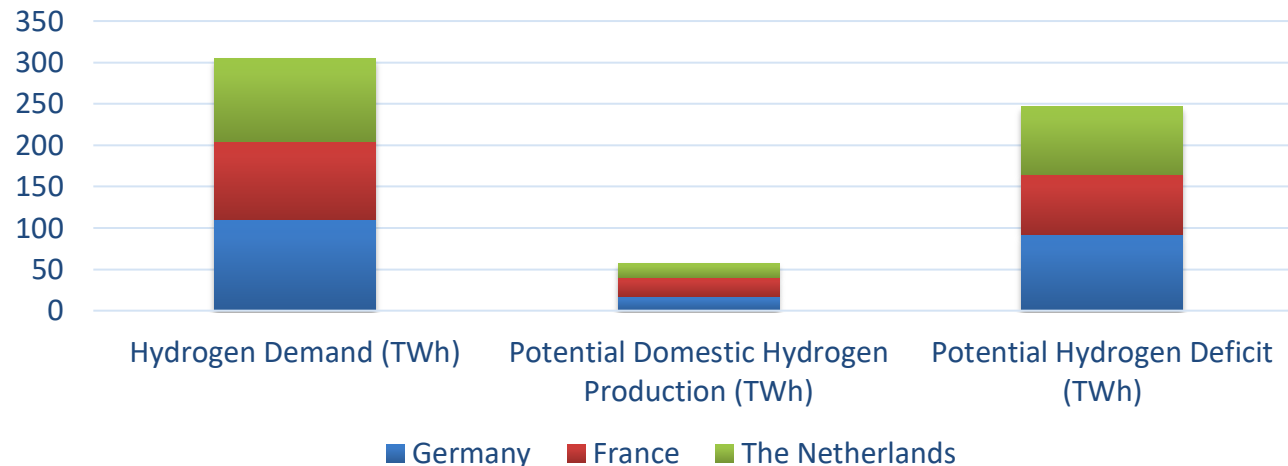


EU Hydrogen Demand and Production Targets



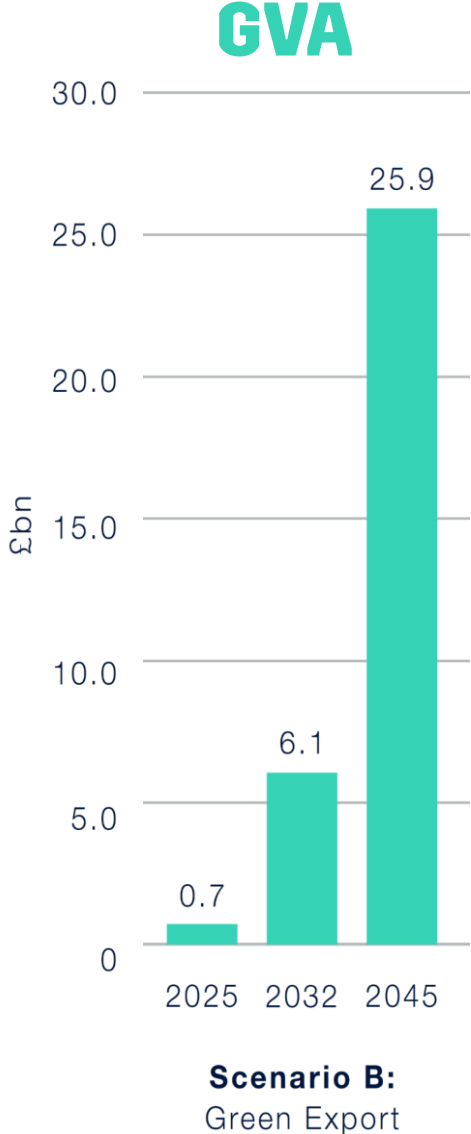
