



Pioneering a
Net-Zero Future

 Net Zero
North West

An aerial photograph of a wind farm at sunset. The sun is low on the horizon, creating a warm, golden glow. Several wind turbines are visible, with the one in the foreground being the most prominent. The landscape is a mix of green fields and a dirt road.

Net Zero North West's Transformative Vision for a Sustainable North West

Net Zero North West is an industry-led cluster, acting as a combined public and private sector investment accelerator, to promote industrial decarbonisation and clean growth. The partnership unites world leading manufacturers, multi-national companies, regional leaders, and a network of academic experts with a common goal to become the world's first decarbonised industrial cluster.

Funded and driven by industry, the cluster proudly collaborates with industrial powerhouses in the Liverpool and Manchester City regions, as well as across Cheshire, Warrington, Lancashire, Cumbria, and North Wales.

In our relentless pursuit to propel the North West towards a net zero carbon future, Net Zero North West passionately champions transformative initiatives on five key fronts:

Energy efficiency, energy generation, investment, innovation, skills and the supply chain.

Major North West current and future industrial decarbonisation project locations/contributors



30 Billion
near term investable projects with
£207 Billion
overall investment opportunity

Safeguarding and creating
34,500
green jobs in near term with
660,000
green jobs in future

Saving
46 Million tonnes
of CO2 including
17 Million tonnes
from industry

Leading the charge in renewable energy



Net Zero North West stands prominently at the forefront of catalysing change - from driving the surge in renewable energy to calling for regulatory evolution. Research shows that the North West is the nation's leader of manufacturing new, low-carbon technology, and has the highest number of potential jobs in green tech manufacturing.

Driving the net-zero trajectory



Embracing hydrogen and ammonia as pivotal players in the net-zero trajectory, we envision a sector that is not only competitive but also highly investible, emphasising a shift from mid-term Blue to Green hydrogen.

Industrial decarbonisation



Going beyond mere vision, Net Zero North West actively addresses planning barriers through streamlined processes, a stable policy framework, and coordinated governance, with a specific focus on prioritising industrial decarbonisation.

Global green tech hub



As we strive to elevate the region, Net Zero North West harbours aspirations of transforming the North West into a global green tech hub. This involves a fervent call for increased public investment and the forging of innovative partnerships, including recognising the indispensable role of skilled professionals.

Skilful transition



We are also committed to advocating for a comprehensive skills strategy, ensuring that the workforce is well-equipped to lead the UK's Net Zero transition.

From underscoring the significance of rail connectivity to lending support to the transition in decarbonising heat, Net Zero North West presents a holistic vision for a sustainable and thriving North West future. Join us in shaping a cleaner, greener, and more resilient North West.



The Manifesto

This manifesto is a collective industry partnership commitment and call to action to ensure our region has the constituent parts required to be at the forefront of delivering industrial decarbonisation and clean growth.

The world's first net zero industrial region

The North West Industrial Cluster has a roadmap to deliver the world's first net zero industrial region by 2040. It outlines a £30bn investment pathway in a diverse mix of technologies over the near-term targeted at decarbonising major heavy industrial sectors across the North West and North Wales.

Categories include power sector decarbonisation, wide scale hydrogen production and use, industrial energy efficiency measures including electrification of processes, bioenergy with carbon capture and storage (BECCS), and industrial CCUS at industrial plants. The plan includes a complex portfolio of projects, with inherent interdependencies throughout.

The cluster plan work made a clear recommendation for creating an enabling institution to work across these areas and support delivery of the cluster plan projects. Net Zero North West is working in partnership with industry, regional and national government, to move towards coordinated delivery of the plan.

The following will be required if we are to be successful, and we are calling for further government support and assistance to enable this:

- Policy certainty and incentives driving forward key technologies including Hydrogen and CCUS, balancing the price of hydrogen and providing financial support for decarbonisation.
- Development of enabling infrastructure including addressing planning and regulatory permitting challenges, improved regional grid connectivity, access to suitable low carbon transport networks, water network capacity, and delivery of hydrogen and CO2 pipelines.
- Consistent and effective regional communications on the industrial decarbonisation agenda to local, regional, and national audiences.
- Development of appropriate skills, workforce, and systems.
- Provision of overarching leadership, oversight, and assurance to monitor and oversee progress of the complex and evolving portfolio of projects within the cluster plan and support delivery of multiple projects in parallel.

