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Your Gas Network

# HyNet North West

## Delivering Clean Growth





## Project summary

HyNet North West is a hydrogen energy and Carbon Capture, Usage and Storage (CCUS) project. The goal of HyNet is to reduce carbon dioxide (CO<sub>2</sub>) emissions from industry, homes and transport and support economic growth in the North West.

Spanning across Liverpool, Manchester and parts of Cheshire, the region's unique geology, existing technical skills base and concentration of industry make it ideally placed to host HyNet. It can bring strong economic and environmental benefits to the North West, as well as positioning the region as a leader in the research, development and deployment of hydrogen and CCUS technologies, providing opportunities for skills export.

Find out more at [hynet.co.uk](https://hynet.co.uk)



## How much will it cost?

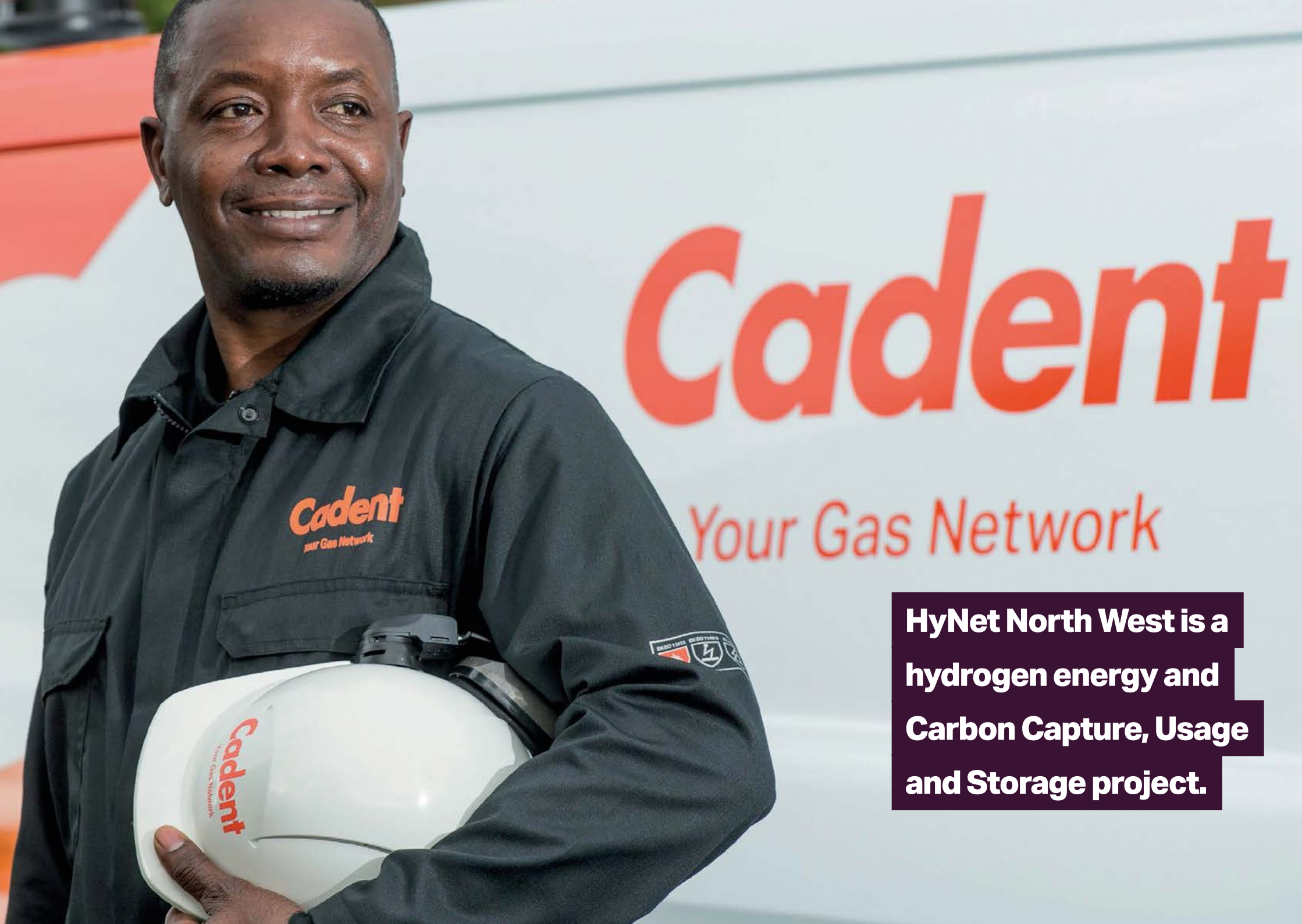
The estimated required infrastructure investment for the full HyNet project is around £0.9 Billion. This includes hydrogen production, pipelines and full CCUS chain.