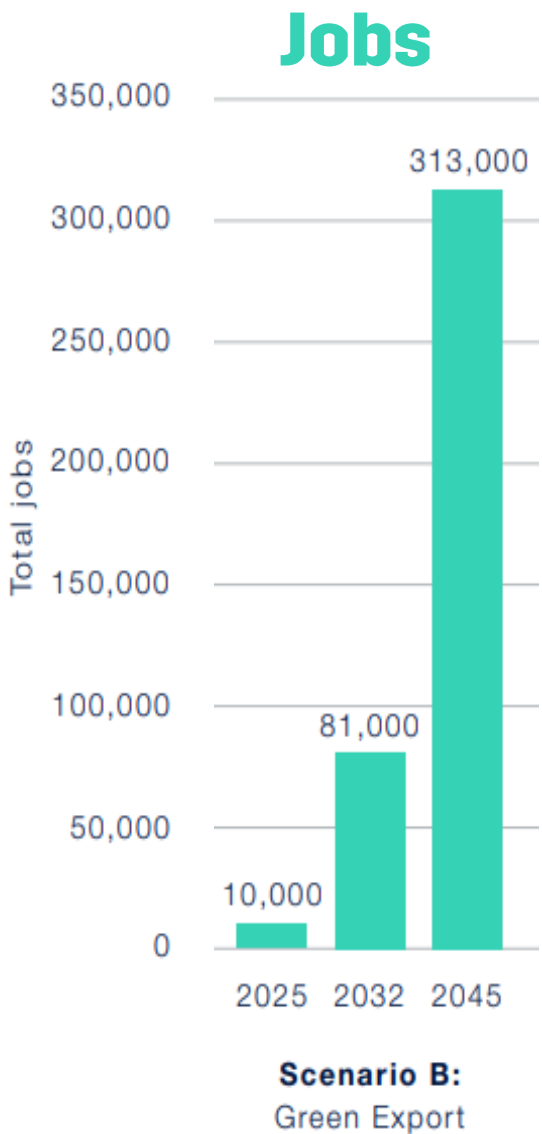
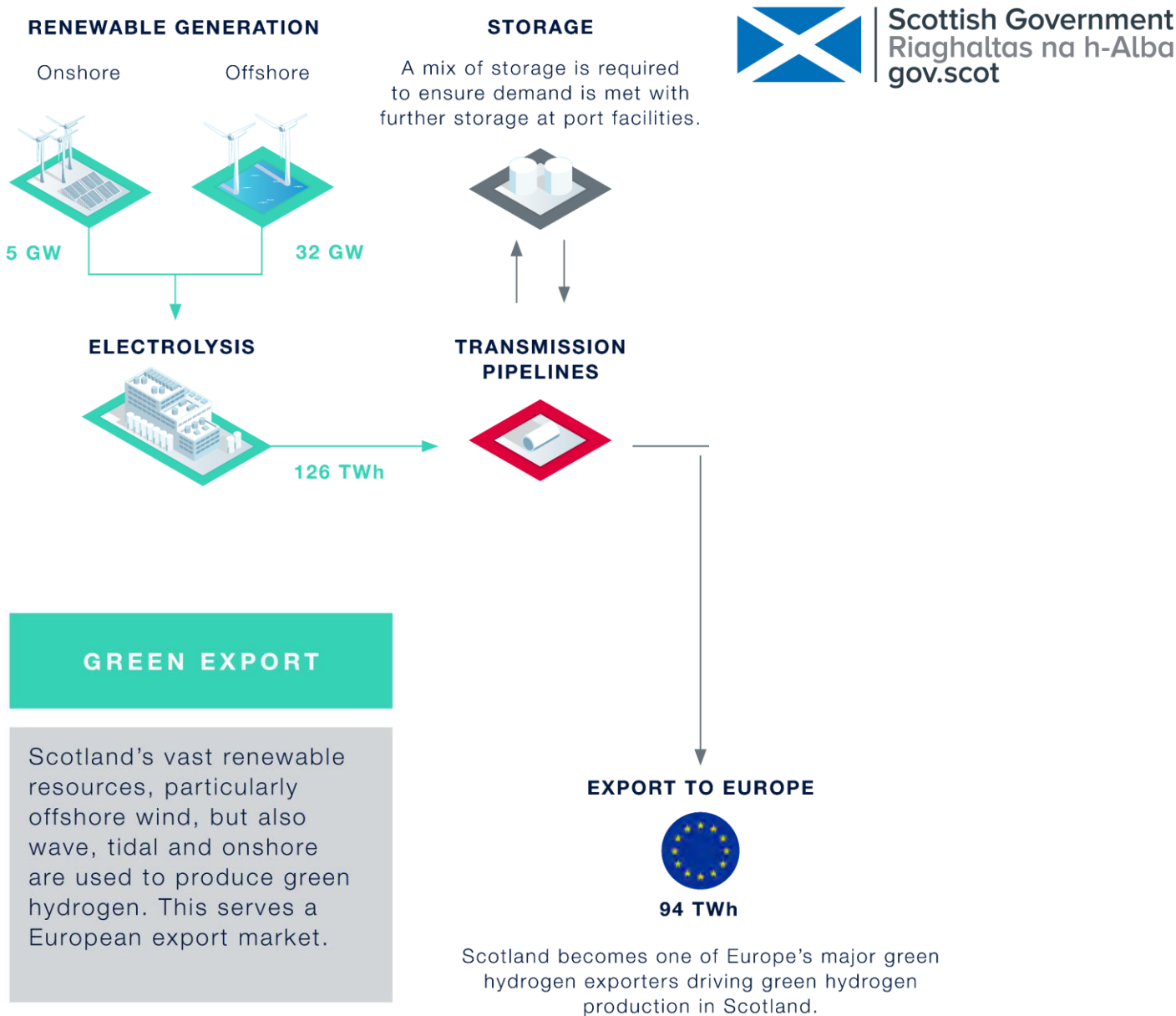
Source: The Integration of Early Clean Hydrogen Production in Scotland, 2021