Energy Efficiency

Driving Net Zero Through Proactive Energy Efficiency Initiatives

In addition to transitioning to new, low or zero carbon, energy sources, it is essential that we use energy more efficiently across the North West. A clear strategy for Energy Efficiency is not only vital to achieving the UK's net zero ambition but can also greatly accelerate progress towards this goal, as recognised by Government's target to reduce total energy demand across all sectors by 15% from 2021 to 2030.

The Energy Efficiency First principle, adopted by the EU, prioritises investments in energy efficiency and demand-side resources whenever these options are more cost-effective than investments in energy supply, and we believe a similar approach should be adopted in the North West and the UK. Alongside other measures, implementing the Energy Efficiency First principle can significantly accelerate the energy transition in the Northwest.

We are calling for Government to:

- Implement the "Energy Efficiency First" principle
- Mandate implementation of energy efficiency measures for industrial sites in the UK.
- Utilise the UK ETS to drive the uptake of energy efficiency measures.
- Highlight the importance of data and digitalisation as a key enabler for energy demand reduction.

Championing a Net-Zero Carbon Future

Energy Generation

Clear and Ambitious Hydrogen and Ammonia Strategies

Hydrogen, ammonia and CCUS are inextricably linked. The Climate Change Committee identified a strong role for hydrogen and ammonia to meet the UK's ambitious net zero trajectory. In addition to being used as a low carbon fuel in the maritime sector, ammonia will also be required as a means of transporting and storing hydrogen.

There are similar challenges and opportunities for the North West in the Aviation sector. There is a NW initiative, bringing together Manchester & John Lennon airports, airline operators, HyNet and the North West Hydrogen Alliance to develop a strategy for hydrogen in aviation for the North West.

The North West has the potential to be 'way ahead' of London airports as a hydrogen Hub, as the HyNet project provides significant volumes of hydrogen, together with INOVYN's storage site (HyKeuper) close to Manchester airport, providing a very resilient supply of significant volumes of fuel, essential in the aviation industry. However, investment is required in aircraft development (which the manufacturers have already started) and hydrogen liquefaction facilities (which no one is doing at present).

In addition, although 'Blue' Hydrogen has the initial market lead due to lower production cost, as we transition to 'Green' Hydrogen, the Government needs to take a joined-up approach giving the necessary support across the value chain from production to storage to transport and offtakes in order for it to work. Policy framework and financial support is needed to bring all this together.

We are calling for:

- Competitive and investible hydrogen (including mid-term Blue to Green transition) and CCUS business models to draw inward investment into the North West to support decarbonisation.
- An investment framework and stable policy environment for hydrogen and production, distribution, storage, and fuel switching.
- Support for commercial scale demonstrations and beyond: - a) for hydrogen use in all sectors including domestic, power, industrial and transport e.g. support for hydrogen into HGVs and aircraft; - b) for ammonia use in aviation and shipping including the development of low carbon regional maritime and aviation hubs.
- Amend the Renewable Transport Fuel Obligation to include hydrogen as a vehicle and aviation fuel and ammonia as an aviation/shipping fuel which will provide a strong driver for manufacturers and fleet operators to make the necessary investment decisions.

Nuclear

The North West has considerable expertise across the whole of the nuclear lifecycle. The region is currently home to over 35% of the nuclear workforce nationally, with more than 27,000 people employed in the area contributing more than £3.9bn GVA to UK economy. It also has an unrivalled history of delivering first-of-its-kind nuclear technology, welcoming host communities and consented sites, making it the ideal location for the siting of new nuclear generation opportunities.

In Lancashire, the two Heysham nuclear power plants employ more than 1,100 people. Springfields Fuels, also in Lancashire, and Capenhurst in Cheshire, together with their extended supply chain, employ many hundreds more, providing vital fuel fabrication and uranium enrichment services, providing energy security to the UK and valuable exports to the world, including Ukraine, eliminating dependence on Russia.

