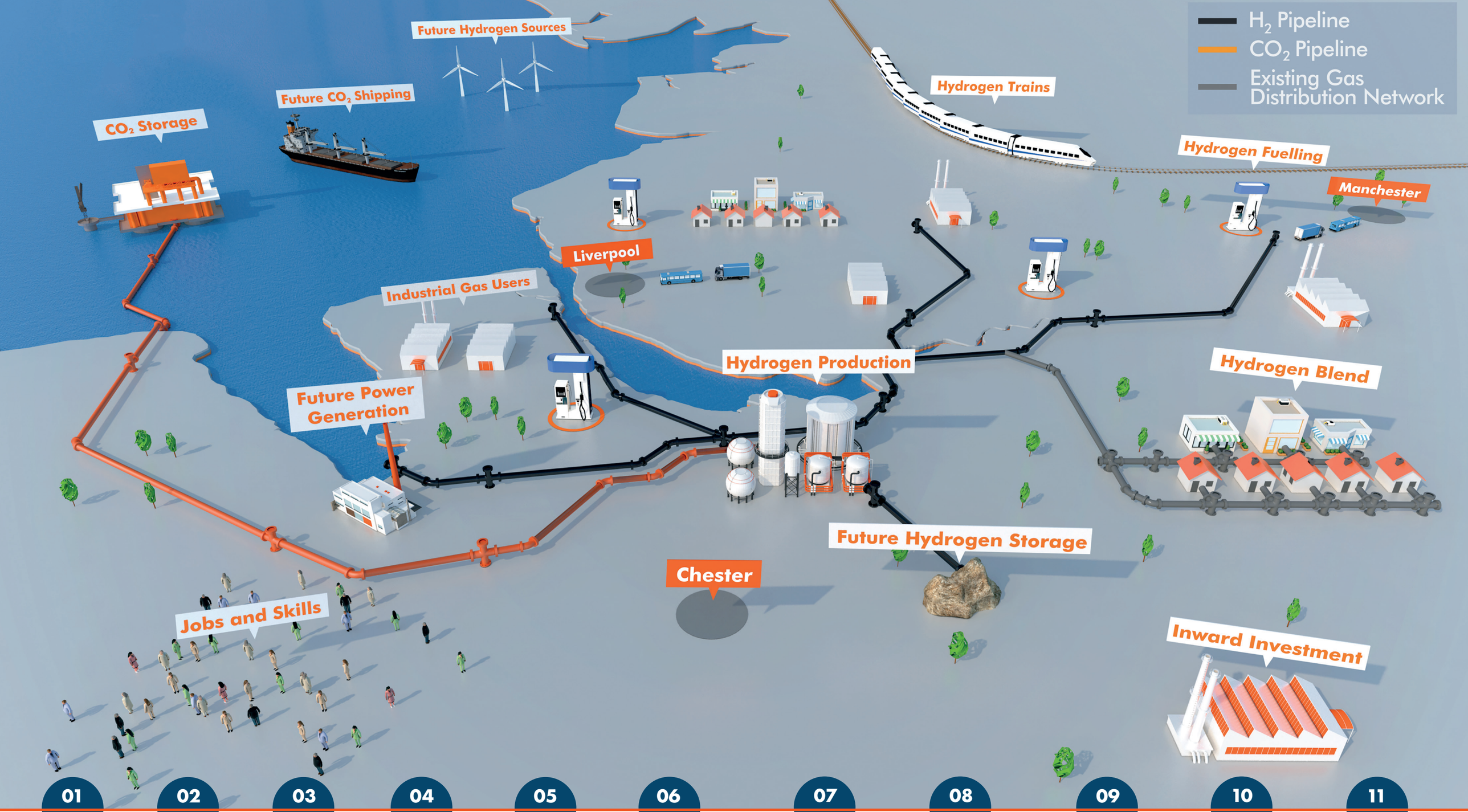
HyNet North West

UNLOCKING NET ZERO FOR THE UK



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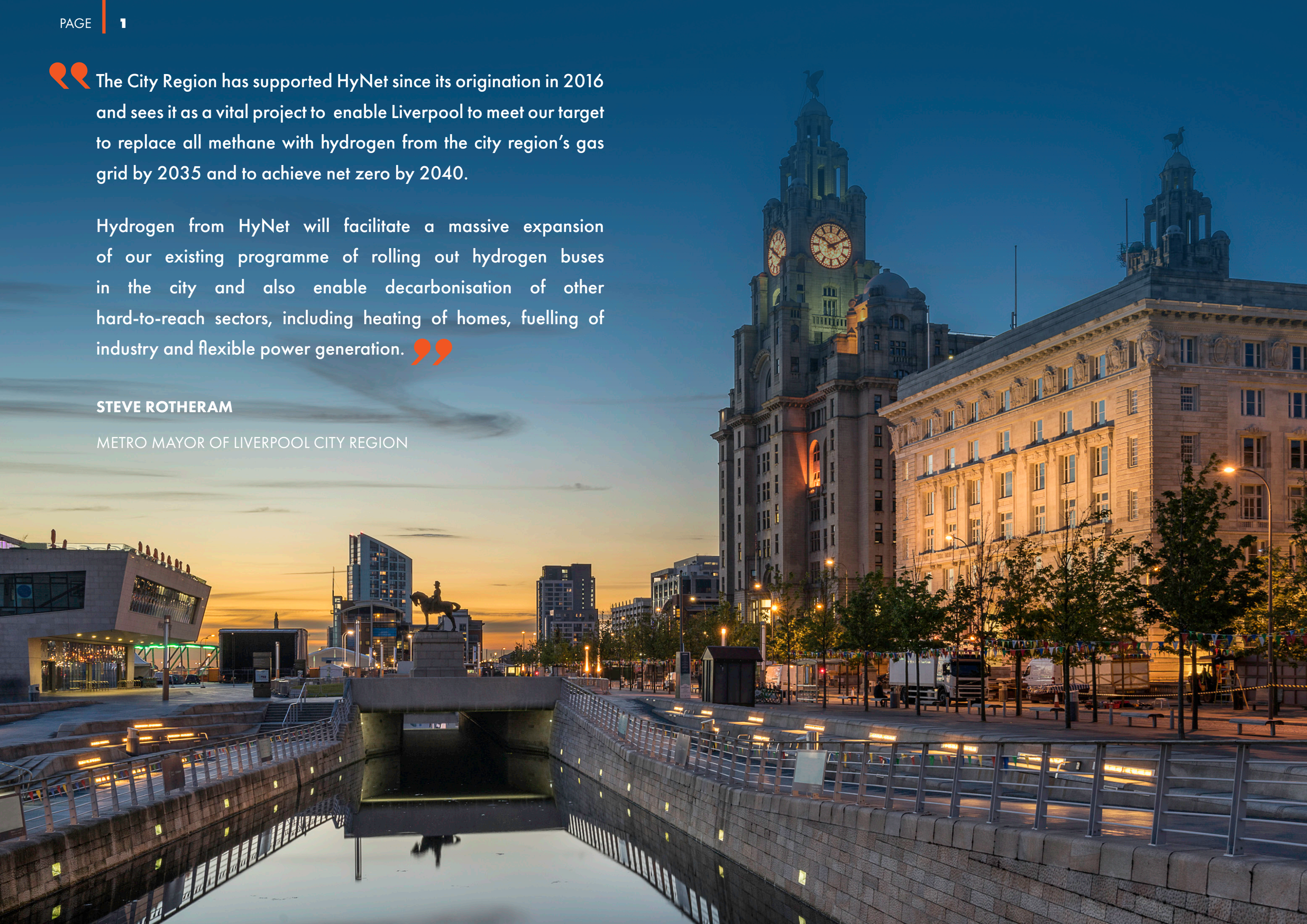
"The City Region has supported HyNet since its origination in 2016 and sees it as a vital project to enable Liverpool to meet our target to replace all methane with hydrogen from the city region's gas grid by 2035 and to achieve net zero by 2040.

