

# Invest Net Zero Cheshire

## A Blueprint for Industrial Decarbonisation

IKIGAI



CATAPULT  
Energy Systems



As we recover from the COVID-19 global pandemic and look ahead to the UK's presidency of the United Nations climate conference, COP 26, the green industrial revolution is more critical than it has ever been.

Decarbonising industry is a vital part of the jigsaw and we must act quickly to reduce carbon emissions, safeguard industry and protect jobs.

Here in Cheshire we have developed a blueprint that will unlock capital investment in a net zero carbon industrial cluster. We have set out an unrivalled range of projects which collectively offer long-term, sustainable investment opportunities in net zero. We have the opportunity to lead the way in Cheshire and once proven here we could see this innovative approach across the UK and even overseas.

Ged Barlow,  
Chair of the Cheshire Energy Hub





## WHY CHESHIRE?

Cheshire, in the North West of England, is home to one of the UK's largest industrial clusters. The region features major manufacturing employers, including oil refining, glass manufacture, nuclear enrichment, fertiliser and chemicals production, and automotive.

This concentration of industry means the area around Ellesmere Port consumes around 5% of the UK's energy. Cheshire West and Chester council have declared a 'Climate Emergency'.

Located along the M56 corridor between the cities of Chester, Manchester and Liverpool the area has access to a highly skilled workforce, academic institutions and R&D expertise which can drive innovation. Across the North West the drive towards net zero could deliver £4 billion investment and 33,000 jobs.

Cheshire is the prime location to invest in a decarbonised industrial cluster. It is the only region that is already decarbonising all elements of the energy system, with an unrivalled range of projects which collectively offer long-term, sustainable investment opportunities in net zero.

*“We have identified £1 billion of low carbon investment opportunities across Cheshire”*

INTERESTED IN INVESTING? FIND OUT MORE INSIDE.

# INVEST NET ZERO CHESHIRE

The UK has set a legally binding target to reach net zero carbon emissions by 2050. With industry accounting for a quarter of all carbon emissions, it's vital that we find ways to decarbonise this sector, while safeguarding the manufacturing jobs that make the local economy thrive.

Invest Net Zero Cheshire has developed a roadmap towards net zero that will drive inward investment into the low carbon energy and transport decarbonisation projects already identified or underway, across:

- Energy efficiency
- Low carbon and renewable power
- Heat and fuel generation
- Carbon capture, utilisation and storage
- Energy storage
- Refuelling infrastructure and vehicle conversion
- Private power and heat networks

We have an opportunity to deliver a new whole energy system which could provide secure, low carbon and lower cost energy to support our vital industries. Once proven in Cheshire, this innovative approach to industrial decarbonisation could be replicated across the UK and even overseas.



# THE APPROACH

To reach net zero we need to find ways to decarbonise the energy used by industry. To understand the current carbon emissions of industry in the area and the potential carbon savings of current and future low carbon projects, the energy use of industry was split into four energy vectors (or 'carriers'): electricity; heat; hydrogen; and gas.



## HYDROGEN

Hydrogen, when produced using renewable electricity, is a zero-carbon energy source. Production of 'green' hydrogen increases overall electricity demand, however hydrogen can be used to replace natural gas in industrial processes where the use of electricity is not suitable. Projected future electricity demand to enable increased hydrogen production was assessed.

The North West is also home to leading hydrogen and carbon capture project HyNet, which is initially exploring options around 'blue' hydrogen with carbon capture technology to capture associated carbon emissions. Hydrogen can also be used as an energy storage medium and safely stored in underground salt caverns, which are abundant across Cheshire.



## GAS

An assessment was made of the residual net natural gas demand which is not ready for transition to electricity or hydrogen use, either due to technical or commercial barriers faced by industrial users.

To continue the journey to net zero beyond the Net Zero Cheshire route map, trials are upcoming to explore hydrogen injection into the natural gas distribution network to create a gas blend. The HyDeploy project is trialling blending hydrogen in the gas network in Keele, with further demonstrations planned for the North East and North West. Carbon capture and storage can also provide a route to net zero for industrial users with residual natural gas demand if appropriate commercial incentives can be captured.