In the wake of significant turbulence in global energy markets resulting from the climate crisis and Russia's invasion of Ukraine, we have seen a rise in Government defence spending and significant focus on how Great Britain will accelerate homegrown power for greater energy independence. An estimated 140,000 additional people will be needed across the UK Nuclear Sector (in both civil and defence) by 2050, from engineers and welders to technicians and safety personnel. The North West has a significant role to play in this.

Government's recent formation of Great British Nuclear provides the opportunity to deploy our skills and expertise to deliver the next generation of nuclear energy generation, in particular Small Modular Reactors, with significant private sector investment committed to making this a reality. This investment funding is time limited.

We are calling for:

Government to recognise the role that the North West can play in delivering new nuclear in its roadmap to 2050, including a positive siting decision for early deployment of Small Modular Reactors in West Cumbria and Lancashire and continued investment to ensure nationally critical skills are not lost as our existing nuclear fleet retires. Heysham 1 will retire in March 2026, and Heysham 2 in 2028, while Springfields, which supplies the stations with fuel, will see its demand fall. A major new nuclear programme will secure the future of those communities, and those of others across the country.



Investment

Grid Infrastructure Upgrades

The government and private investors have spent £198bn on renewable power infrastructure since 2010. However, North West industry is warning that significant delays to connect their green energy projects to the system will threaten their ability to bring more green power online. Some new solar and wind sites are waiting up to 10 to 15 years to be connected because of a lack of capacity in the system.

There are currently more than £200bn worth of projects sitting in the connections queue. Around 40% of them face a connection wait of at least a year, according to National Grid's own figures. That represents delayed investments worth tens of billions of pounds. It's not just new (green) generators that are being delayed by NGENSO. Very important hydrogen economy infrastructure projects, such as HyNet and INOVYN's hydrogen storage projects are being delayed by available connection dates to take power from the system. We are now being told power will not be available until 2037, 10 years too late!! So, we have generators not allowed to supply and green industrial consumers desperate to take and no wires in between for 15 years.

The problem is so many new renewable projects are applying for connections, the grid cannot keep up. The system was built when just a few fossil fuel power plants were requesting a connection each year, but now there are 1,100 projects in the queue.

The National Grid ESO has been attempting to rectify delays in connecting to the electricity network issue by removing stalled projects from the transmission entry capacity (TEC) register via a new initiative. This will allow new projects to be connected to the national electricity transmission network quicker.

We are calling for:

- Ofgem to accelerate investment in the transmission and distribution networks and to focus on a shift to a strategic rather than reactive approach.
- A CEO-led plan from the system operator, transmission, and distribution networks for immediate measures to address constraints. These should include joined up and effective queue management and a smarter, more flexible approach to unlock capacity.

Innovation

Planning Policy

Despite strong intentions and policies to address carbon emissions, the UK planning system presents several significant barriers that hinder the progress of industrial decarbonisation. Industrial decarbonisation projects often require substantial upfront investments, which can be challenging to secure due to perceived financial risks. The uncertain planning process and potential delays make investors hesitant to commit to such projects, particularly when there is no guarantee of a smooth and timely approval process. Specific issues include:

- **Complex and Lengthy Planning Process**

The UK planning system is notorious for its complexity and often lengthy approval process. Large-scale industrial decarbonisation projects, such as the establishment of low-carbon infrastructure or renewable energy facilities, can be delayed for years due to the need for multiple permits, environmental assessments, and public consultations. These bureaucratic hurdles discourage investment and deter businesses from pursuing carbon reduction initiatives.

- **Lack of Clear Policy Framework**

A major obstacle to industrial decarbonisation is the absence of a coherent and consistent policy framework. The UK's climate goals and regulations have evolved over time, resulting in uncertainty for businesses seeking to align their strategies with the national vision. Frequent changes in policies can lead to confusion, and industries may hesitate to make substantial investments without a stable and long-term policy roadmap.