Snapshot of EU Clean Hydrogen Demand vs Production by 2030



Source: Port of Rotterdam, 2022

Scottish Hydrogen Assessment



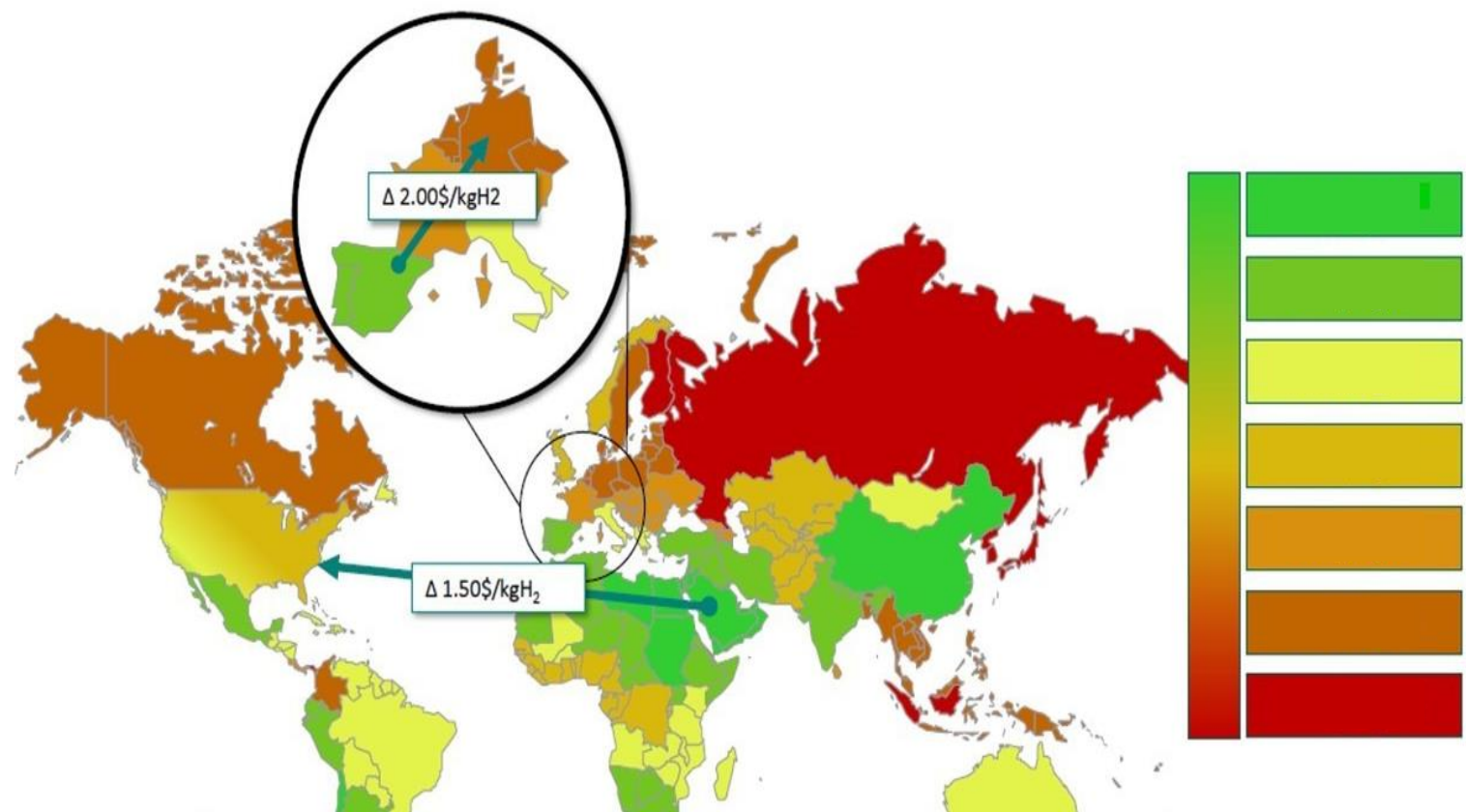
Source: Scottish Hydrogen Assessment, 2019

Can Scotland Exploit this Opportunity?