Hydrogen from HyNet will facilitate a massive expansion of our existing programme of rolling out hydrogen buses in the city and also enable decarbonisation of other hard-to-reach sectors, including heating of homes, fuelling of industry and flexible power generation."

STEVE ROTHERAM

METRO MAYOR OF LIVERPOOL CITY REGION



01 HYDROGEN: BUILDING A SUSTAINABLE FUTURE

HyNet North West will play a critical role in the world's fight against climate change, accelerating the UK's transition to 'net zero' greenhouse gas emissions by 2050.

As a collection of world-leading organisations coming together to develop HyNet North West, our hydrogen network will produce, store and distribute hydrogen to decarbonise the North West of England and North Wales. Together with carbon capture and storage (CCS), these technologies have the potential to reduce carbon dioxide (CO_2) emissions by 10 million tonnes every year by 2030 – the equivalent of taking four million cars off the road.

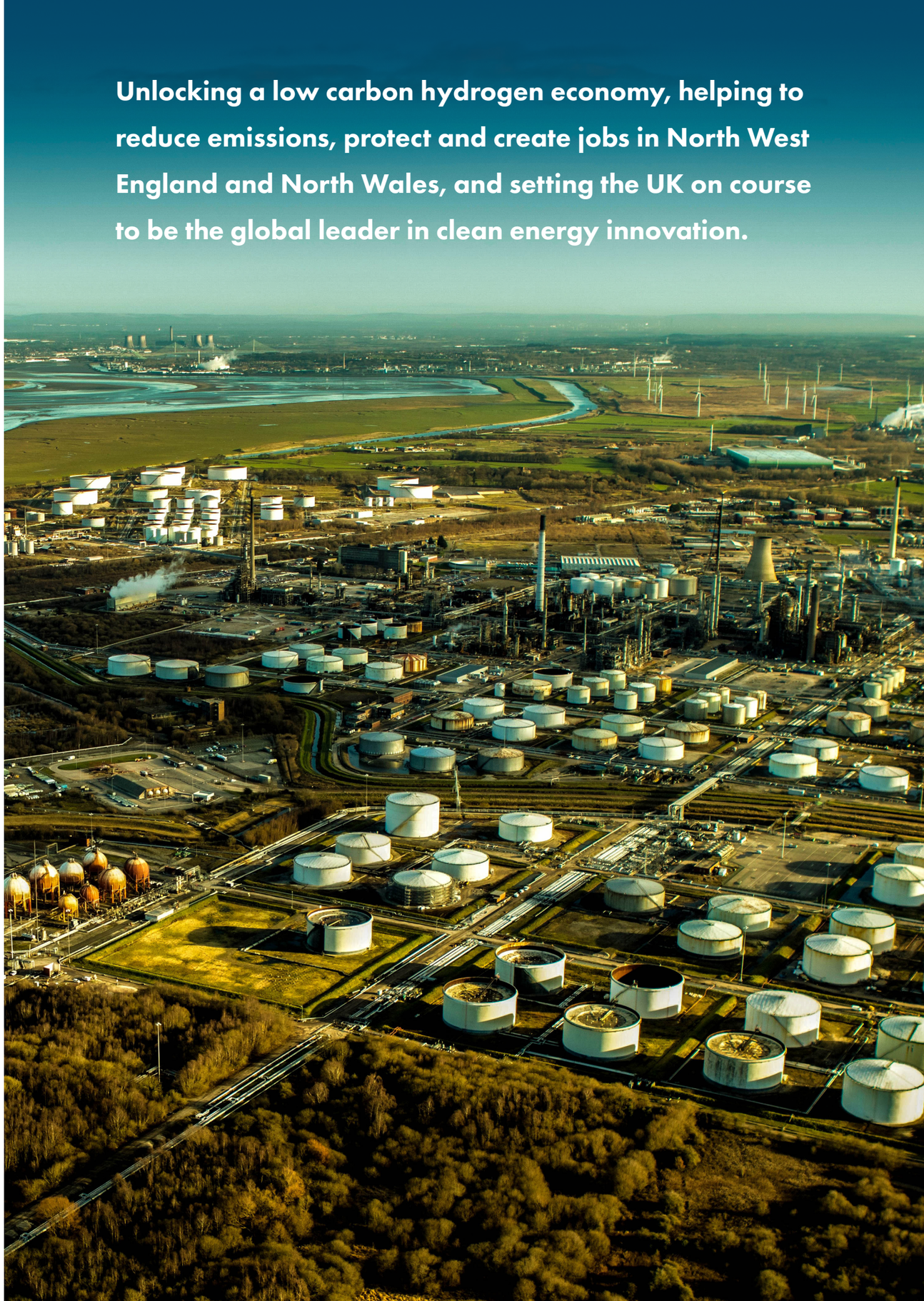
The project is a game-changer. It will realise the potential of the hydrogen economy through the creation of state-of-the-art infrastructure. It will offer a viable alternative to the use of natural gas, providing a safe transition to a decarbonised world.

HyNet North West will provide a lasting legacy for generations to come in North West England and North Wales. It will establish the region as a world leader in clean energy innovation, building on its rich industrial heritage with new solutions to combat climate change, and promoting the area as an attractive place for businesses to operate and invest.

HyNet North West is a regional project with national and global benefits. According to a 2020 report from the UK Hydrogen Taskforce, scaling up hydrogen solutions in the UK could support 75,000 jobs by 2035. This would offer opportunities for people in North West England and North Wales, and further afield, to develop new skillsets and train to work in exciting new sectors.

HyNet North West offers a once-in-a-generation opportunity to effect real change in energy production and consumption, creating the building blocks for a safer and cleaner world for generations to come.

