

ALL THINGS HYDROGEN CONFERENCE

#ATH23

14 MARCH 2023
NATIONAL SUBSEA CENTRE,
ABERDEEN

SUPPORTED BY:



ORION

Clean
Energy
Project



Shetland
Islands
Council



LERWICK
PORT AUTHORITY



Net Zero
Technology
Centre
Technology Driving Transition



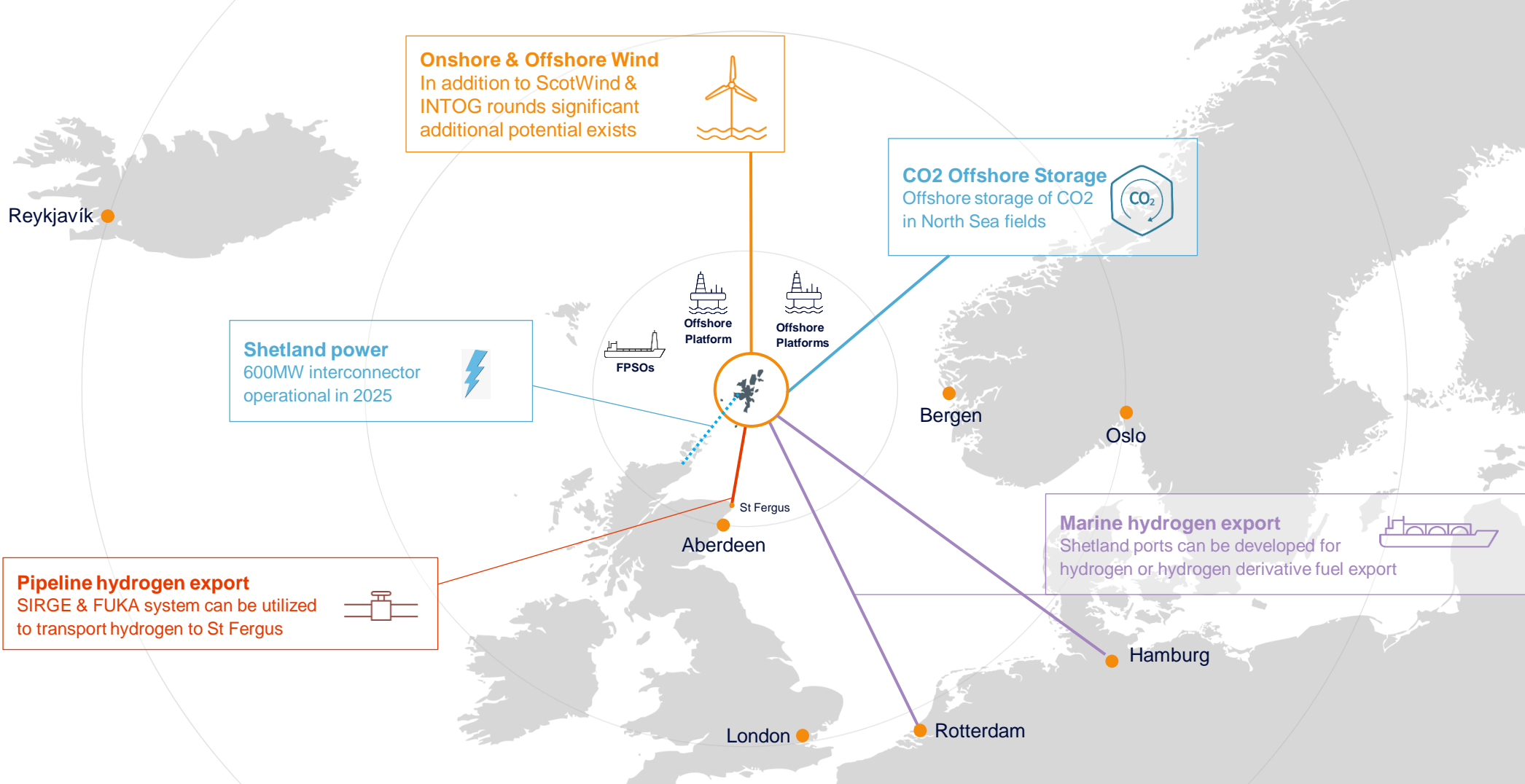
University of
Strathclyde
Glasgow

ORION Project – Helping Shetland become a regional hydrogen Hub