## ELECTRICITY

The electricity distribution network that supplies the area is managed and operated by SP Energy Networks. Electricity delivered through the distribution network is generated through a mixture of fossil fuel, nuclear and renewable generation. Increasing the amount of low carbon electricity generated and used by industry is key to reducing carbon emissions. Locations within the project area were identified that would be suitable for renewable energy projects, including solar PV and wind for electricity generation.



## HEAT

Heat demand is generally met using natural gas. Natural gas is a carbon-intensive fuel and heat source. Replacing it with low carbon alternatives, such as industrial waste heat, hydrogen or electrification via renewable sources is vital to reduce carbon emissions.

The use of industrial heat within the region was evaluated to identify suitable projects that could be deployed to reduce the carbon intensity of heat demand.

The feasibility of using waste heat, generated from industrial processes, to be re-used was also assessed. This included evaluating the potential for heat networks, which link heat generators to heat users to improve the efficiency of heat use and to reduce waste.

## DEVELOPING A PROJECT PORTFOLIO

Firstly, industrial energy users were contacted to understand their existing and future energy demands. From this a portfolio of projects was developed by assessing each energy vector for opportunities to reduce carbon emissions for individual industrial energy users. The projects identified and shortlisted were assessed for their commercial viability and investment opportunity.

The portfolio was then holistically evaluated to determine the overall net benefit across all four energy vectors, which produced a refined portfolio of projects and a blueprint for reaching net zero carbon emissions.

## CORE PRINCIPLES FOR PROJECT IDENTIFICATION

Immediacy,  
scale &  
replicability

Affordability  
and  
inclusivity

Local skills  
development  
and jobs  
growth

Aligned with  
and enabling  
existing  
projects

Catalysing  
capital  
investment  
to achieve  
Net Zero

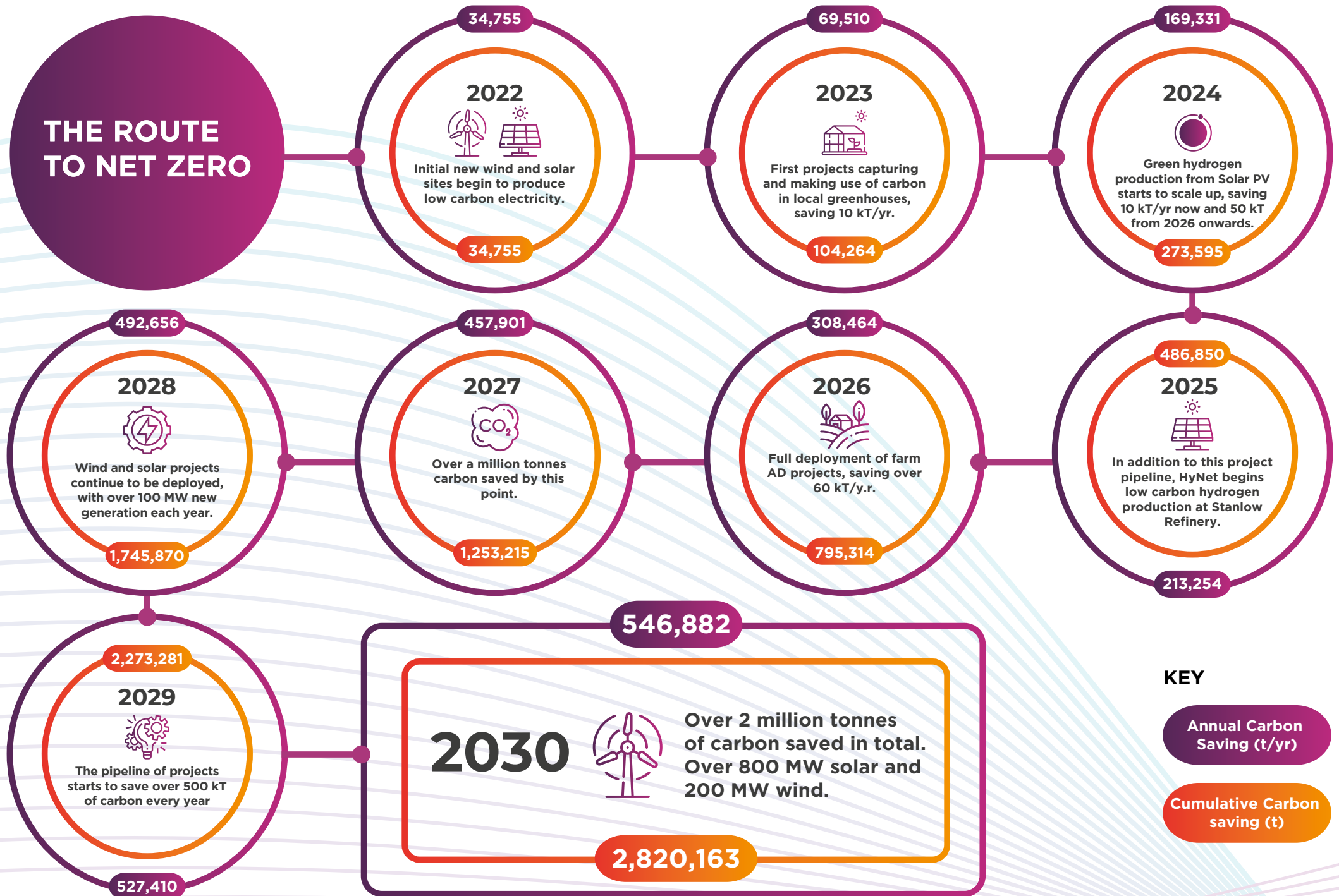
Multi-vector,  
multi-  
technology,  
energy and  
transport