Unlocking a low carbon hydrogen economy, helping to reduce emissions, protect and create jobs in North West England and North Wales, and setting the UK on course to be the global leader in clean energy innovation.



Doing things differently doesn't just mean a new set of policies – it means a new approach to managing energy altogether and, in working to decarbonise in the North West, we can create a blueprint for the world.

It wouldn't be the first time. We can change ourselves, and we can inspire change in others.

ANDY BURNHAM

MANCHESTER METRO MAYOR

02 THE TIME IS NOW

The hydrogen economy has been promised for many years with the prospect of low carbon, low cost fuel. This can become a reality with HyNet North West.

Following the UK Government's announcement in 2019 to set a legally binding target of net zero greenhouse emissions by 2050, nearly 70% of local authorities in England and Wales declared a climate emergency with many setting net zero goals earlier than the national 2050 target.

Working to implement this change will involve wholesale transformation of the way people live, travel, shop, work and do business. HyNet North West is a critical part of achieving net zero; the project will realise the ambitions of local and city authorities across Manchester, Liverpool, Cheshire, Warrington and North Wales, helping the wider decarbonisation of the UK.

Both Government and industry see hydrogen as having a clear role, alongside electrification, in creating a greener and cleaner future.

Now is the time to set the wheels in motion to deliver HyNet North West.

REGIONAL CONTEXT

HyNet North West is working with a wide variety of organisations to develop the project, and has strong support from regional leaders and business groups:

Liverpool City Region Combined Authority has declared a climate emergency and set a net zero target date of 2040.

Greater Manchester Combined Authority has declared a climate emergency and set a net zero target date of 2038.

Cheshire West and Chester Council has declared a climate emergency and set a net zero target date of 2045.

North West Hydrogen Alliance: an organisation comprising 21 members, which is helping drive the creation of an industrial hydrogen cluster in the North West.

Net Zero North West: a collaboration of industry leaders, which has come together to drive investment into the net zero economy and post COVID-19 green recovery in the North West.

NATIONAL CONTEXT

Our approach is supported by both central Government and industry.

The Committee on Climate Change (CCC), in its 2020 Progress Report to Parliament, recognises that hydrogen has an integral role to play in the UK's transition to net zero.

In its 2020 **Future Energy Scenarios** report, National Grid cites hydrogen as a central component in decarbonising industry and the heating of homes.

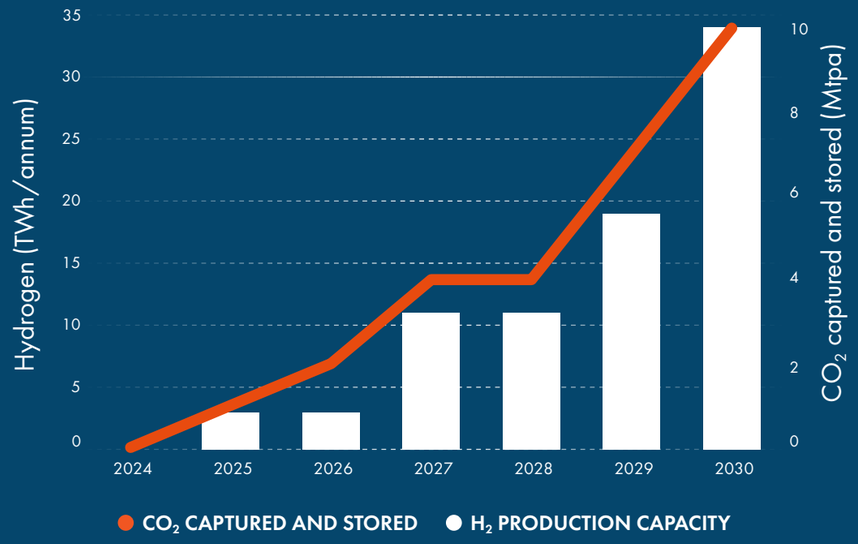
The Department for Business, Energy and Industrial Strategy's (BEIS) Industrial Decarbonisation Challenge aims to deploy carbon capture and storage (CCS) and hydrogen at scale across the UK's industrial clusters.

Early next year, the Government is set to publish its much anticipated national **hydrogen strategy**, where firm measures to facilitate delivery will be announced

Longer-term funding mechanisms and regulatory regimes to support the development and safe operation of HyNet **North West** are either in place or in development (see Chapter 8 for more information).

03 DELIVERABLE AND SCALABLE

While ambitious, we have deliberately planned HyNet North West in distinct, achievable stages to ensure that the first phase is delivered as soon as 2025, with expansion happening shortly thereafter to deliver widespread decarbonisation of the economy by 2030. These incremental stages will expand HyNet North West's capacity to deliver up to 10 million tonnes per annum (Mtpa) of carbon reduction by 2030, paving the way for wholesale hydrogen use in the future.



1Mtpa

TAKING **0.4M** CARS OFF THE ROAD

= 50,000 cars

4Mtpa

TAKING **1.6M** CARS OFF THE ROAD

10Mtpa

TAKING **4M** CARS OFF THE ROAD

2025: CO_2 ABATEMENT BEGINS

The initial phase of HyNet North West will reduce CO_2 emissions by over 1Mtpa.

Direct capture of **400,000** tonnes per year of CO_2 from one of our partners' major industrial sites.

Construction of the UK's first **low-carbon hydrogen** (LCH™)* plant to produce 3TWh per year of low carbon hydrogen at Stanlow Refinery. This is equivalent to the energy used for heating around a third of a million households with natural gas boilers for a year.

Repurposing existing natural gas pipelines for CO_2 and transporting over 1 million tonnes of CO_2 for **storage in depleted gas reservoirs under the seabed in Liverpool Bay.**

Building the UK's **first hydrogen pipeline network** to supply to local industry and to blend hydrogen with natural gas into local networks. Blending up to 20% hydrogen does not require changes to boilers or cookers, so provides meaningful decarbonisation of buildings with zero disruption for households and businesses.

*LCH is a trademark of the Johnson Matthey Group of Companies

2027-28: A FURTHER REDUCTION OF CO_2 EMISSIONS TO 3-4Mtpa

This will be achieved by deploying additional hydrogen production capacity, enabling us to expand blending into the network and supply a wider range of industry sites.

2030: CAPACITY TO REDUCE CO_2 EMISSIONS BY 10Mtpa

This is equal to 20% of the improvement needed to meet the UK's legally binding 5th Carbon budget for the period between 2028 and 2032. There is a clear plan for delivering this:

A further **one million** tonnes per year of direct CO_2 capture from industry.

Over **30TWh per year of hydrogen**, initially from Stanlow, then extending to further production sites across the region. This will be supplied to at least one major power station which runs on 100% hydrogen and used to to decarbonise heavy transport (trains, heavy goods vehicles, buses and ships).

Development of the first large-scale **underground storage** of hydrogen in the UK, with greater than 1TWh of capacity across multiple underground salt caverns in the Cheshire salt basin.