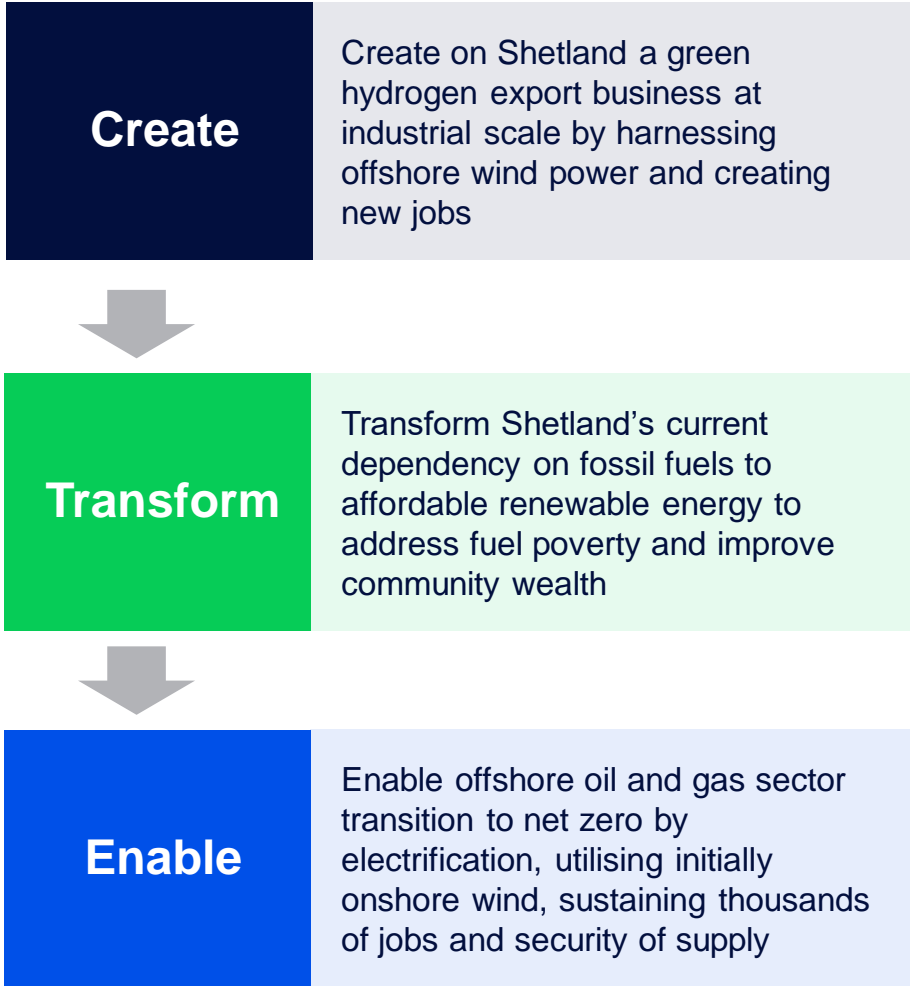
March 2023

Opportunity for Renewables Integration with Offshore Networks

Shetland Regional Energy Hub



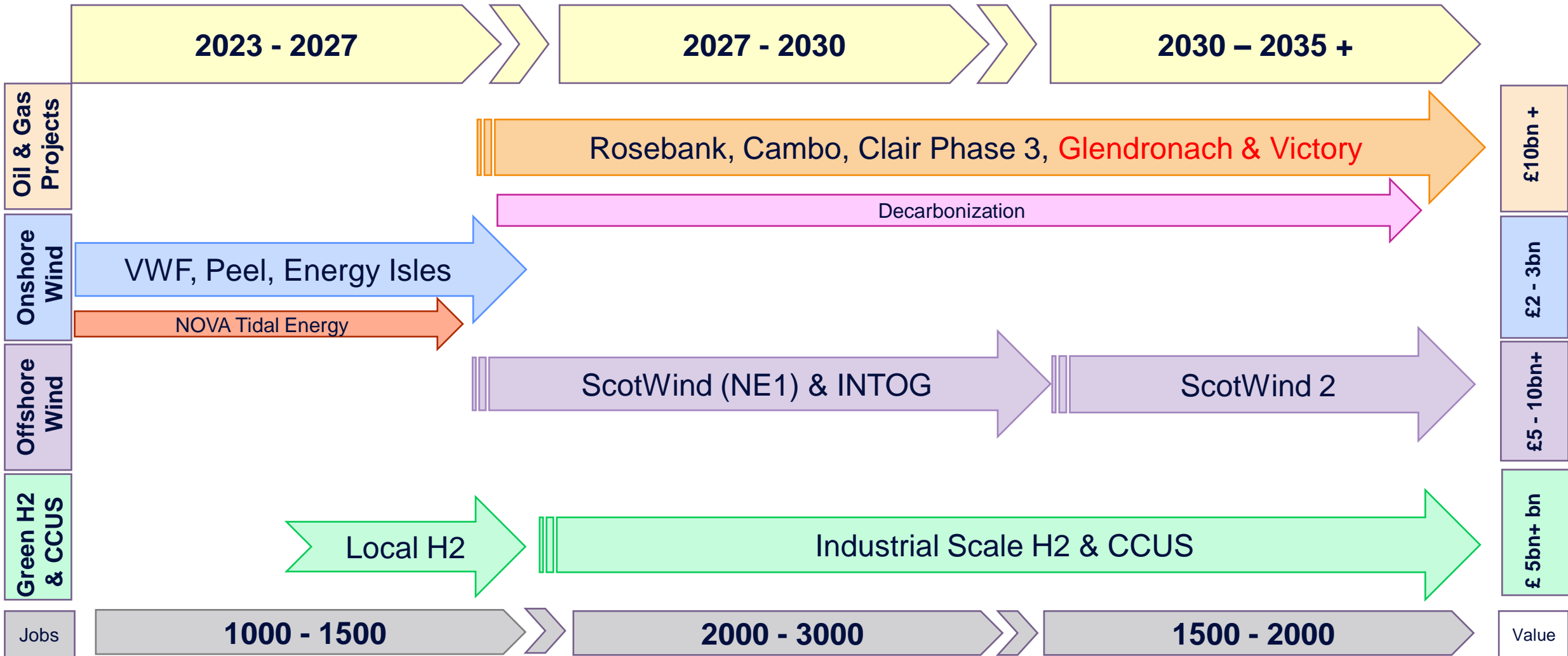
Ambition



Energy Vision

Skilled workforce, industrial land, ports, wind & tidal

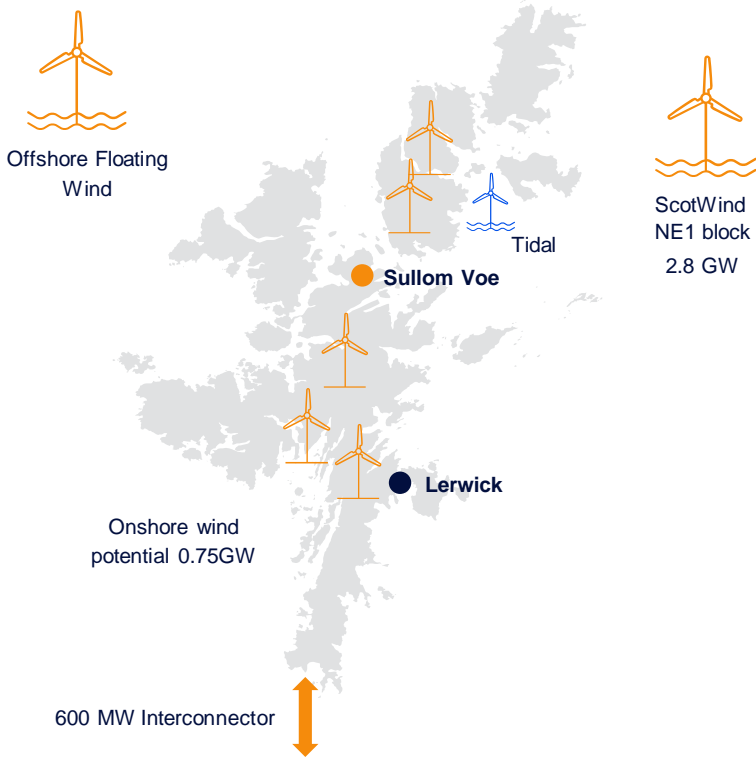
Shetland Project Pipeline



Key Enablers

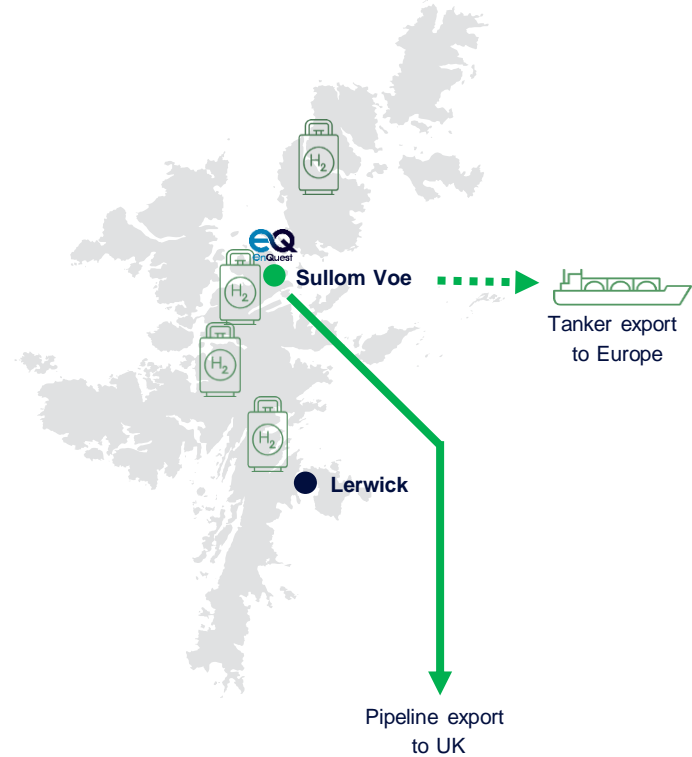
