

Humber Hydrogen Update

November 2024



Sally Prickett

Hydrogen, CCS and sustainable
fuels lead



Who we are

1 800 energy specialists

Highly accredited Economists, behavioural scientists, engineers and sustainability consultants.

Diverse by design

Leveraging the strength of complimentary experience from renewable energy development, work with the oil & gas industry, transportation infrastructure planning and design, financial consulting, corporate strategy, and more.

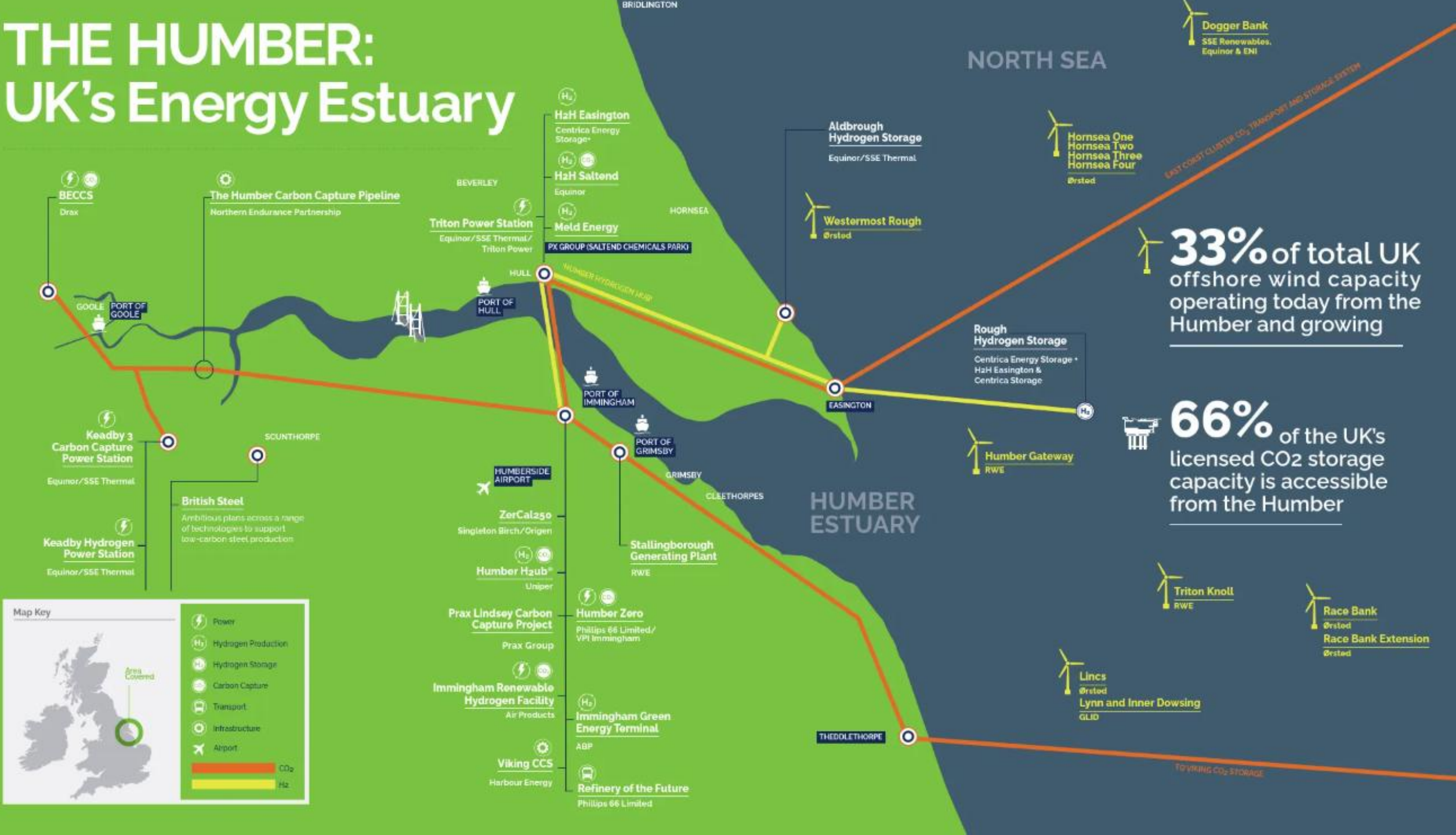
Represented locally

Arup energy specialists are represented in many countries around the world, combining local knowledge with the power of Arup's global footprint.