Around **350km of new-build pipelines** to create the first hydrogen network in the UK.

The CO_2 saving delivered by HyNet North West in 2030 is equivalent to the emissions from heating over 5 million households with natural gas boilers for a year.

EXTENDING DECARBONISATION TO THE WIDER UK ECONOMY

HyNet North West will subsequently be expanded into other areas, including further into Lancashire and Cumbria, Derbyshire, parts of the West Midlands and into additional areas of Wales.

To meet net zero, all buildings will need to move away from fossil-fuelled heating. To achieve this goal, in the 2030s, **HyNet North West** will supply **100% hydrogen** to heat buildings by converting relevant parts of the existing gas distribution network. Using hydrogen alongside electrification of heating will result in the lowest cost solution for households and businesses. Hydrogen is likely to be used both in standalone hydrogen boilers or as part of a hybrid solution involving electric heat pumps.

130TWh

By 2050, the project could deliver up to 130TWh per year of hydrogen.

50%

According to the Committee on Climate Change (CCC) in its 2019 Progress Report to Parliament, this is nearly 50% of the total hydrogen the UK needs to meet its net zero target.

04 CREATING JOBS AND OPPORTUNITIES

The concentration of industry, existing technical skill base and unique geology in North West England and North Wales offers an unparalleled opportunity for a hydrogen energy cluster.

The North West has a long and rich history as the home of industry in the UK and has the most manufacturing jobs of any UK region. Leading the way in hydrogen innovation is the next chapter in its story.

The North West has the most manufacturing jobs of any region in the UK, employing **345,000** people in 2019.

(Office of National Statistics)

There are more than **30** major manufacturing sites in the region operated by multinational companies including those in chemicals, glass, oil refining and various other sectors.

The North West currently contributes **£174 billion** in gross value added (GVA) to the UK economy, behind only London and the South East.

The combined effects of direct spend on HyNet North West, and from related inward investment, will result in **£31 billion** GVA for the UK as a whole and around **£17 billion** for the North West to 2050.

HyNet North West would establish the region as a global exporter of new technologies, skills and services.

HyNet North West will help to protect and expand on the North West's deep industrial heritage. The region is home to localised expertise and capacity for oil and gas exploration and storage, and its chemicals and refining sector is the largest in the UK.

New, exciting careers

HyNet North West is made up of a series of 'links' in a chain of hydrogen production, hydrogen pipelines, hydrogen storage, CO_2 capture, CO_2 pipelines and CO_2 storage. It offers significant growth prospects for people and businesses in a range of sectors and would establish the region as a world leader in energy innovation.

The diversity and scale of our approach will enhance the region's supply chain with opportunities for new and existing businesses, and expand the reach of local subcontractors across North West England and Wales.

A hydrogen-fuelled local economy will support ongoing growth for the region, while protecting and creating high-skilled career opportunities. HyNet North West will help maintain existing jobs and create a further **6,000** permanent jobs in the region, and many more during construction and across the wider UK. By kick-starting the hydrogen economy, HyNet will help support up to **75,000** jobs across the country by 2035.

Export of skills and services

The hydrogen and carbon capture and storage (CCS) chain represent major steps forward for low carbon energy technology and innovation in the UK. The North West's manufacturing verve and know-how will enable the region to capitalise on this opportunity.

Other nations have taken the lead on clean technologies like offshore wind energy and battery storage; HyNet North West is the UK's chance to be a global leader in energy innovation and build a skills base that can be exported to lead the world in clean hydrogen and CCS.

"HyNet is a critical part of the low carbon infrastructure that is needed in Cheshire & Warrington, and more widely across the region, to both make a material contribution to CO_2 emissions reduction from 2025 and to help the UK meet its net zero target in 2050.

HyNet is a highly deliverable project that can protect existing jobs and bring much needed new employment to the region at a time of great uncertainty resulting from the impacts of Covid-19 and Brexit."