All elements  
of the value  
chain

Demand and  
feedstock  
aggregation

Circular  
economy and  
systems  
thinking

# THE ROUTE TO NET ZERO



## KEY

Annual Carbon Saving (t/yr)

Cumulative Carbon saving (t)

## PROJECTS

Invest Net Zero Cheshire has produced a portfolio of viable projects that meet the aim of net zero carbon emissions whilst satisfying the energy demands of the area. This blueprint offers long term, sustainable investment opportunities in net zero.

All of the projects are essential to the decarbonisation, sustainability, productivity and competitiveness of the Cheshire and Warrington region. But, with the right public and private sector support, they are also bankable and deliverable.

Invest Net Zero Cheshire has identified a number of new investment opportunities to accelerate this transition. We also acknowledge that a number of pre-existing initiatives exist which will also play a significant part in decarbonisation. Some of these, which occur within the 10-year timeline of our modelling we have considered directly. Other pre-existing projects are beyond the scope of this work and so may constitute viable next steps to close the remaining gap to net zero after 2030.

For more information on the projects identified, visit the project website:  
[www.investnzcheshire.co.uk](http://www.investnzcheshire.co.uk)



SOLAR



WIND



HYDROGEN



GREENHOUSE HEAT AND CO2 UTILISATION



ANAEROBIC DIGESTION



SUSTAINABLE MULTI-FUEL TRANSPORT HUB(S)