- **Land Use Restrictions**

Industrial decarbonisation often requires the development of new infrastructure or repurposing existing facilities. However, the UK planning system faces challenges in identifying and allocating suitable land for low-carbon projects. Zoning restrictions and limited availability of industrial sites can hinder the implementation of transformative projects, restricting the country's overall progress towards decarbonisation.

- **Fragmented Decision-Making**

The UK planning system involves multiple levels of government, including local, regional, and national authorities. This fragmented decision-making process can lead to conflicts and discrepancies in aligning industrial decarbonisation projects with broader climate objectives. Cooperation and coordination among different governing bodies are essential to ensure a streamlined approach towards low-carbon initiatives.

- **Overemphasis on Economic Growth**

The UK planning system has traditionally prioritised economic growth and development over environmental concerns. This approach has led to a bias towards approving projects that promise short-term economic benefits, often neglecting the long-term implications of carbon emissions. Shifting the focus towards sustainability and decarbonisation requires a fundamental shift in planning principles.

To successfully tackle the challenges of industrial decarbonisation in the UK, the planning system must adapt to the urgent need for sustainable development. We are calling for:

- A streamlining of the planning process, where large scale industrial decarbonisation projects can be approved at a national rather than local level.
- A stable long term policy framework, addressing land use restrictions, which will provide the surety that private investors need to make large-scale long-term investments in decarbonisation infrastructure.
- A coordinated and integrated approach among different levels of government to ensure that industrial decarbonisation is given the priority it deserves, leading the UK towards a greener and more sustainable future.

Local Energy System Regulation – the case for Industrial Smart Grids

The North West is developing a blueprint for a decentralised low carbon energy system for the Energy Innovation District – an area surrounding the industrial heartland of Ellesmere Port in Cheshire – which could deliver cheaper and cleaner energy for power, heating, and transport.

This model for a regional smart grid could be applied nationally and exported internationally and sets out a new way for energy to be traded locally in a defined geographical area. However, this is not possible within the current regulatory framework, with single peer to peer arrangements as the only option.

We are calling for:

- A parliamentary commission to be set up, bringing together government, the regulator Ofgem and business, to evaluate how the current regulatory framework can be repurposed to accelerate the transition to low carbon energy in industry. Examples might include:
 - Can we use flexibility to defer reinforcement (accelerating connection to the grid)?
 - Can we artificially increase headroom through having available flexibility?
 - Assessing how much flexibility do we need to have contracted to offer firm connections over and above asset limits?
 - Do we need some form of incentives and penalties?

Decarbonisation of Heat/Electrification as part of Decarbonising Industry

In the pursuit of decarbonising industry, the focus on the electrification of heat presents both challenges and opportunities. Without the right intent and signals, decarbonising heat remains a significant barrier. This initiative involves transitioning to heat pumps, a complex engineering process with associated costs, potentially hindering adoption without adequate support and incentives. There are several challenges:

- Moving to heat pumps will not be straightforward and requires a lot of engineering at quite a high cost compared to installing gas boilers and as a result may be deemed too difficult for many businesses without such support, clarity, and incentive.
- The price of electricity is still interlinked with gas due to residual reliance on gas fired power stations to produce electricity and electricity costs remaining directly proportional to any increase in gas prices. As a result, we support the planned increase in lower-cost renewable power capacity as this will ensure heat pumps become more economically viable, weakening that link and interdependence between gas and electricity prices.
- Given the early stage of deployment of heat pump technologies, we believe the Non-Domestic Renewable Heat Incentive was removed too early, and while there is limited grant support across public and private sector, we would encourage the reintroduction of an incentive mechanism to support this key topic.
- At site and grid level, heat pump projects will typically require grid reinforcements and therefore our call for accelerated grid infrastructure upgrades and reduced planning complexity, is highlighted by the opportunity for decarbonising heat.

We are calling for:

- Government to develop a strategy to support the decarbonisation of heat to assist our overall transition to net zero.

Review of Electricity Market Arrangements (REMA)

We agree with a move away from marginal pricing, where gas-fired generation sets the wholesale electricity price whenever it is called on to generate. Increasing gas and carbon prices are already leading to much higher wholesale electricity prices than reflects the portion of zero-margin, low-carbon generation in the mix.