Wind & Tidal

Up to 30GW wind energy potential



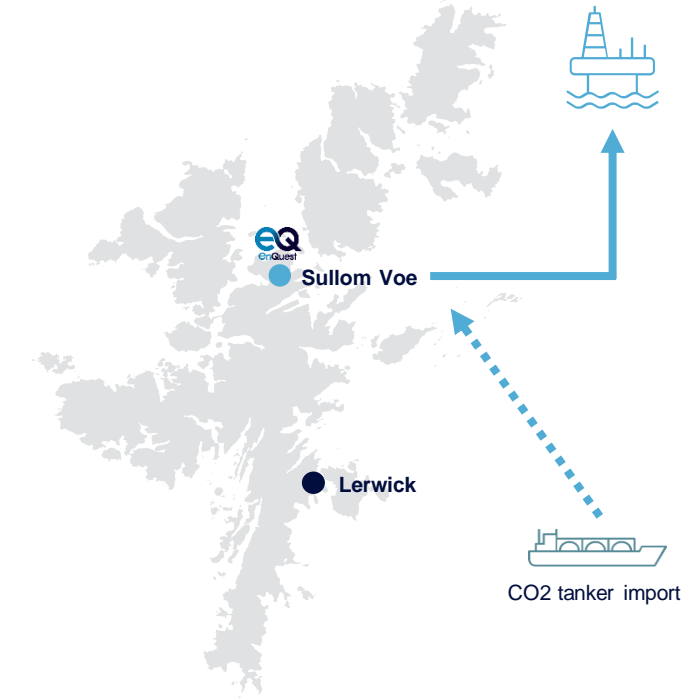
Green Hydrogen

Potential to produce & export > 1MTPA



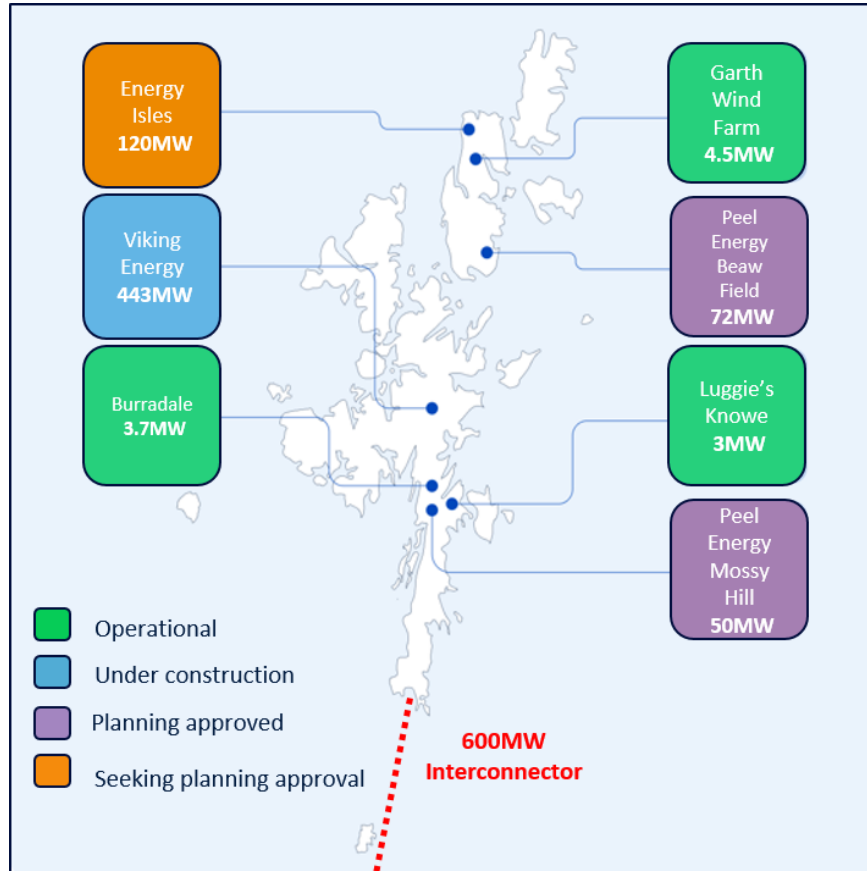
CCUS

Potential to store up to 10MTPA



Onshore Wind & Tidal

Onshore Wind

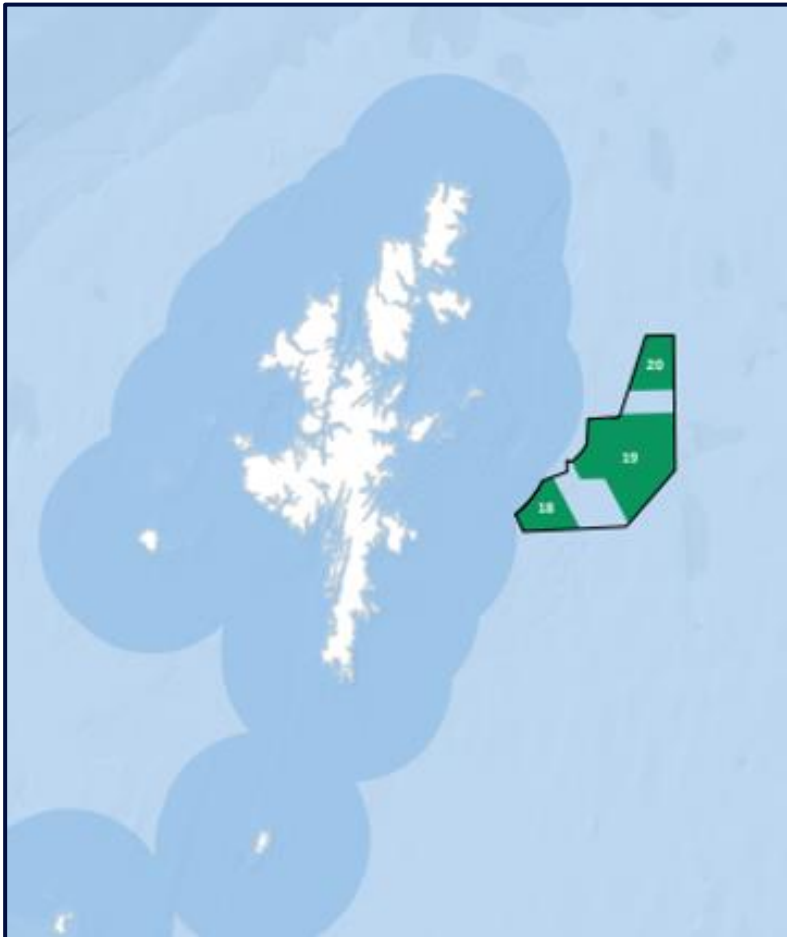


Tidal

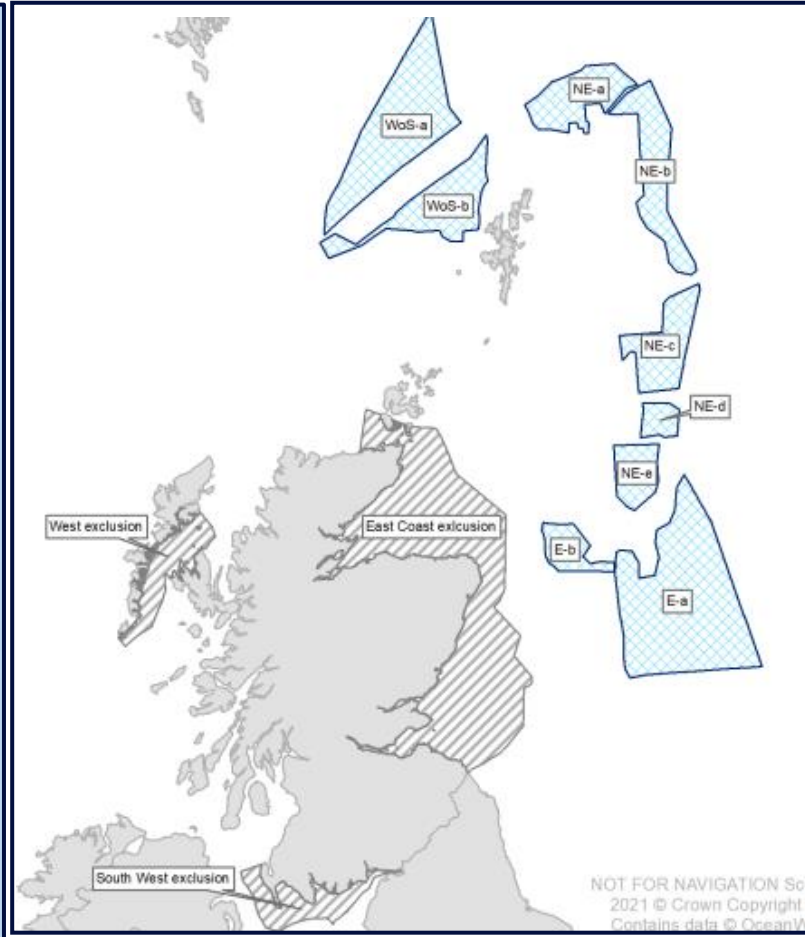