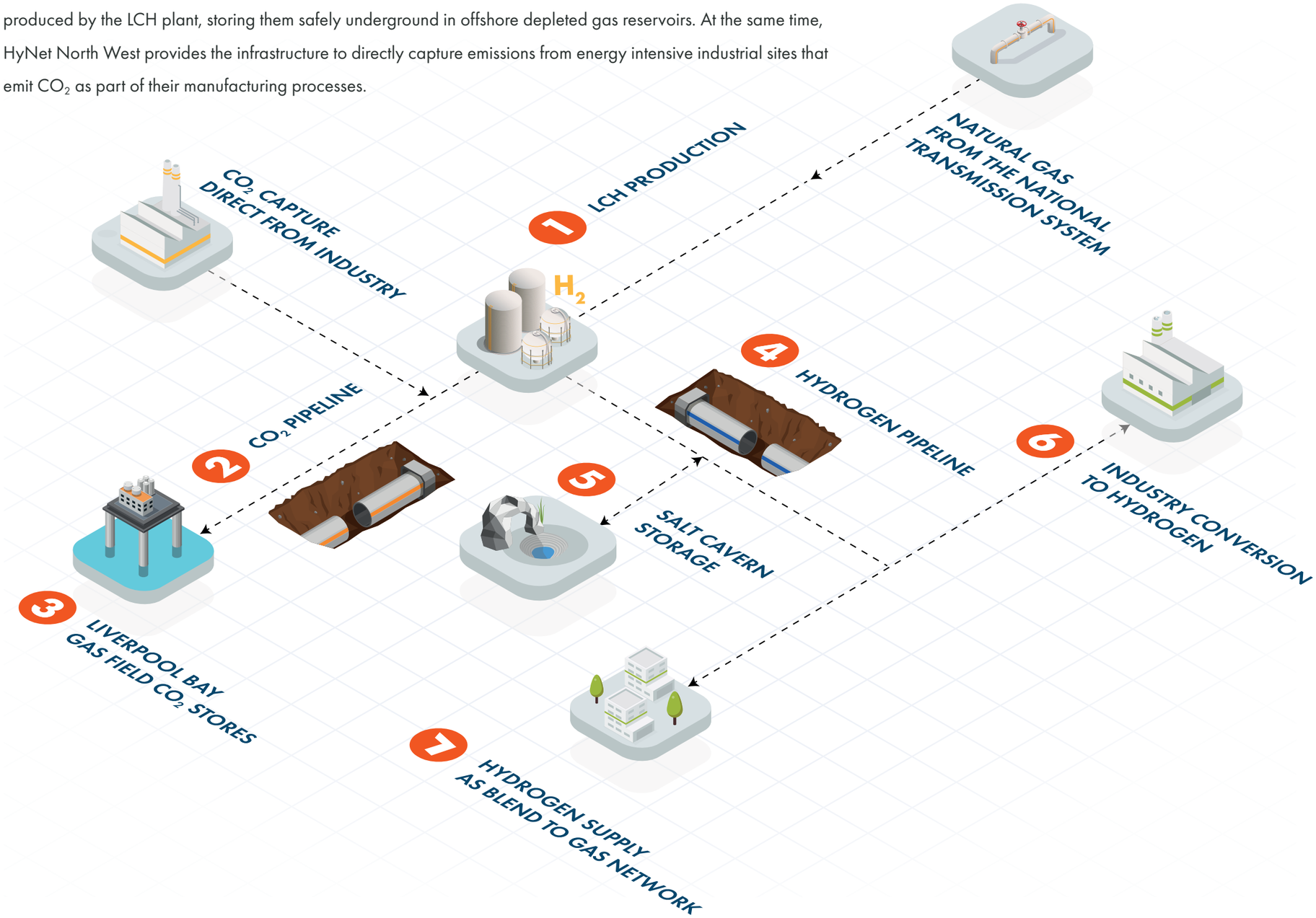
CLARE HAYWARD

CHAIR OF CHESHIRE AND WARRINGTON
LOCAL ENTERPRISE PARTNERSHIP

05 HOW IT ALL FITS TOGETHER

HyNet North West plans to build a low-carbon hydrogen production (LCH) plant at Stanlow Refinery. The hydrogen we produce will be transported by pipeline and provided for industrial, transport, home and business use.

The project also includes carbon capture and storage (CCS) infrastructure, which takes the CO_2 emissions produced by the LCH plant, storing them safely underground in offshore depleted gas reservoirs. At the same time, HyNet North West provides the infrastructure to directly capture emissions from energy intensive industrial sites that emit CO_2 as part of their manufacturing processes.



1. Natural gas will be fed into our LCH plant at Stanlow Refinery. The process splits this into hydrogen and CO_2, around 95% of which is captured for safe storage.

2. The CO_2 is then sent along a pipeline with CO_2 directly captured from other local industrial sites.

3. All the CO_2 captured is transported underground to be safely stored offshore in depleted gas reservoirs beneath Liverpool Bay.

4. The hydrogen produced will be both used as a fuel at Stanlow Refinery and distributed via new hydrogen pipelines.

5. To manage peaks in demand, hydrogen will be stored safely in underground salt caverns

6. Hydrogen will be supplied to manufacturing sites, and potentially power stations, across the region.

7. Some of the hydrogen will be blended with natural gas into the local pipeline distribution network for two million gas customers in and around Liverpool, Manchester, Warrington, Wigan and North Cheshire. This will result in no disruption to either domestic households or businesses.

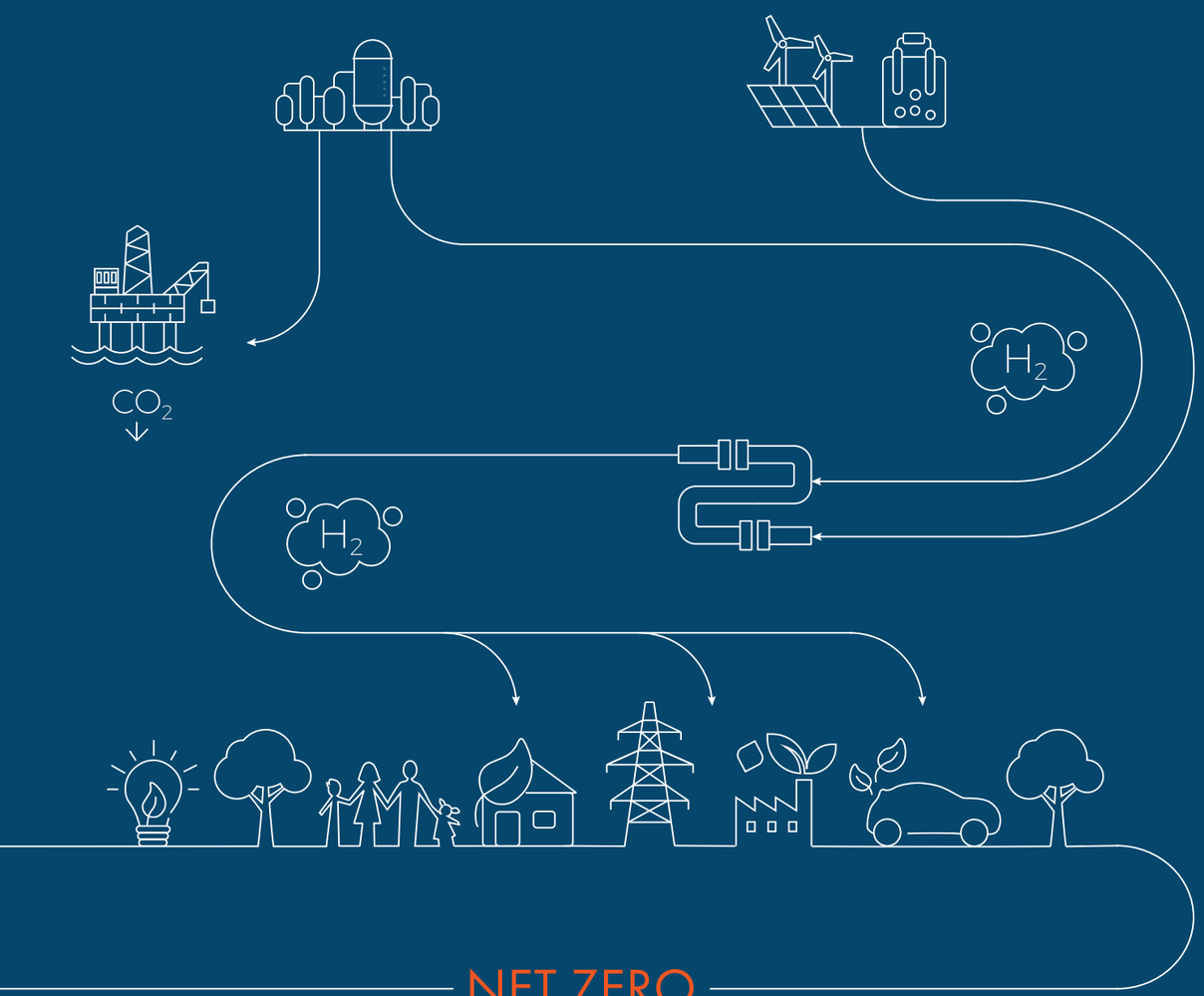
WHAT IS THE DIFFERENCE BETWEEN BLUE AND GREEN HYDROGEN?

BLUE HYDROGEN:

produced, on a continuous, non-stop basis, from natural gas using the low-carbon hydrogen (LCH) process. This is an advanced, highly efficient approach to splitting natural gas into hydrogen and CO_2 which is captured and safely stored.