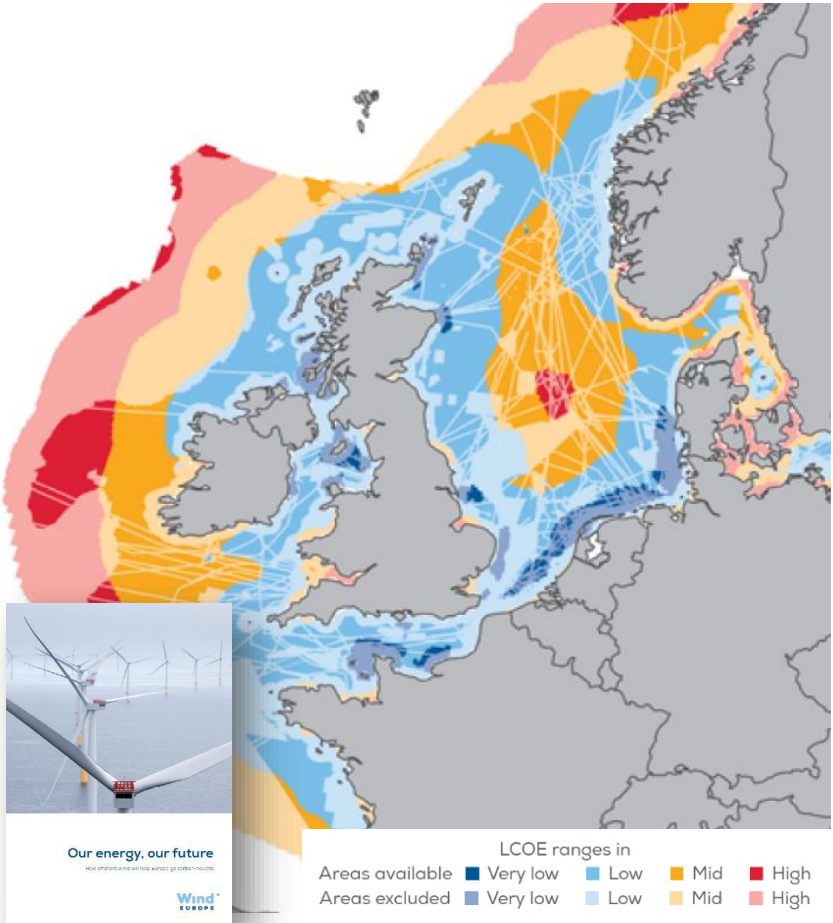
Must reduce costs to rival global competitors with low cost solar in North Africa, for example