- **Onshore Wind:** Over 0.75GW available by 2028 providing local power, export & potentially green hydrogen locally
- **Tidal:** Significant local contribution of over 15MW by 2028
- **Next Steps:** Utilizing onshore wind & tidal energy to start generation of green hydrogen

ScotWind



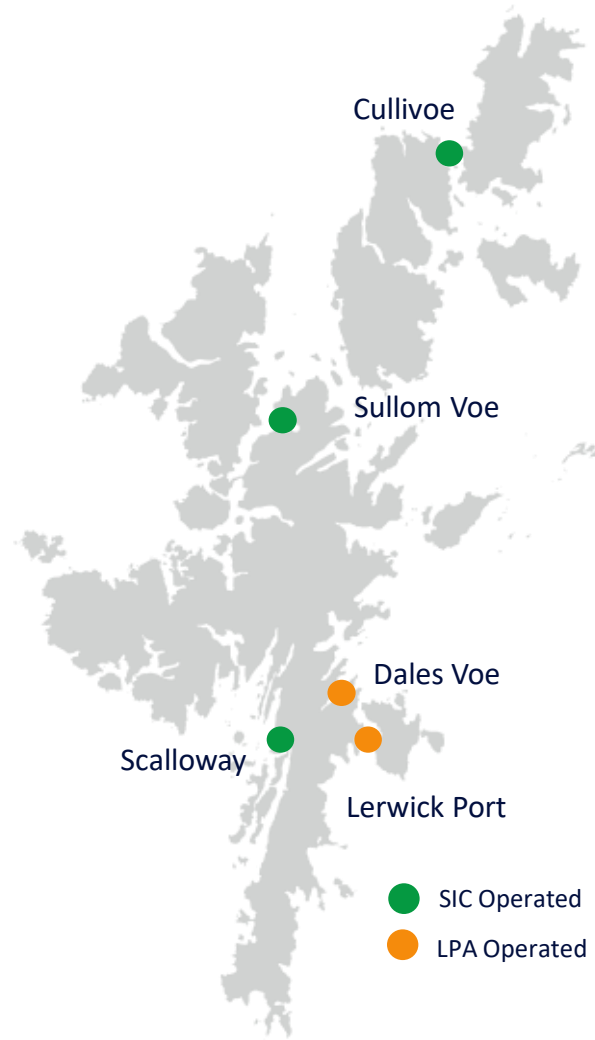
INTOG



- **ScotWind:** NE1 awards made to Ocean Winds, Mainstream RP & ESB for 560sq kms with 2.8GW wind energy for green hydrogen production
- **INTOG:** Interest shown by wind developers
- **Next Steps:** Working collectively with NE1 offshore wind developers

Shetland Ports

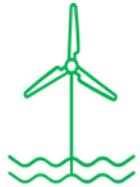
- 40 years+ oil & gas export from Sullom Voe
- Deep water berthing facilities
- Support offshore wind & clean fuel export