GREEN HYDROGEN:

usually created using intermittent forms of renewable electricity generation (wind, tidal or solar) to extract hydrogen molecules from water using a process known as electrolysis



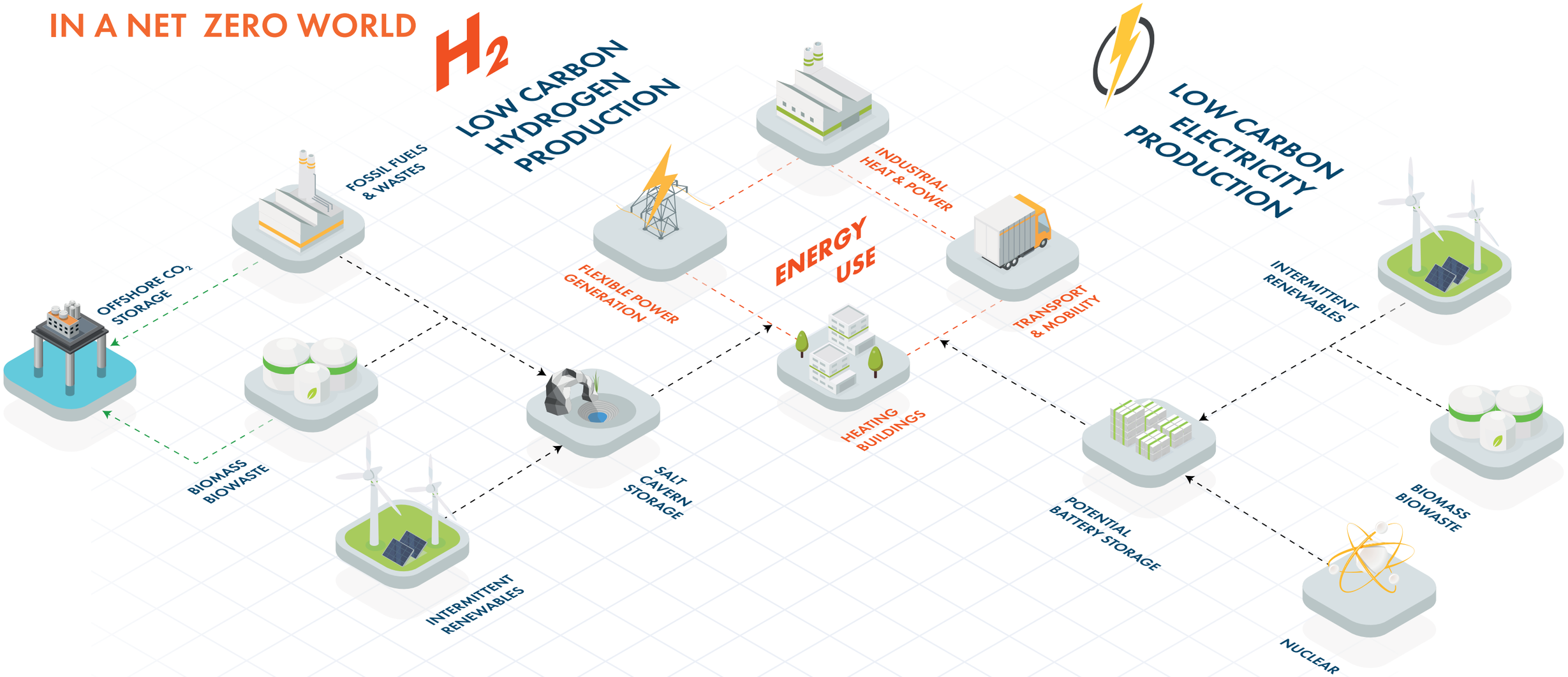
THE ROLE OF HYDROGEN IN REACHING NET ZERO

To meet net zero, the independent Committee on Climate Change (CCC) states that massive deployment of both blue and green hydrogen is necessary. We must move quickly on the path to net zero and blue hydrogen can be delivered by projects like **HyNet North West** at far lower cost in the shorter-term.

Blue hydrogen can now be delivered at the scale necessary to enable investment in the essential pipeline network, which significantly reduces the costs of transporting hydrogen.

Much in the same way as biomethane plants currently 'plug in' to supply green gas to the natural gas network today, green hydrogen will, in the future, supply into the hydrogen network and storage infrastructure created by **HyNet North West.**

ROLE OF HYDROGEN IN A NET ZERO WORLD



INDUSTRIAL HEAT & POWER

- Easy conversion to hydrogen of equipment already running on gaseous fuel
- Limited applications suitable for electrification, particularly 'direct-firing' processes

POWER GENERATION

- Flexible generation from hydrogen balances intermittent renewable electrical power generation

HEATING BUILDINGS

- Use of hydrogen in boilers and to meet peaks for hybrid heat pumps

TRANSPORT AND MOBILITY

- Hydrogen offers fast refuelling, longer range and is a light weight option for HGVs, buses, trains and ships
- Electrification is more suited to cars, vans and other 'stop-start' vehicles

HyNet is an exciting and ambitious industry-led project... Blue hydrogen projects such as this are recognised by the Committee on Climate Change as essential to supporting the UK's journey to carbon neutrality.

HyNet will lay the foundations and infrastructure for a long-term transition to renewable green hydrogen and transform West Cheshire into a world-leading location for clean growth.

COUNCILLOR LOUISE GITTINS

LEADER OF CHESHIRE WEST AND CHESTER COUNCIL

06 THE NATURAL PLACE TO SET NET ZERO IN MOTION

The North West and North Wales are perfectly set up to deliver the lowest cost hydrogen production and use in the UK.

Building upon and using existing infrastructure, we can support one of the UK's largest industrial clusters and help to re-energise the regional economy with new technology, skills, and jobs.

The North West industrial cluster is located close to ideal geological structures, reducing the cost of moving and storing both hydrogen and CO_2. The gas reservoirs in Liverpool Bay are due to reach the end of their economic life in time for CO_2 storage to begin in 2025. Further potential for CO_2 storage also exists in the nearby Morecambe Bay gas fields, which similarly could be repurposed for CO_2 storage in future. Both these sets of fields are relatively close to shore, reducing CO_2 transport and storage costs. Reusing existing natural gas infrastructure for CO_2 transport and storage minimises the capital cost of HyNet North West. Typically, operators and Government both share the costs of decommissioning oil and gas assets. By repurposing the depleted gas reservoirs, HyNet North West negates the need to decommission them, significantly reducing the burden on UK taxpayers.

- **CO_2 will be stored in depleted gas reservoirs under the seabed of Liverpool Bay**
- **Existing onshore and offshore pipelines will be reused for transporting CO_2**
- **Current offshore platforms will be reused to facilitate CO_2 storage**

The Cheshire salt basin is already used extensively for natural gas storage, and is suitable and available for hydrogen storage. In the longer term, additional salt fields are available in Lancashire and offshore in Morecambe Bay.