**HyNet is a cost effective option compared to alternative projects with similar CO<sub>2</sub> savings. This is due to:**

- The concentration of industry in a relatively small geography. This means there is consistent gas demand, avoiding the need for hydrogen storage.
- Hydrogen blending for homes and businesses means existing domestic appliances do not have to be replaced.
- Close geographical proximity and timing of depletion of the Liverpool Bay oil and gas fields for CO<sub>2</sub> storage.

HyNet is also a low cost option to reduce carbon emissions from heat compared with alternatives.





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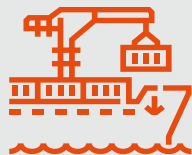
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**HyNet North West is a hydrogen energy and Carbon Capture, Usage and Storage project.**



## First UK

Carbon Capture, Usage  
and Storage infrastructure



**1 million tonnes+**  
**CO<sub>2</sub> savings**

per annum

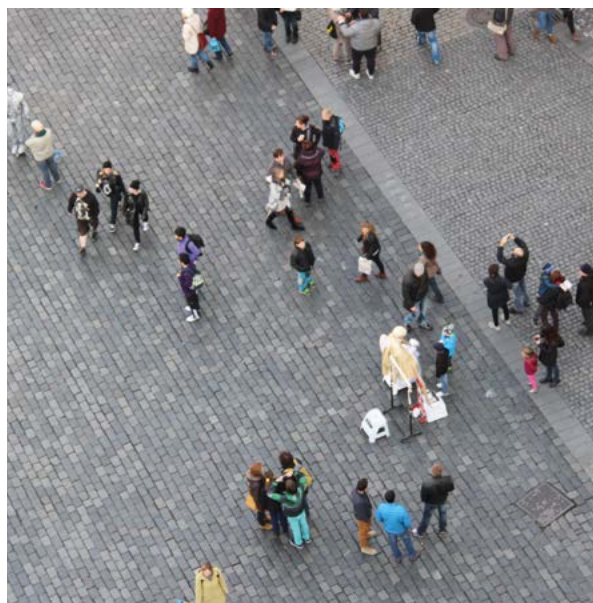


**£31bn**

estimated GVA  
for UK economy



**Up to 100%**  
for 10 energy intensive  
industry sites



**Over 5000 jobs**

created in the NW from now to 2025



A UK centre for hydrogen  
and CCUS skills and  
knowledge for export in a  
global low carbon economy



**Simple CO<sub>2</sub>  
savings**

for 2 million+ homes  
and businesses

Deliverable by  
**2026**



Hydrogen for  
future transport  
(buses, HGVs,  
trains)



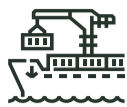
**130 million  
tonnes**

capacity at Liverpool  
Bay oil and gas fields



### CO2 storage

Reduced cost CCUS infrastructure opportunity through the reuse of the Liverpool oil and gas fields. Estimated CO2 storage capacity of 130 million tonnes. Greater CO2 storage also available in the wider area.



### Future CO2 shipping

Shipping could offer a flexible solution to enable larger amounts of CO2 to be transported from other industrial clusters, for example, South Wales.



### Future hydrogen sources

Renewable energy sources in the region offer potential for future hydrogen production to move towards 100% renewable energy. The potential for connection to hydrogen infrastructure could also encourage investment in regional renewable energy projects (e.g. wind, solar, tidal and biomass). This could help absorb excess off-peak renewable energy generation.



### Jobs and skills

Reducing carbon emissions from energy intensive industry helps to secure the long-term future of industry and jobs. Building on the existing technical skills base in the North West could form a pioneering research, development and skills base for hydrogen offering opportunities for export.



### Future power generation

Renewable energy sources in the region offer potential for future hydrogen production to move towards 100% renewable energy. The potential for connection to hydrogen infrastructure could also encourage investment in regional renewable energy projects (e.g. wind, solar, tidal and biomass). This could help absorb excess off-peak renewable energy generation.



### Industrial gas users

HyNet will supply hydrogen to 10-15 major industrial gas users with up to 100% hydrogen via a dedicated pipeline. This will achieve a material reduction in carbon dioxide emissions. Reducing industrial CO2 emissions helps to protect jobs by reducing exposure to carbon related costs from gas use.



### Hydrogen trains

Separate projects in the North West are exploring the possibility of running hydrogen trains in the future. Building accessible hydrogen infrastructure through HyNet could help to bring hydrogen to the UK rail network for the first time.