Low Cost Hydrogen Potential

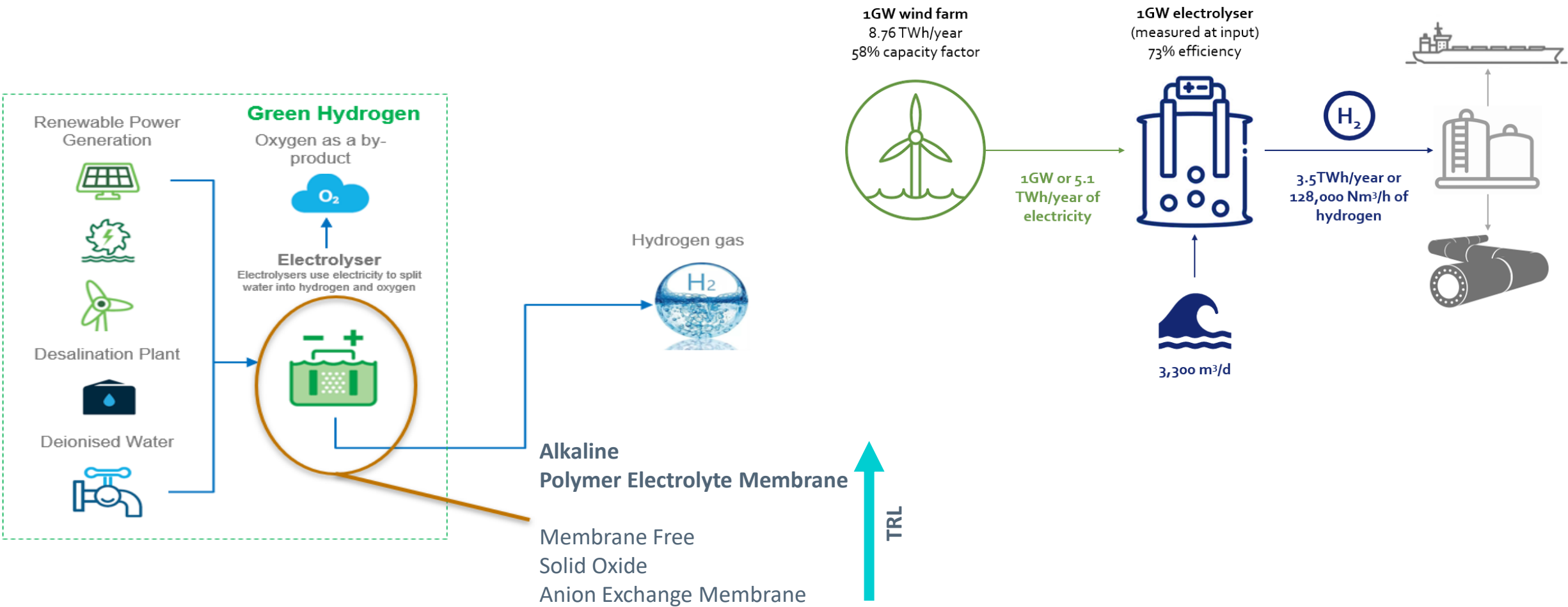


Source: hydrogenious.net, 2022

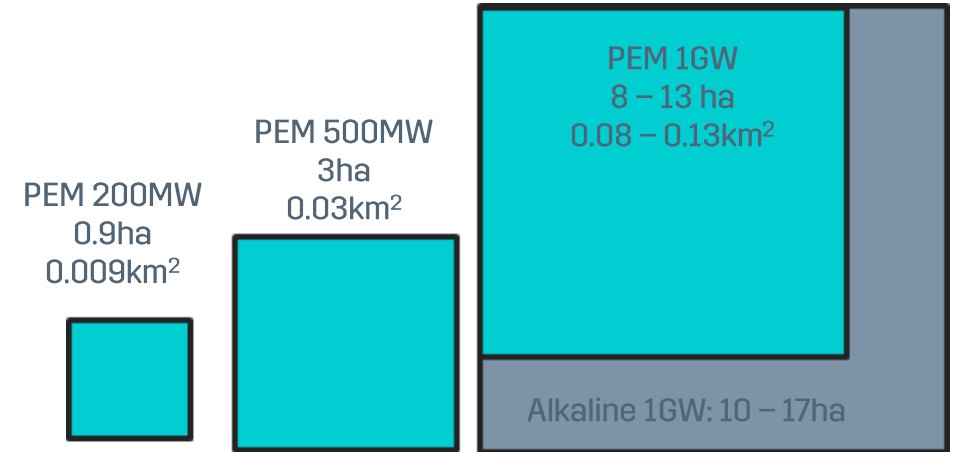
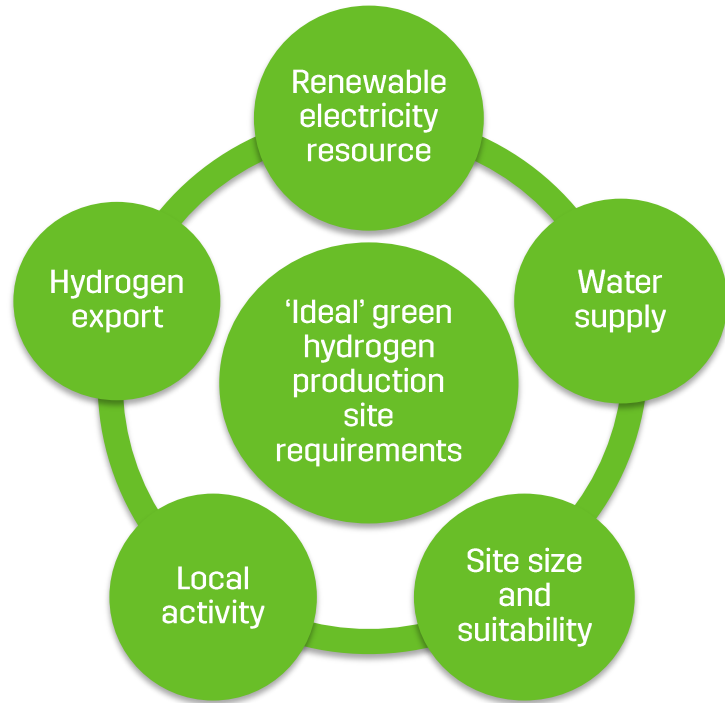
Low Cost Offshore Wind Potential