The scale and ambition of **HyNet North West** is significant, and the technology is safe and proven. Added to its low cost, the project is the UK's most attractive opportunity to drive the regional economy

Industrial users in the North West will benefit from HyNet North West's **continued development and expansion**. Industry use of hydrogen typically involves low cost conversion rather than major new equipment, enabling deep, cost-effective decarbonisation, which cannot be achieved by other means.

HyNet North West helps decarbonise power generation, which will provide the grid with the flexibility it needs to balance electricity supply from intermittent renewables. This will enable the construction of a **greater number of offshore wind farms**, supporting the wider journey to net zero.

To bridge the gap between the cost of natural gas and low carbon hydrogen, HyNet North West only needs support of around £25 per MWh of hydrogen produced. This is a **significantly lower level of support than needed by many other forms of clean energy** and so reduces the costs of the transition to net zero for both households and businesses.

According to a Government-funded study, the Hamilton gas field in Liverpool Bay is the UK's **most suitable, safe site for CO_2 storage.**

www.eti.co.uk/programmes/carbon-capture-storage/strategic-uk-ccs-storage-appraisal

07 COLLABORATIVE LEADERSHIP

Progressive Energy is leading the development of the CO_2 pipeline, and the hydrogen production plant. The company was formed over 20 years ago to commercialise CCS and is a project development business with significant commercial 'know-how' and engineering expertise. Progressive Energy has led other regional cluster projects, which included direct capture of CO_2 from industry and building of a new hydrogen power plant.

Cadent is leading the development of the hydrogen network and is the largest operator of gas networks in the UK, making it ideally placed to operate the hydrogen network. Cadent owns several other regional gas networks, so will be well positioned for the future expansion of HyNet.

Progressive Energy and Cadent are supported by a range of organisations which are either consortium partners or closely engaged on the project.

HyNet North West has received funding support from the Cheshire & Warrington Local Enterprise Partnership through their Local Growth Fund.

NORTHERN POWERHOUSE HM Government

Cheshire and Warrington 87 Local Enterprise Partnership

HyNet North West is a network of separate but integrated consortia that together will deliver remarkable benefits. Each is led by industry experts who are working collaboratively across the network of hydrogen production, distribution, usage and storage and in carbon capture and storage.

ESSAR

eni

CF

HyNet North West

JM

inovyn An INEOS company

PROGRESSIVE ENERGY

Cadent

SNC·LAVALIN

InterGen

encirc

University of Chester

PILKINGTON

SOLVAY

JAGUAR

LAND ROVER

Novelis

Ibstock Brick

PEEL

uniper

Unilever

Cargill

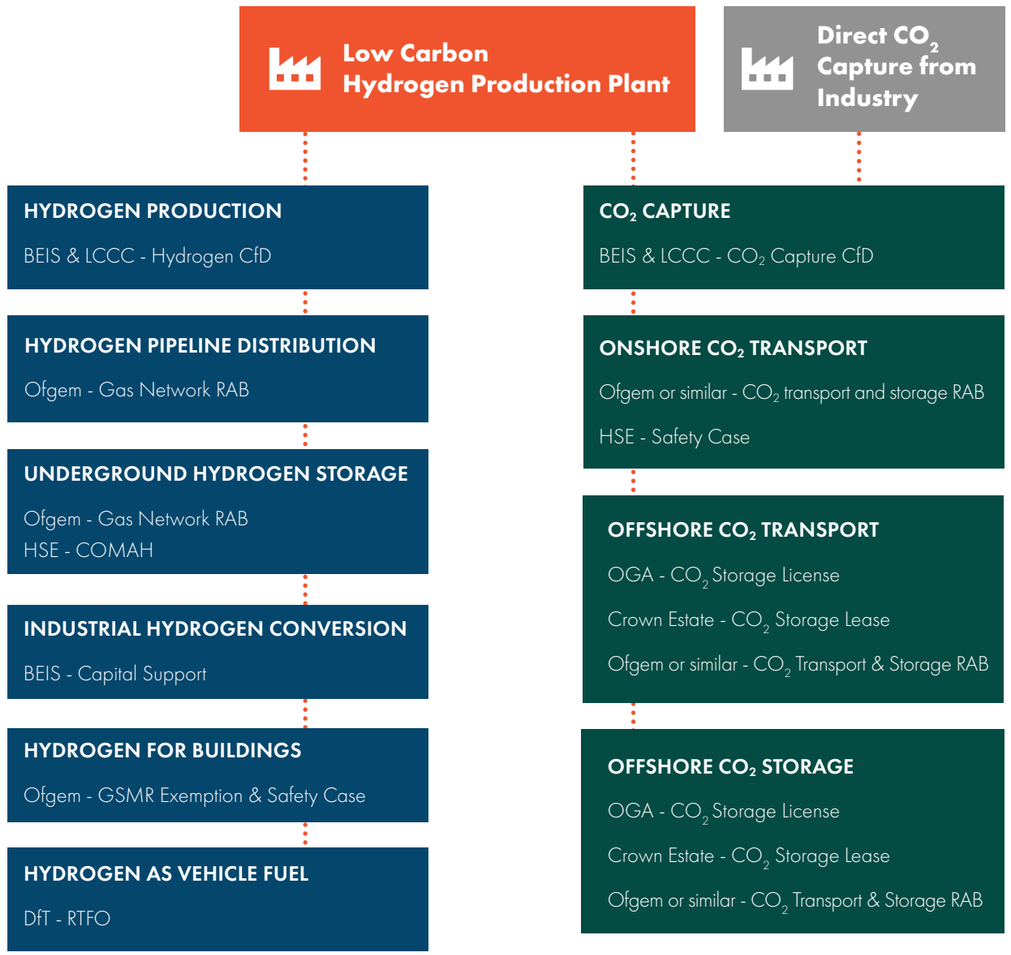
NET ZERO NORTH WEST

North West Hydrogen Alliance

cpw Cereal Partners Worldwide Nestlé and General Mills

08 KEEPING IT SIMPLE FOR INVESTORS

To bridge the gap between the basic costs of natural gas and hydrogen, tried-and-tested policy mechanisms will be used. There is a lot of perceived complexity to funding integrated hydrogen and CCS projects, but much has been done in the UK to develop policy and regulatory mechanisms that facilitate investment. Below is a comprehensive picture of all those mechanisms. Clarity in respect of these mechanisms will reduce perceived risk for investors and so lower the cost of capital for the project.



WHO IS INVOLVED?

The **Department for Business, Energy and Industrial Strategy (BEIS)** is responsible for UK energy policy and is working with industry to agree the most efficient approach to supporting hydrogen production (and storage) and CO_2 capture. This Expert Working Group is considering such approaches as a **'Contract for Difference' (CfD)** a version of which already exists to support low carbon electricity generation. A CfD guarantees that the low carbon generator will receive a fixed price for the electricity it sells into the market. This gives generators and their investors price certainty throughout the length of the contract, usually 15 years.