### Hydrogen production

HyNet is based on the production of hydrogen from natural gas. Hydrogen would be produced in bulk at a central plant using established, proven technology. There are already existing sources of hydrogen in the region meaning that there is an established skills base for hydrogen production and handling; as well as potential sources for an initial demonstration project.



### Hydrogen fuelling

Hydrogen pipeline infrastructure can facilitate transport fuelling hubs throughout the North West. This would help to lower harmful emissions from transport including trains and buses, contributing towards cleaner air for Liverpool, Manchester and the surrounding areas.



### Future hydrogen storage

To meet fluctuations in energy demand from households, hydrogen storage would be needed in the long-term. Salt caverns in the Cheshire 'Basin' offer potential for future storage and may reduce the cost of developing new assets. Five existing salt caverns amount to a total current storage capacity of 455 million m³ (mcm) of natural gas.



### Hydrogen blend

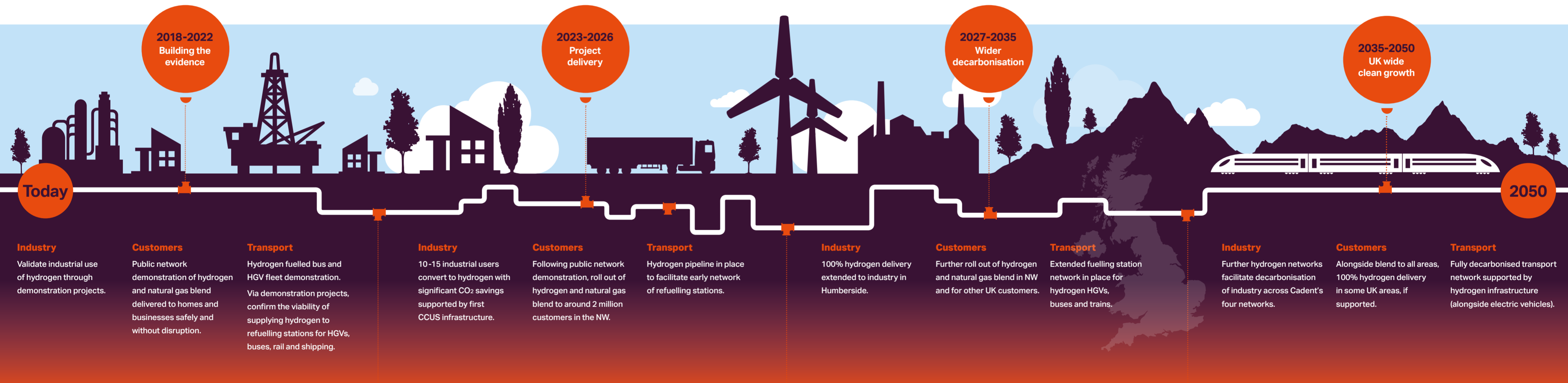
A blend of hydrogen (up to 20% by volume) and natural gas could be delivered to customers and businesses on the surrounding gas network. This would help towards reducing carbon emissions from heat without the need to change domestic appliances.



### Inward investment

The new hydrogen infrastructure created for HyNet is readily extendable into the wider area. This encourages inward investment from other companies looking to utilise the infrastructure. The opportunity for hydrogen connections could also boost investment in other regional renewable energy projects.

## What HyNet can deliver



### Benefits

- Technical, cost and practical evidence to inform heat and CCUS policy.
- Customer experience of hydrogen as energy in their homes.
- UK skills base for hydrogen and CCUS begins to develop.

### Benefits

- Over 1 million tonnes CO2 savings every year.
- UK's first operational CCUS infrastructure.
- Decarbonisation of domestic heat takes significant step forward and customer acceptability for hydrogen established.
- Design and construction creates over 5,000 jobs and significant investment in the NW.
- Skills hub for hydrogen and CCUS firmly established.

### Benefits

- Over 25 million tonnes per annum CO2 savings.
- Initial CCUS project extended to facilitate further heat and power decarbonisation.
- Hydrogen network accepts fuel from other sources, supporting further deployment of renewables.
- Investment in hydrogen transport sets the scene for the UK to take the global lead in hydrogen vehicles and refuelling equipment.
- Skills hub for hydrogen and CCUS for national and international knowledge sharing.
- Other UK projects begin operation based on HyNet model.

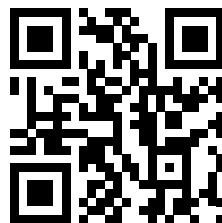
### Benefits

- 100m tonnes per annum CO2 savings.
- £31bn estimated Gross Value Added for the UK (£17bn in North West).
- Hydrogen supply from both natural gas and renewables.
- Use of HyNet approach to support decarbonisation across all four Cadent regions.
- UK becomes centre of expertise in global low carbon economy.

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