Working together to shape a better world.



THE HUMBER: UK's Energy Estuary



Map Key

- Power
- Hydrogen Production
- Hydrogen Storage
- Carbon Capture
- Transport
- Infrastructure
- Airport

— CO₂
— H₂

Area Covered

33% of total UK offshore wind capacity operating today from the Humber and growing

66% of the UK's licensed CO₂ storage capacity is accessible from the Humber

Dogger Bank
SSE Renewables, Equinor & ENI

**Hornsea One
Hornsea Two
Hornsea Three
Hornsea Four**
Ørsted

Aldbrough Hydrogen Storage
Equinor/SSE Thermal

Westermost Rough
Ørsted

Rough Hydrogen Storage
Centrica Energy Storage + H2H Easington & Centrica Storage

Humber Gateway
RWE

Triton Knoll
RWE

**Race Bank
Race Bank Extension**
Ørsted

**Lincs
Lynn and Inner Dowsing**
GLID

H2H Easington
Centrica Energy Storage

H2H Saltend
Equinor

Meld Energy
PX GROUP (SALTEND CHEMICALS PARK)

Triton Power Station
Equinor/SSE Thermal/Triton Power

Humber Hydrogen Hub

PORT OF IMMINGHAM

PORT OF GRIMSBY

Stallingborough Generating Plant
RWE

ZorCal250
Singleton Birch/Origen

Humber H2hub*
Uniper

Prax Lindsey Carbon Capture Project
Prax Group

Immingham Renewable Hydrogen Facility
Air Products

Viking CCS
Harbour Energy

Humber Zero
Phillips 66 Limited/VPI Immingham

Immingham Green Energy Terminal
ABP

Refinery of the Future
Phillips 66 Limited

The Humber Carbon Capture Pipeline
Northern Endurance Partnership

BECCS
Drax

Keadby 3 Carbon Capture Power Station
Equinor/SSE Thermal

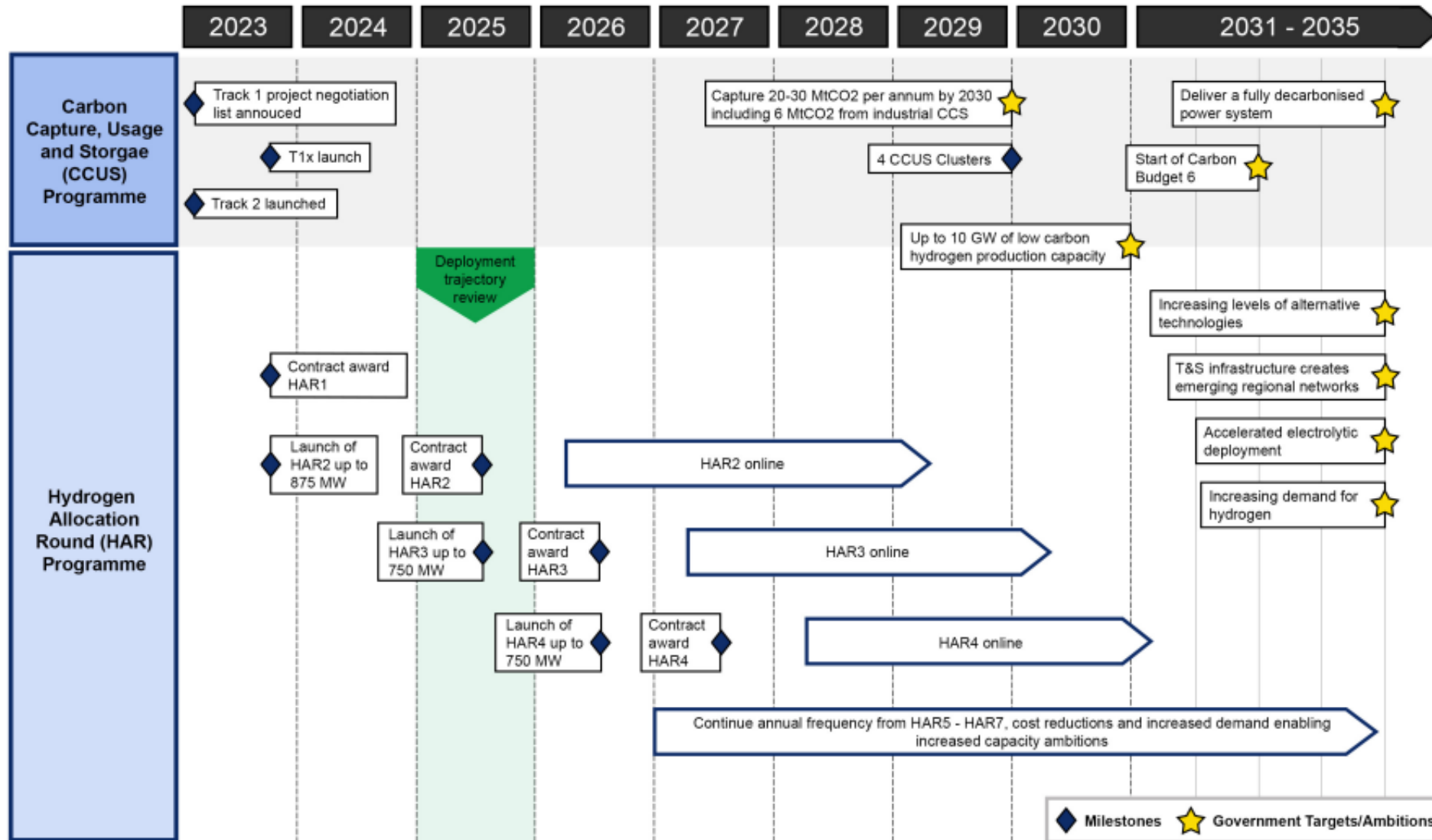
Keadby Hydrogen Power Station
Equinor/SSE Thermal