The existing **Low Carbon Contracts Company (LCCC),** a private company funded by BEIS, is well placed to manage and make payments to companies which have been awarded CfDs, as is the current case for electricity generation.

The **Department for Transport (DfT)** is responsible for transport policy and can amend the existing **Renewable Transport Fuel Obligation (RTFO),** to enable hydrogen to be sold as vehicle fuel at a price comparable with petrol and diesel.

Hydrogen and CO_2 pipelines along with hydrogen storage can be funded using the existing **Regulated Asset Base (RAB)** model, an existing system managed by the **Office of Gas and Electricity Markets (Ofgem)**. The RAB model provides for regulated returns which are suited to investment from the likes of pension funds, which rely on long-term, stable returns.

The **Crown Estate** owns the seabed below British waters, and has an established system to enable leasing of sub-sea land for transport and storage of CO_2.

The **Oil and Gas Authority (OGA)** runs an existing licensing regime for CO_2 storage license. Eni UK, a collaborating party in HyNet North West, has been awarded a CO_2 storage licence for fields in the Liverpool Bay Area for a work programme leading to an application for a storage permit.

The **Health and Safety Executive (HSE)** will regulate and oversee the safety of hydrogen distribution to homes and businesses, along with hydrogen storage and CO_2 transport. For hydrogen blending, this will be undertaken using the existing **Gas Safety Management Regulations (GSMR),** with the transport and storage of hydrogen and CO_2 governed by the existing **Control of Major Accident Hazards (COMAH) regime.**

Planning permissions for HyNet North West will be managed by both the Secretary of State for **BEIS** and local planning authorities.

09 STARTING AN ONGOING CONVERSATION

We will proactively bring stakeholders, local communities, industry and the supply chain along with us on every step of the journey. We want our proposals to be a true reflection of the needs and priorities of the area and attract a skilled and experienced workforce.

We will collaborate with government agencies, councils, combined authorities, regional planners, delivery bodies and local communities to enhance their understanding of HyNet North West as the UK's best hydrogen cluster proposition. These efforts will help shape our considerations and planning for the design of the hydrogen network, hydrogen production and CCS infrastructure.

This conversation will run parallel to continued dialogue with utilities, industry associations and prospective partners to increase awareness of HyNet North West's environmental benefits and economic potential.

The game-changing nature of HyNet North West will deliver exciting employment, training and education opportunities for local communities, but we know there may be concern about local effects of the scheme, particularly during construction. That's why we will carry out consultation with local people and businesses to ensure we can take their views on our plans into account to minimise these effects wherever possible.

As momentum for hydrogen builds, we will continue to work with Government and industry to highlight HyNet's essential role in decarbonising the North West and wider UK. We will engage at a level that demonstrates the magnitude of the opportunity for clean growth and involves more people in the conversation about the positive legacy we can create for future generations.

For more information on the planning process for HyNet, please see www.hynet.co.uk/community

10 ON TARGET DELIVERY

HyNet North West is targeting 2025 for first operation. The project has hit its first major milestone by beginning the planning process for the pipeline infrastructure, and is on course to meet its target date.

There are several key stages to developing and deploying **HyNet** North West. As shown below, we have completed all feasibility activities and are well into the second main phase of development which consists of detailed engineering design and planning.

HyNet North West is undertaking significant work to demonstrate that the technologies we plan to use will be safe and deliverable:

- **HyNet Industrial Fuel Switching (IFS)** programme – this includes hydrogen demonstrations at Unilever and Pilkington and an associated project at Essar's Stanlow Refinery.
- **HyNet Hydrogen Supply (HSP)** – this is a Front-End Engineering Design (FEED) study of the hydrogen production plant at Stanlow Refinery, which also includes application for planning consent.
- **HyDeploy** – we are currently injecting a hydrogen blend into a 'closed' gas network at Keele University and will shortly inject a similar blend to a greater number of houses and businesses in an open network.
- **HyMotion** and **H2GV** – we are gathering a range of technical evidence to support hydrogen demonstrations for heavy good vehicles (HGVs), trains and other freight transport.

HyNet North West is also working closely with the Government's **Hy4Heat** programme and the Gas Network Innovation Competition funded **H21** programme, both of which focus on longer-term conversion of the existing natural gas network to hydrogen.

2016

2016 – 2017 PROJECT ORIGINATION

'Liverpool - Manchester Hydrogen Cluster'

2017 – 2018 PROJECT FEASIBILITY

HyNet

2020

HyNet Hydrogen

2019 PRE-FEED

2020 – 2021 PRODUCTION: FEED/CONSENTS

2020 – 2023 DISTRIBUTION: CONSENTS

HyNet CCS

2019 PRE-FEED

2020 – 2023 FEED/CONSENTS

2022

2016 – 2022 EVIDENCE DEVELOPMENT PROGRAMMES

HyMotion · HyDeploy · HyNet Industrial Fuel Switching · H21 · Hy4Heat

2023

FINAL INVESTMENT DECISION

START OF CONSTRUCTION

2025

HyNet Extensions

ADDITIONAL H_2 SUPPLY

FURTHER INDUSTRY H_2 CONVERSION

FURTHER INDUSTRY CO_2 CAPTURE

ADDITIONAL NETWORK BLENDING

TRANSPORT REFUELLING

FLEXIBLE POWER

BIOENERGY CCS (BECCS)

AN UNMISSABLE OPPORTUNITY

www.hynet.co.uk

CRITICAL STEP TOWARDS NET ZERO

HyNet North West will reduce CO_2 emissions by up to 10 million tonnes every year by 2030. This is the equivalent of taking over 4 million cars off the road, or heating over 5 million households.

Could provide nearly 50% of the total hydrogen the Committee on Climate Change says is required to meet UK's net zero target.

Plays a critical role in the UK's net zero energy system by enabling more offshore wind generation and later green hydrogen production.

LOW COST AND DELIVERABLE

The North West's gas network is getting 'hydrogen ready', with 77% of gas pipelines recently replaced to enable hydrogen transportation.

A Government-funded study highlighted HyNet North West's CO_2 storage site in Liverpool Bay as the safest, most suitable site in UK waters.

Proximity to sites for CO_2 and hydrogen storage and the reuse of existing infrastructure means this is the lowest-cost hydrogen and carbon capture and storage (CCS) solution in the UK.

AN AMBITIOUS GROWTH OPPORTUNITY

By 2050, direct spend on HyNet North West and related inward investment would mean £17 billion for the regional economy, and £31 billion for the UK.

Regionally HyNet North West would directly provide 6,000 permanent new jobs and contribute to a further 75,000 jobs nationally by 2035, with thousands more temporary jobs in construction.

HyNet North West will secure first-mover advantage for the UK and make the North West a global exporter of new technologies, skills and services.