PRIVATE WIRE

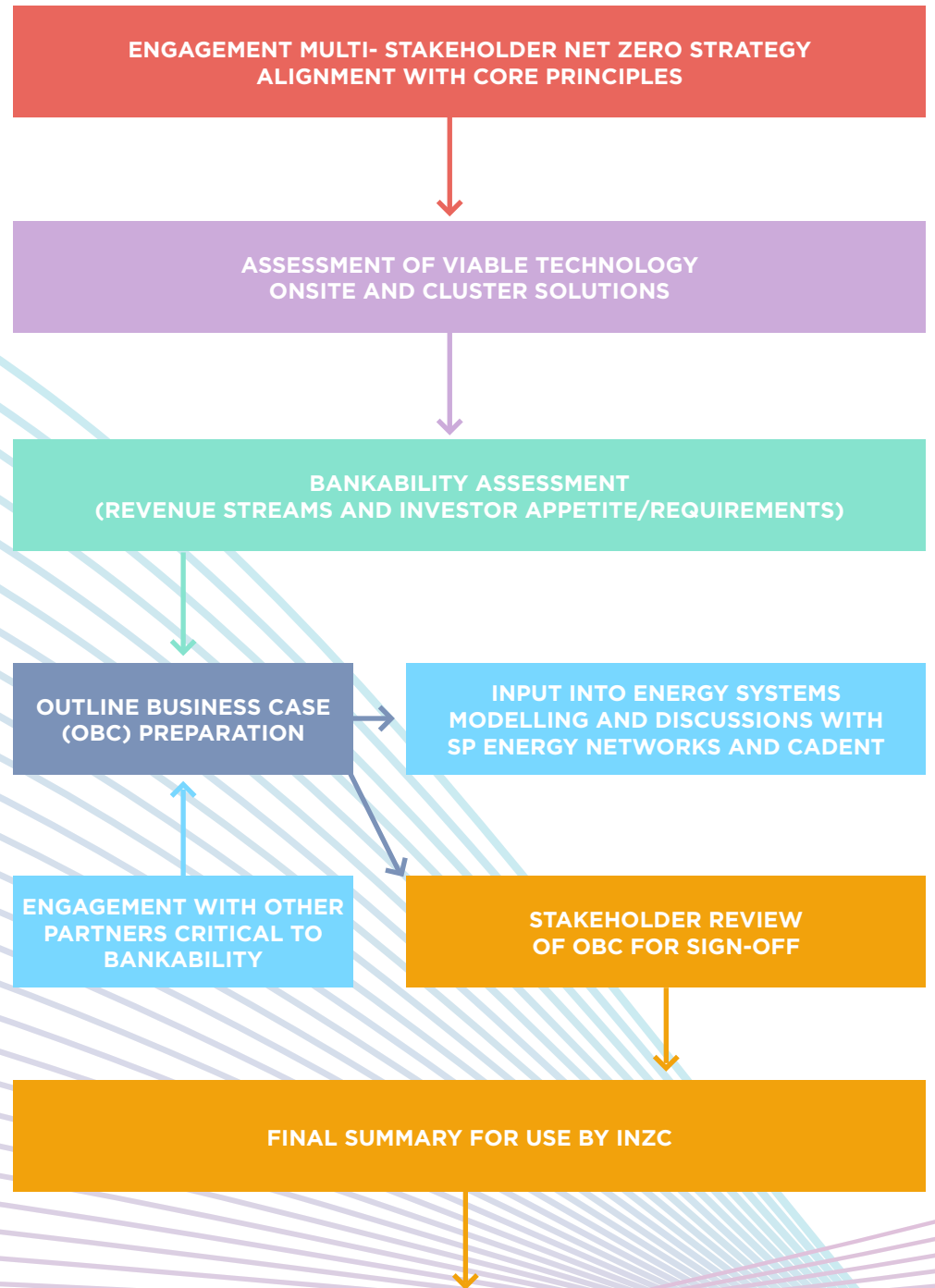


CARBON CAPTURE



# DEVELOPING AN INVESTMENT PORTFOLIO

The project followed a robust assessment process focused on the needs of potential investors, which included the preparation of outline business cases for identified projects.



# GET INVOLVED

Want to get involved in Invest Net Zero Cheshire?

## INVEST

Invest Net Zero Cheshire offers long-term, sustainable investment opportunities in net zero across an unrivalled range of low carbon energy projects. Outline Business Cases for each project are available on the Invest Net Zero Cheshire website. If you are interested in investing contact [info@ikigai-capital.co.uk](mailto:info@ikigai-capital.co.uk)

## COLLABORATE AND INNOVATE

Delivering net zero will require collaboration between a variety of different stakeholders. Cheshire is already a melting pot of ideas where education and industry are co-located. To realise the energy transition, we must draw on the extensive knowledge, technology and delivery capabilities of local businesses. If you have a world-leading technology, a targeted business model, or a team of operational experts which could complement or advance any element of the Invest Net Zero Cheshire blueprint contact [support@c&wgrowthhub.co.uk](mailto:support@c&wgrowthhub.co.uk)

## DEMONSTRATE OR RELOCATE

Whether you're a business already based in the area or looking for the place to grow your business, Cheshire is aiming to deliver the lowest cost, low carbon energy for future business growth. If you'd like to discuss how your business can benefit from the lessons learned by Invest Net Zero Cheshire or take advantage of world-class infrastructure and cheaper, greener energy contact [support@c&wgrowthhub.co.uk](mailto:support@c&wgrowthhub.co.uk)

FOR GENERAL ENQUIRIES, PLEASE CONTACT:

[www.investnzcheshire.co.uk/contact](http://www.investnzcheshire.co.uk/contact)

[info@ikigai-capital.co.uk](mailto:info@ikigai-capital.co.uk)

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