British Steel
Ambitious plans across a range of technologies to support low-carbon steel production

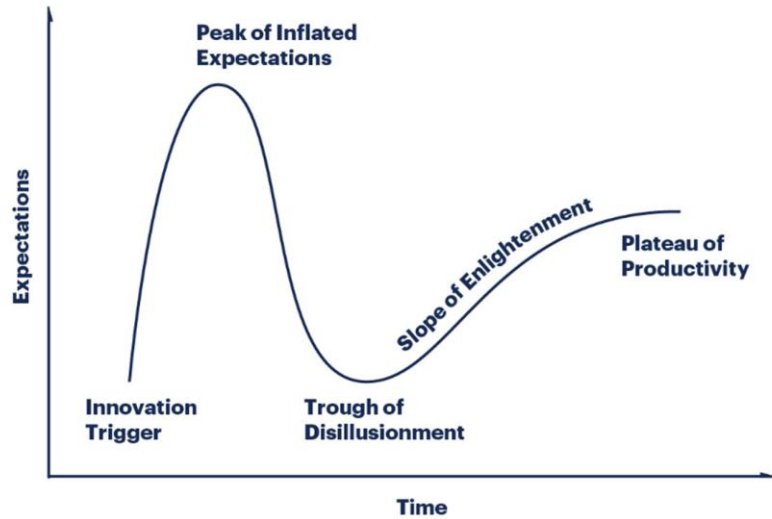
EAST COAST CLUSTER CO₂ TRANSPORT AND STORAGE SYSTEM

TO VIKING CO₂ STORAGE

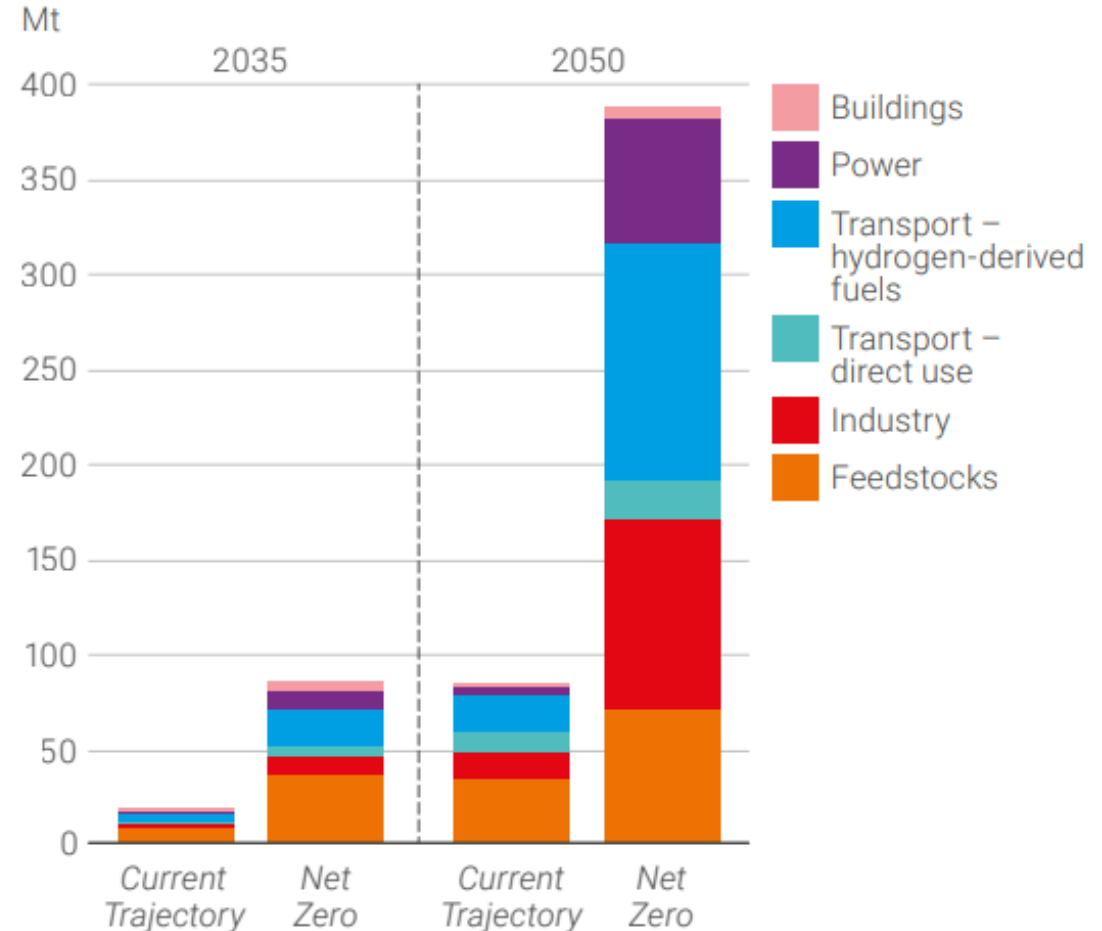
UK Roadmap - where are we today?



Over hyped or on the way to enlightenment?

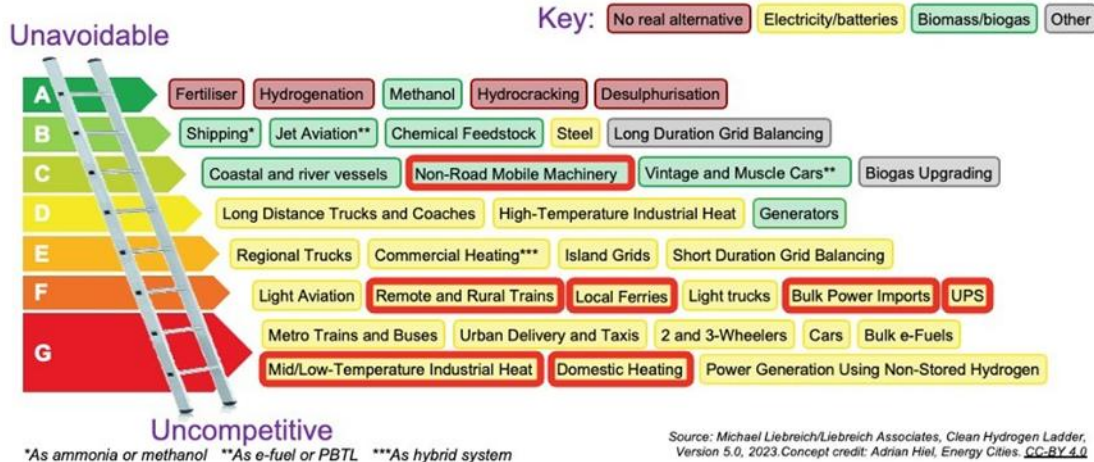


Low carbon hydrogen demand by sector



Hydrogen Ladder 5.0 – Demotions (7)

Liebreich Associates



Transport - hydrogen-derived fuels include hydrogen used to produce methanol and ammonia in marine and synthetic jet and diesel fuel.

Source: Michael Liebreich/Liebreich Associates, Clean Hydrogen Ladder, Version 5.0, 2023. Concept credit: Adrian Hiel, Energy Cities. CC-BY 4.0

What does this mean for the Humber?

- New government appears to be holding course with opportunity to access policy support
- Challenges remain – cost, grid connection, water, offtake, infrastructure
- We know much more about what “good” looks like in hydrogen. Opportunity to leverage learning and focus on developing successful projects targeting investment and resource in the right areas



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