- **SIC Ports:** Sullom Voe exported over 8bnbbls crude oil and LPG for over 40 years with all ports supporting oil & gas sector operations
- **Lerwick Port Authority:** Supporting oil & gas sector operations and projects plus decommissioning
- **Next Steps:** Assessing & marketing & developing port capability for supporting offshore wind development, clean fuel & CO2 export

Shetland Supply Chain

Resource



Wind



Wave & Tidal

Infrastructure



H2 plants



Port facilities

Distribution



Electricity



Hydrogen

Transportation



H2 pipelines



H2 carriers

Storage



CO2 storage



H2 storage

Shetland Energy Transition Skills Group

- Ensure that skills issues across Shetland, and wider, energy sector are well understood
- Ensure a skilled workforce is in place to address challenges and capitalise on opportunities
- Ensure a co-ordinated and partnership approach to help address Shetland's skills & training requirements
- Inform and influence Shetland's education and skills provision



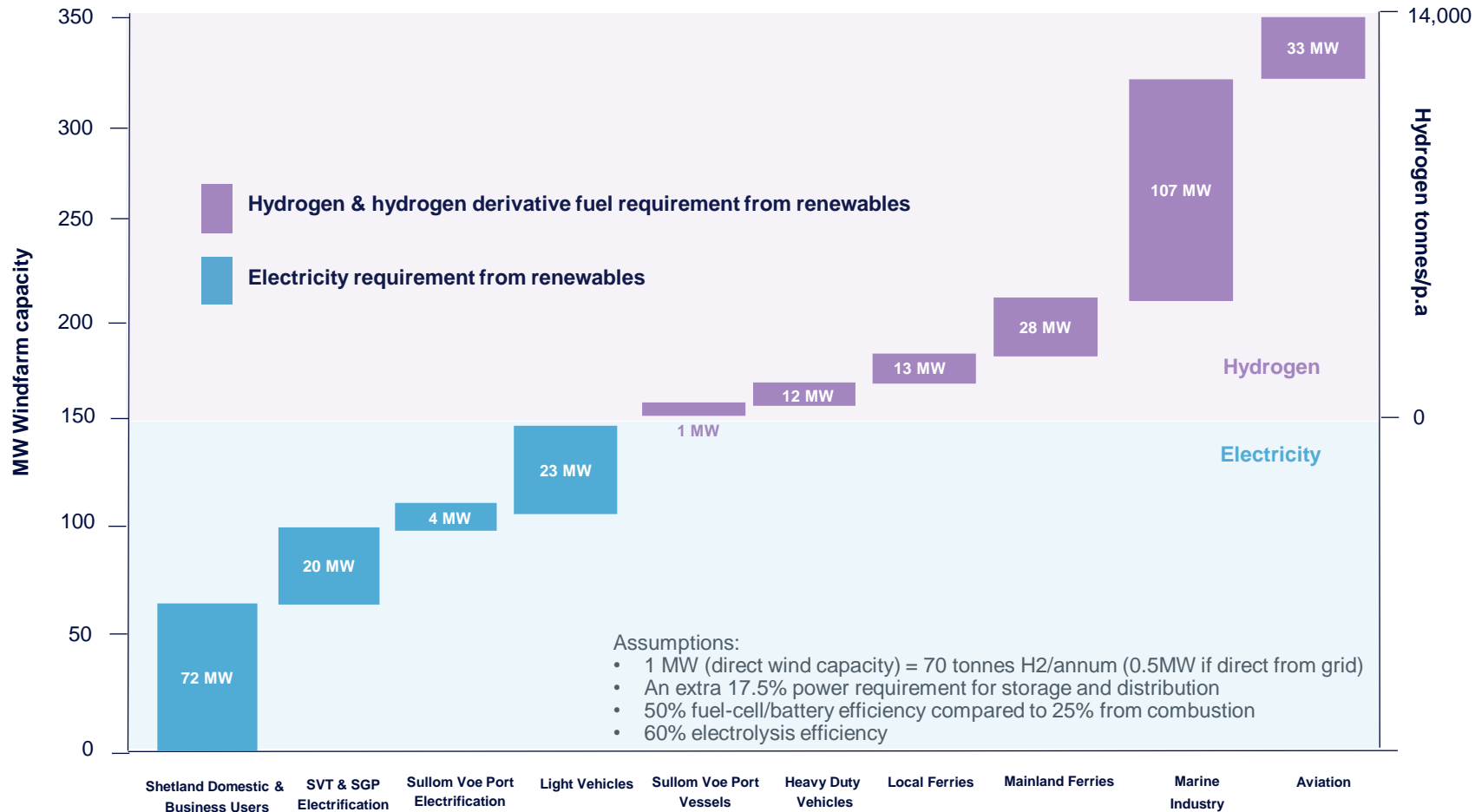
Partnership approach working closely with industry

Shetland Green Hydrogen Deliverability

Energy Source	Energy (MW)	Land Area (Hectares)	Green H2 (t/day)	Oxygen (t/day)	Ammonia (t/day)	Customers
 <p>ScotWind Offshore Floating Wind</p>	2800	100	700	5400	4000	Regional Use <ul style="list-style-type: none"> • Tanker Export • Pipeline Export
 <p>Onshore Wind</p>	200	10	50	400	460	Local Use <ul style="list-style-type: none"> • HDV's • District Heating • Marine Vessels
 <p>Tidal</p>	15					