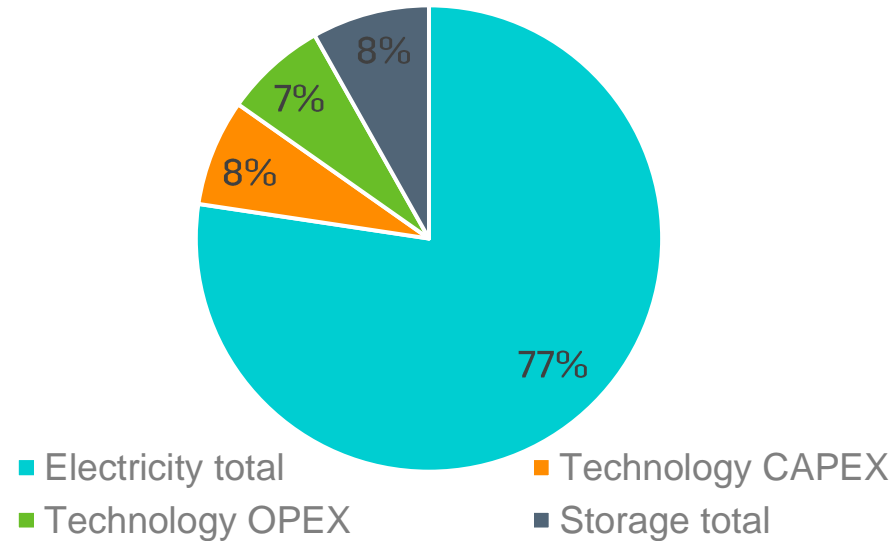
Green Hydrogen Production Technology

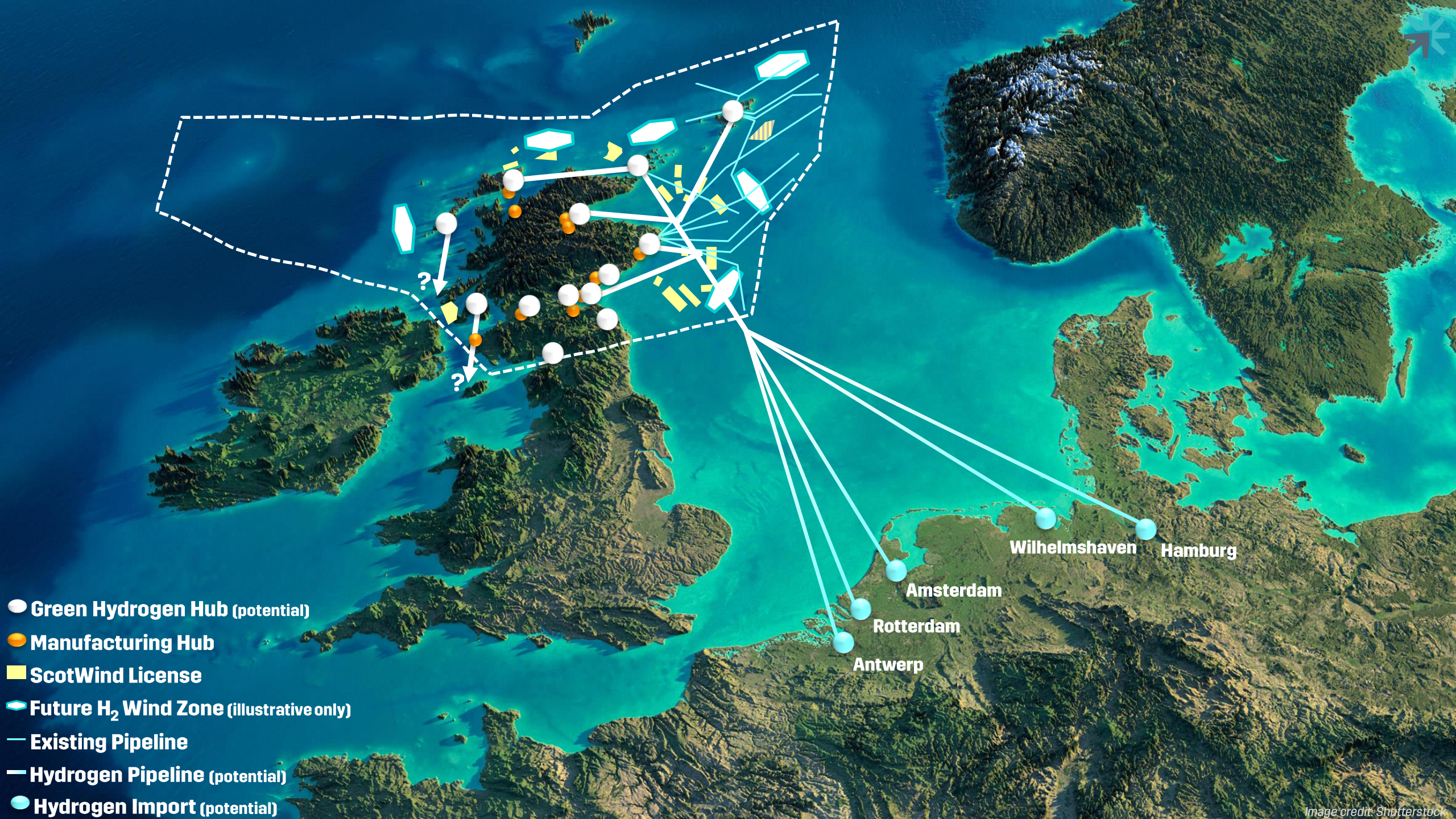


Green Hydrogen Production Site Requirements



Cost Distribution for 1GW Electrolyser Facility





Hydrogen Backbone Link

Hydrogen Backbone Link Project Scope of Work

Option Identification, Route Assessment and GIS Mapping

Pipeline Re-Use Assessment

Blending & De-Blending

Inter-Seasonal Storage

Compression Systems

Metering

Valves and New Materials

Safety System Analysis - Regulations and Specifications / Operational

Economic Modelling

Phase 3 & 4 Project Build Out

Hydrogen Backbone Aims & Targets



Upcycling of existing assets