With increasing renewables penetration, this issue will only become more acute, as on demand (gas-fired) generators are required to cover their operational costs with lower levels of activity. Policy to roll out hydrogen-fired and CCS-abated gas-fired generation will also inflate wholesale costs when these technologies are generating under the current model. Whereas the UK's foundation industries need secure, stable, and competitively priced electricity if they are to make use of it to decarbonise their heat demand.

We are calling for:

Government to prioritise splitting the market, even if that means bringing action on this element forward before wider reforms.

Sustainable Transport Projects

The contribution of North West airports in fostering markets for Sustainable Aviation Fuel, aimed at maximising opportunities at Stanlow Terminal during its shift away from high carbon fuels, has been mentioned.

However, the North West is also leading the way in EV vehicle and battery development through investments which have been made at Ford, Stellantis and Jaguar Land Rover's plants. In addition, improving rail connections to major industrial sites holds immense potential for enhancing sustainable travel in numerous ways.

Firstly, upgrading rail infrastructure can significantly reduce road congestion and the associated carbon emissions. By providing efficient passenger and freight rail options, commuters and cargo can shift away from fossil fuel-dependent vehicles, lowering the overall environmental impact.

In the area of freight transport, bolstered rail connectivity enables industries to move goods more efficiently and sustainably. Trains are inherently more fuel-efficient and emit fewer greenhouse gases per ton-mile compared to trucks, making rail freight an environmentally responsible choice. Reduced reliance on long-haul trucking also mitigates road wear and tear, leading to lower maintenance costs and safer roadways.

Furthermore, investing in rail connections promotes economic growth by facilitating the movement of raw materials and finished products. This can attract businesses to locate near rail hubs, fostering regional development and job opportunities.

We are calling for:

- Government to continue to promote innovation in aircraft design and development to accelerate the shift to low carbon fuels.
- Government to include improvements to rail connectivity to industrial sites, as part of all plans to upgrade national rail infrastructure in future.



Skills and the Supply Chain

Skills needed for Industrial Transformation

Meeting the skills needs for industrial decarbonisation is a multifaceted challenge that requires a coordinated effort from government, educational institutions, and industry stakeholders.

Technical Expertise

The foremost skill requirement for industrial decarbonisation is technical expertise. Engineers, scientists, and technicians skilled in renewable energy technologies, carbon capture and storage (CCS), energy-efficient manufacturing processes, and advanced materials are indispensable. They design, implement, and maintain the systems and technologies needed to reduce emissions across various industries.

Data Analytics and AI

The application of data analytics and artificial intelligence (AI) plays a pivotal role in optimising industrial processes for decarbonisation. Data scientists and AI specialists are needed to develop algorithms that can identify inefficiencies, predict maintenance needs, and enhance energy management systems, leading to reduced emissions and cost savings.

Regulatory and Policy Experts

Decarbonisation efforts are often guided by complex regulations and policies. Skilled professionals in environmental law, policy analysis, and regulatory compliance are essential for ensuring that industries meet emission reduction targets while remaining compliant with legal requirements.

Supply Chain Management

An often-overlooked aspect of industrial decarbonisation is the supply chain. Professionals with expertise in sustainable supply chain management can help industries source materials and components with lower carbon footprints, contributing to overall emissions reduction.

Project Management

Managing large-scale decarbonisation projects requires specialised project managers who can coordinate multidisciplinary teams, set clear goals, and ensure projects stay on schedule and within budget. Skilled project managers are crucial for the successful implementation of emission reduction initiatives.

Public Relations and Communication

Public acceptance and support are essential for the success of industrial decarbonisation initiatives. Skilled communicators can bridge the gap between technical experts and the public, explaining the importance of these efforts, addressing concerns, and garnering support.

We are calling for:

- Government to develop, publish and support a skills strategy to drive the development of Net Zero skills to delivery of the UK's Net Zero transition. This should include the development of new course content and learning in Apprenticeships, Further Education and Higher Education to equip our young people for the future.
- Continuous training and upskilling opportunities for existing industry professionals are also vital and this needs to be part of a holistic strategy.





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