Local hydrogen demand








Shetland local electrical & hydrogen demand





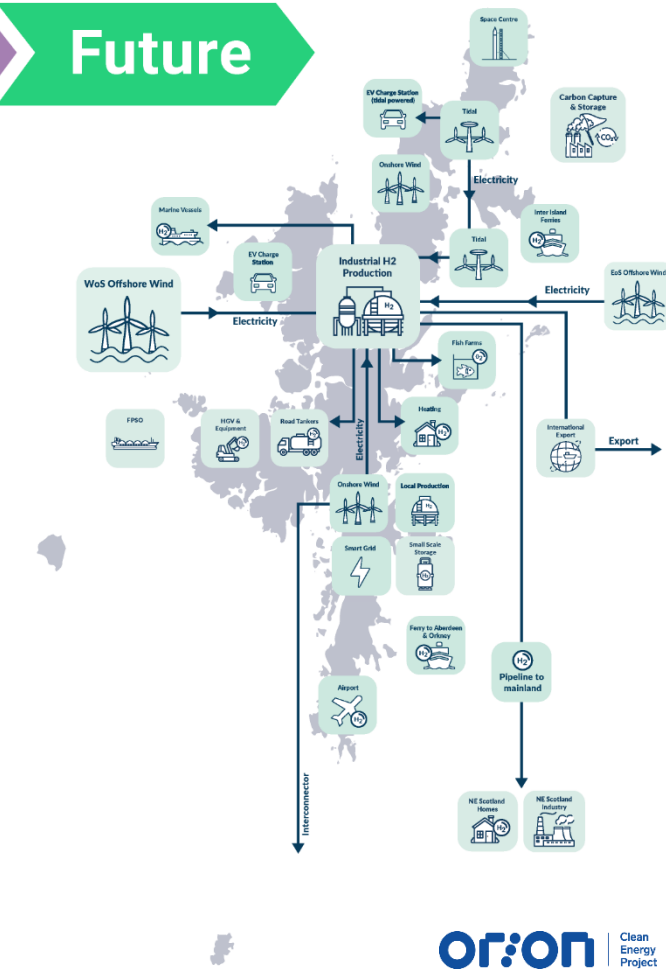
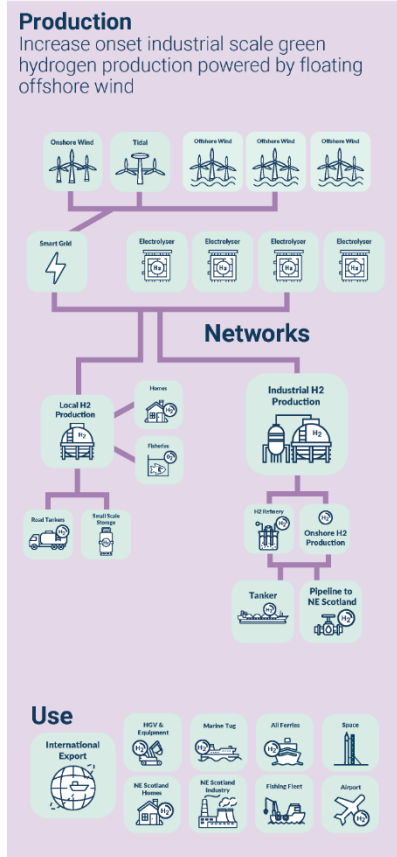
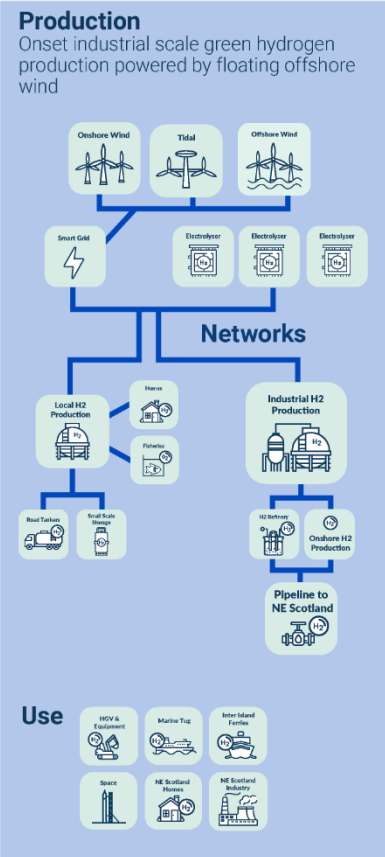
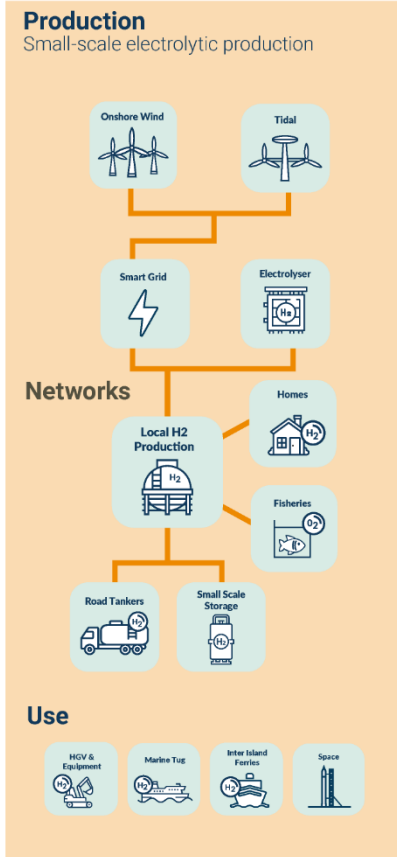
EnQuest: New Energy