699-800

Jobs*

* Based on IEV modelling



£1.71bn

Deliver 1.71 Billion GBP**



€0.93bn

Deliver 0.93 Billion EUR**

Creation of a European hydrogen backbone project link



14%

14% of the UK hydrogen market**



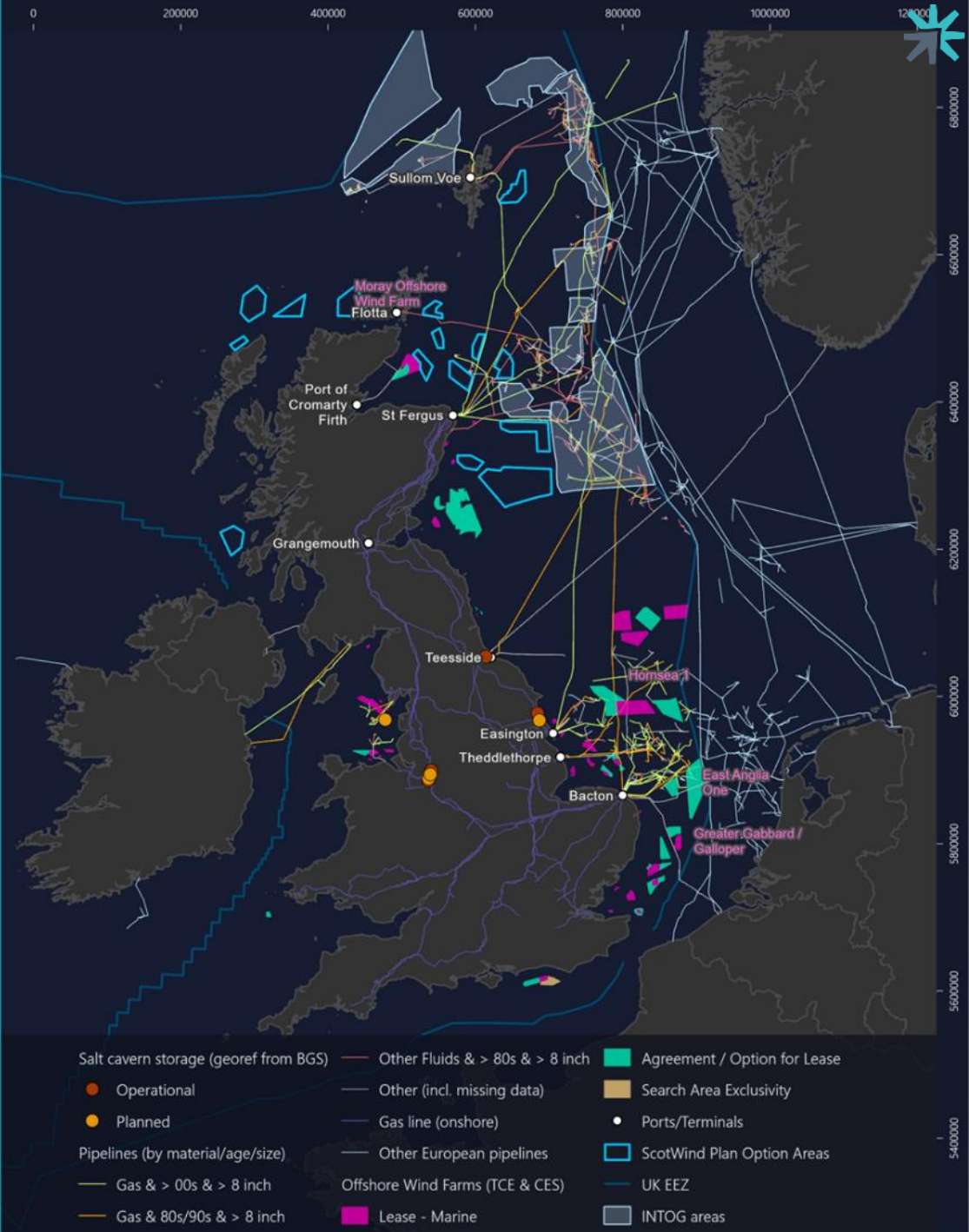
2%

2% of the European hydrogen market**

** Through delivery of the full project from phases 1-4.

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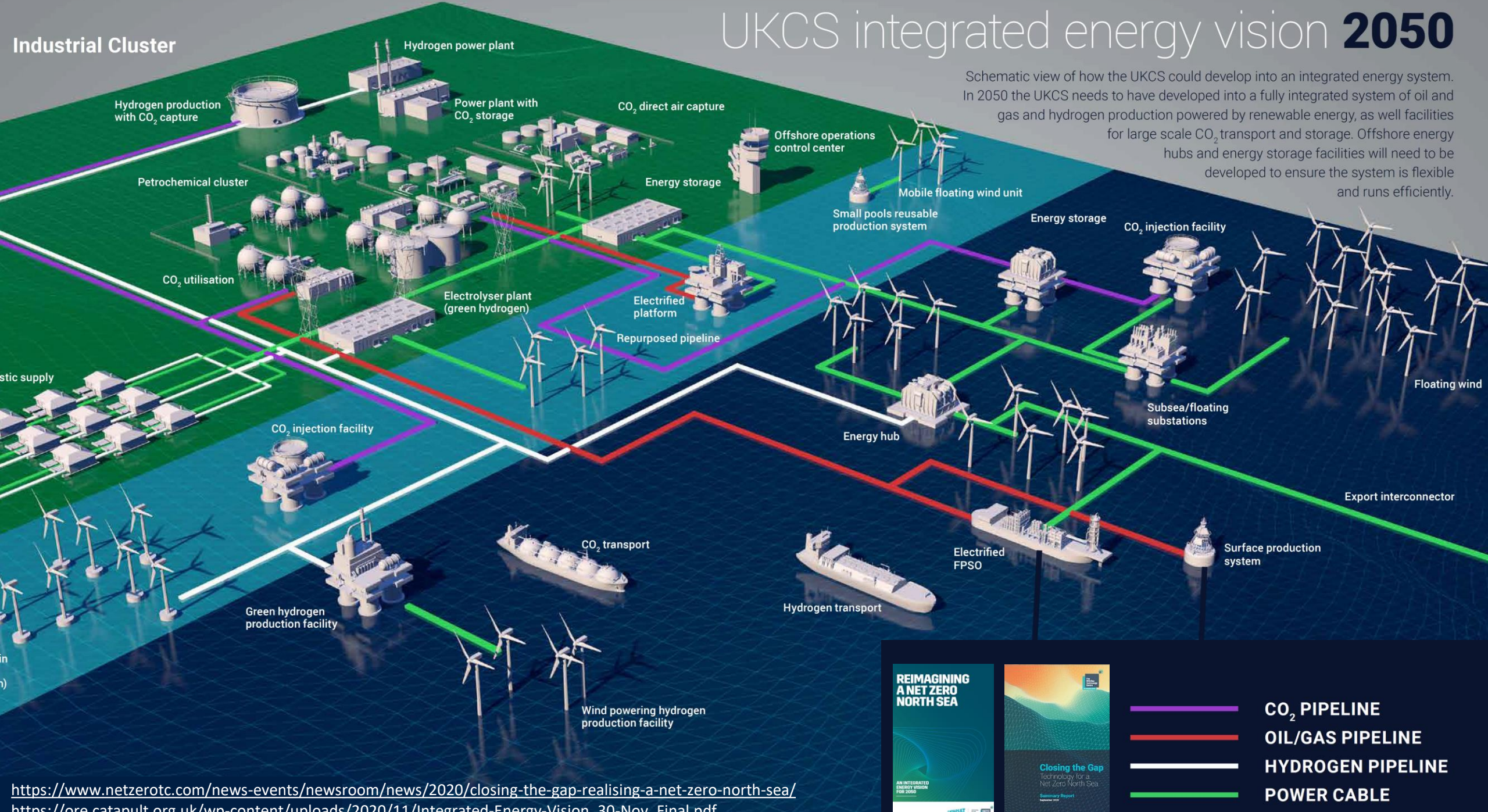
Sources and attributions:
BGS (2019), NG (2019), UKNDR (2019), TC/CES (2019), Marine Scotland (2019).

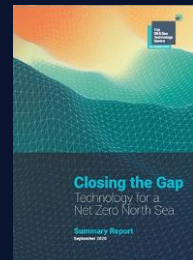
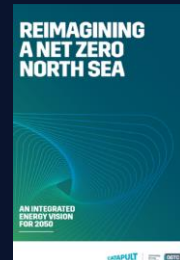


Industrial Cluster

UKCS integrated energy vision 2050

Schematic view of how the UKCS could develop into an integrated energy system. In 2050 the UKCS needs to have developed into a fully integrated system of oil and gas and hydrogen production powered by renewable energy, as well facilities for large scale CO₂ transport and storage. Offshore energy hubs and energy storage facilities will need to be developed to ensure the system is flexible and runs efficiently.





CO₂ PIPELINE

OIL/GAS PIPELINE

HYDROGEN PIPELINE

POWER CABLE

Thank You

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**Net Zero
Technology
Centre**

Technology Driving Transition