EnQuest aims to deliver Scotland's largest Energy Hub at SVT

-  Existing Brownfield Acreage **1,000-acre brownfield industrial COMAHsSite**
-  Existing Pipeline Infrastructure **Pipeline connections to offshore storage sites and Mainland UK**
-  Established Supply Chain and SVT Workforce **Shetland has five decades of Energy Industry experience**
-  Wind Resource **10GW+ onshore & offshore wind potential**
-  Regional CO₂ and H₂ Storage Potential **Multiple CO₂ storage sites accessible from existing infrastructure**
-  Deepwater Jetties **24m deep jetties accepting VLCC size vessel**
-  Strategic Location **Strategically located to service UK and Europe**



Shetland Hydrogen Road-map

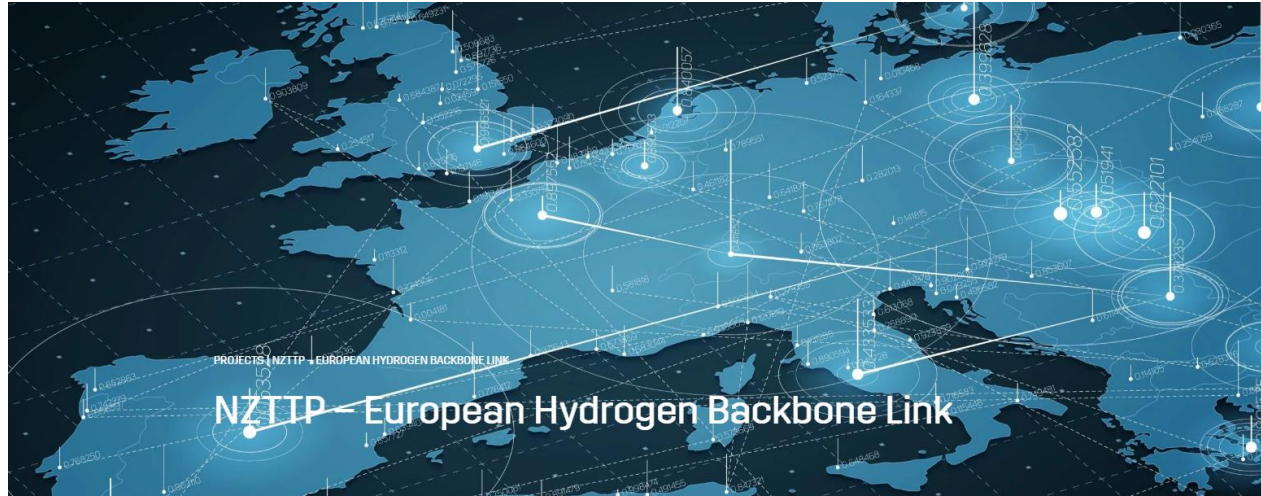


Key Actions & Milestones

- 2023-2027**
- All onshore wind farms operational
 - Trials for export H2 & import CO2
 - Port & Jetty development in progress
 - PPA in place with clean fuel offtakers
 - Local green H2 market

- 2027-2030**
- Phase 1 ScotWind & INTOG
 - Sullom Voe H2 production & CCUS
 - SIRGE H2 pipeline export
 - Shetland ports support offshore wind
 - WOS development commences

- 2030-2035**
- ScotWind & INTOG full production
 - New offshore wind areas licenced
 - Pipeline H2 export at scale
 - Tanker import (CO2) & export (H2)
 - All ports decarbonized



NEWS & INSIGHT | ARTICLE

Net Zero Technology Centre
Technology Driving Transition

Project launched to create Hydrogen Highway from Scotland to Rotterdam

CLOSING THE GAP CLOSING THE GAP: GLOBAL PERSPECTIVE

ENERGY TRANSITION ETF HYDROGEN IEV

TLB REPORT

Source: NZTC

The image is a promotional graphic for an article. It features a dark blue background with a network of white lines and nodes. The text 'NEWS & INSIGHT | ARTICLE' is at the top left. The 'Net Zero Technology Centre' logo is at the top right. The main headline is 'Project launched to create Hydrogen Highway from Scotland to Rotterdam'. Below the headline are two buttons: 'CLOSING THE GAP' and 'CLOSING THE GAP: GLOBAL PERSPECTIVE'. Further down are three buttons: 'ENERGY TRANSITION', 'ETF', and 'HYDROGEN', followed by 'IEV'. At the bottom left is a button labeled 'TLB REPORT'. The bottom half of the graphic shows a large white hydrogen transport ship sailing on the ocean. The text 'Source: NZTC' is at the bottom right.

Shaping Shetland as the UK's first green hydrogen & clean energy hub

- Discussions in progress to utilize onshore wind & tidal energy to create green H2
- Offshore floating wind blocks awarded with 2.8GW potentially available for green H2 production
- Sullom Voe region ideally located and suited for manufacture, storage & transportation of green H2
- Studies in progress to store and transport green H2 by pipeline and tanker

Shetland: Islands of Opportunity

In Partnership with:

