

**Manchester
Metropolitan
University**

**NET
ZERO**
NORTH WEST

The Net Zero Skills Challenge

**Developing a
Net Zero 2030
Action Plan**





Phase 1 of the Net Zero Skills vision

Executive Summary

To achieve net-zero skills a coordinated programme of interventions will be required.

To develop the skills needed, the report presents the following findings and recommendations:

- This report presents findings from Phase 1 of the work to identify the engagement and views of those involved in an industry and stakeholder consultation.
- The report focuses on the qualitative analysis of industry and wider stakeholder engagement to date.
- Business as usual demand-led development and provision of training will not be enough to achieve net-zero.
- Immediate action is required to address communication around the role of Net Zero skills.
- There is not a requirement to completely change the skills system but to address the enhancement of the Net Zero requirement.
- There is an immediate requirement to co-create a Net Zero understanding that can be shared with all to inform current job roles across many sectors.
- A commitment to a specific decarbonisation pathway is required. The suggested course of action within the report is the creation of a North West Skills Charter.
- The next phase of the Net Zero NW Skills project will establish a working group of stakeholders from academic institutions, industry and city regions to conduct a gap analysis of existing course content and plan for needed revisions.

Chair Foreword

Building on the UK's leadership as the first major economy to legislate to end our contribution to climate change by 2050, in November 2020 the Prime Minister set out his **Ten Point Plan for a Green Industrial Revolution**ⁱ. Spanning energy, transport and industry and mobilising £12 billion of government funding, this Plan is the first step in capturing the once in a lifetime opportunity to lead the charge and pursue a global green recovery, level up the country, and support jobs throughout the UK as we accelerate on our path to reach net zero by 2050.

Net Zero North West (NZNW) is an industry-led partnership, uniting business, regional leaders and academia to build a strong voice and holistic vision for industrial decarbonisation in the North West. The recent NZNW **Economic Investment Prospectus**ⁱⁱ that has been developed showcases the investment opportunities presented by the North West of England's drive to achieve net zero emissions by 2040 for industry, our communities, and the built environment. We must align the agenda for skills and what this means with net zero in mind. The reforms to the skills system set out in the recently published **Skills for Jobs White Paper**ⁱⁱⁱ provide the foundation on which we can build which is referenced within the recently published **Green Jobs Taskforce report**^{iv}. This programme of reform, which placed employers at the centre of our technical education system, includes the introduction of new T Levels, flexible apprenticeships, Skills Bootcamps and occupational traineeships.

To reference the **Green Jobs Taskforce report**, across the UK there are already over 410,000 jobs in low carbon businesses and their supply chains, with turnover estimated at £42.6 billion in 2019, and the value of goods and services exported by UK low carbon businesses exceeding £7 billion.

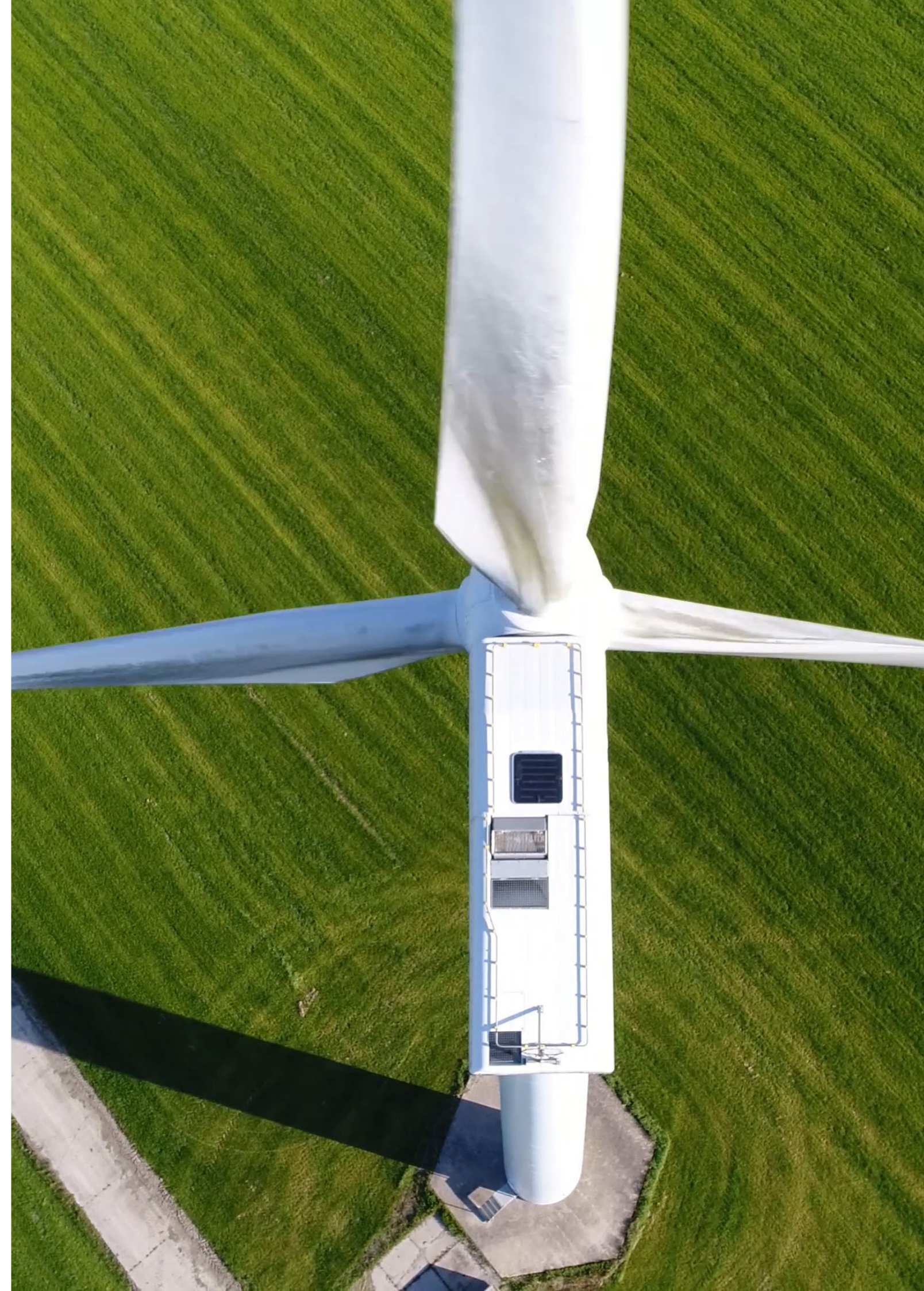
The skills system must play its part managing the transition to net zero so we can quickly enable more students, individuals, and businesses to prosper as the economy develops.

Manchester Metropolitan University have been tasked with developing and leading a technical skills group for NetZero NW. In the first stage of developing a skills pathway, Industrial Members (Board of NetZero NW and other invited guests) provided oversight and defined the pipeline of skills that will need to be developed. This report presents outcomes of a consultation exercise to shape the skills pathway and inform the development of a skills action plan.

The action plan we will develop will be supported by a wide range of organisations who helped identify and prioritise the key actions which will address these skills challenges and opportunities as we move forward to the next stage and develop and devise our action plan to 2030.

Professor Andy Gibson

Pro Vice Chancellor
Faculty of Science & Engineering, Manchester Met Uni





Background

The North West has recently launched ambitious proposals to become a UK leader in tackling the climate emergency and boosting a green recovery from the coronavirus pandemic - Net Zero North West (**NZNW**) has been working with Manchester Metropolitan University to develop a collective North West response for a skills action plan that will be developed through a collective approach by North West Universities and the Further Education sector with full support from industry and regional leaders.

These stakeholders came together in order to understand changing skills requirements more thoroughly, to develop a pipeline of new or transferrable skills and to communicate outcomes to colleagues, employers, students and individuals thinking through career and education choices. The group will drive to close the gap to zero carbon skills and support the pipeline of skills which NetZero requires. **It will also create a North West based response in the form of a task-based action plan to address the Government's 10-point plan for a green industrial revolution and their commitment to create at least 250,000 new jobs.**

The **Science Based Targets initiative (SBTi)**⁶ has defined net zero targets for corporates as outlined below: to reach a state of net zero emissions for companies implies two conditions:

- 'To achieve a scale of value-chain emission reductions consistent with the depth of abatement achieved in pathways that limit warming to 1.5°C with no or limited overshoot and;
- To neutralise the impact of any source of residual emissions that remains unfeasible to be eliminated by permanently removing an equivalent amount of atmospheric carbon dioxide.'

Objectives driving the analysis

The aim of the technical skills group for NetZero NW is to identify skills implications of the Government's commitment to achieve net zero by 2050, to set some specific task-based outcomes and create an action plan to 2030. Specifically to:

- Identify skills requirements in the North West of England for a net-zero industrial cluster.
.....
- Identify opportunities related to skills requirements in the North West of England for a net-zero industrial cluster.
.....
- Identify Higher and Further Education provision relevant to these opportunities.
.....
- Identify skills gaps related to a net-zero carbon North West industrial cluster.
.....
- Seek renewed commitment to collaboration and sharing of opportunities and challenges to address the skills gap.



Approach

The **Green Jobs Taskforce** report prioritised sectors where change will be crucial to meeting net zero and where the clearest and most evidence gathering has been conducted to draw concrete conclusions. Specifically, their report focuses on the following sectors:



Power – including renewables (such as wind, solar and hydropower), nuclear power, grid infrastructure, energy storage and smart systems technology;



Business and industry – including hydrogen production and industrial use, carbon capture, utilisation and storage (CCUS) and industrial decarbonisation;



Homes and buildings – including retrofit, building new energy-efficient homes, heat pumps, smart devices and controls, heat networks and hydrogen boilers;



Transport – including low or zero emission vehicles, aviation and maritime, rail, public transport and walking or cycling;



Natural resources – including nature restoration, tree planting and decarbonising agriculture, waste management and recycling;



Enabling decarbonisation – including science and innovation for climate change, green finance, circular economy and energy networks;



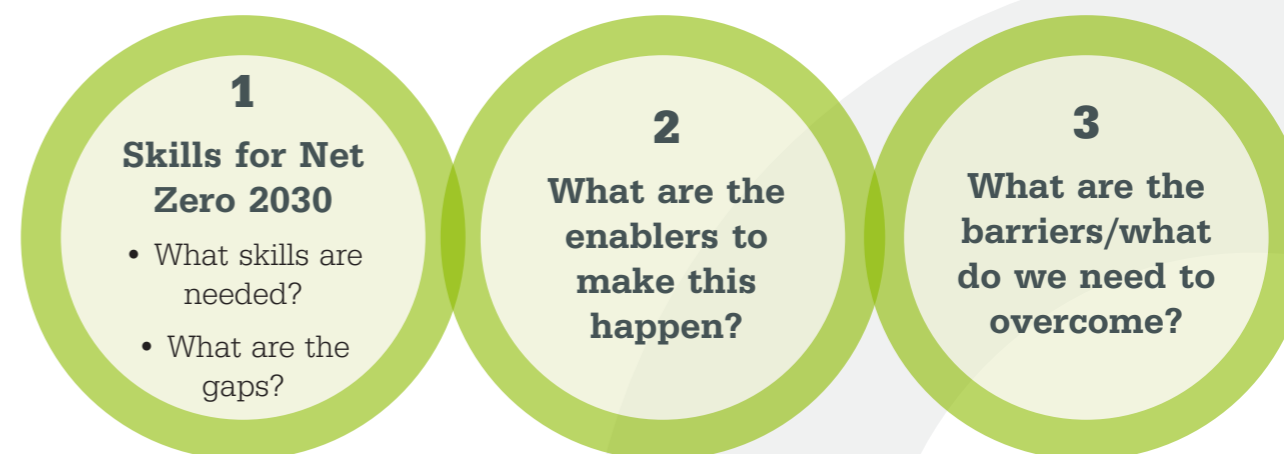
Climate adaptation – including flood defences, retrofitting of buildings to be resilient to extreme weather/climate events, nature-based solutions to reduce climate impacts and civil and mechanical engineering for infrastructure adaptation.

To understand the skills requirement associated with net zero, a consultation process was carried out by Manchester Metropolitan University with NZNW industry partners and other regional stakeholders to capture input from priority sectors in the North West.

There were 24 total attendees representing the following companies and organisations:

- **Manchester Metropolitan University**
- **Encirc360**
- **Greater Manchester Combined Authority**
- **Manchester City Council**
- **Liverpool City Region Combined Authority**
- **Cadent Gas**
- **Peel L&P/Peel NRE**
- **Exyte Hargreaves**
- **North West Business Leadership Team**
- **CF Fertilisers**
- **University of Chester**
- **Liverpool City Region Growth Company**
- **Siemens**
- **ABB UK**
- **RS Technical Solutions**

An online workshop sought input from participants through structured discussions that addressed the following questions:



The project secured ethical approval from the University before proceeding and GDPR regulations were followed.

The transcription and notes from the industry session were analysed in qualitative software, NVivo, to identify themes emerging from the consultation process.

Thematic Areas

Eight key themes emerged from the consultation as below:

1. Barriers and Challenges

2. Requirements for Skills

3. Disciplinary Areas

4. Skills

5. Opportunities

6. Ideas

7. Develop and Implement Action Plan 2030

8. Cross-cutting Issues

The following sections of the report present the key outcomes of the consultation process in relation to each theme identified above.



1

Barriers and Challenges

There are a number of barriers which present challenges to developing the net zero agenda. The analysis highlighted that tackling challenges linked to government policy, competition, technology, demand and skills were amongst key barriers.

The consensus was that employers or grouped industry partners such as **NZNW**, under the thematic area of skills, should work with industry bodies, government and unions collaboratively to tackle barriers to retraining and upskilling so that students and workers not are left behind by the transition to net zero. A key element to this is recognition that investment decisions are not being addressed due to the lack of net zero knowledge, so there is a need for an overarching agenda to develop literacy around net zero for mass adoption by all.



Barriers and Challenges continued



2 Requirements for Skills

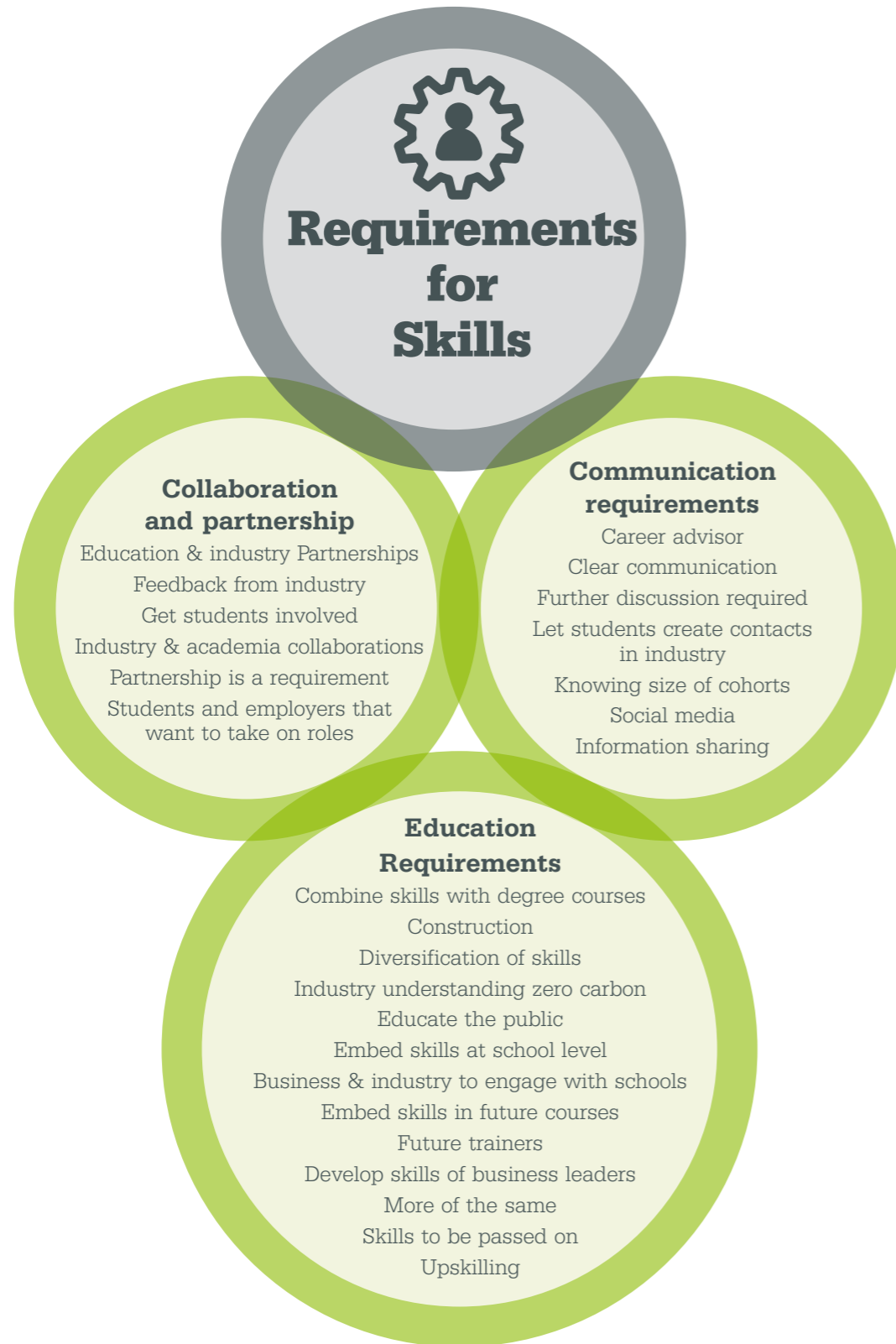
Skills requirements for the main decarbonisation pathways will not progress until stability through collaborations with industry and education providers is established and net zero is understood more widely.

Key requirements include:

1. Collaboration and Partnership
2. Communication Requirements
3. Education Requirements
4. Funding and Investment Requirements
5. Importance of Work Experience Opportunities
6. Organisational Requirements
7. Regional Requirements
8. Skills Related Requirements
9. Understanding Strengths & Weaknesses
10. Empower and Support Implementing New Technology
11. Wider Collective Vision

Training through a range of pathways will need to be addressed by firm commitments through a series of charter commitments from industries, leaders of regions and academic institutions. Through a combination of routes, there is potential for employers to tap into emerging talent, which has often been underutilised. Industry can work with FE colleges and Universities to design appropriate courses and facilitate collaboration with other employers with a shared agenda.

Requirements for Skills continued



3

Disciplinary Areas

The Green Jobs Taskforce suggested that in developing education and skills policy and provision, it is important to note that every job of the future will be directly or indirectly shaped by the transition to net zero.

It is recognised that that net zero is a global agenda that requires skills development action across all disciplinary areas ranging from social sciences through to engineering and in all business functions including construction and manufacturing. It is essential that the UK workforce has the correct skills for net zero to take advantage of the jobs which will be created by new projects and initiatives.

4

Skills

The suggestion by the **Green Jobs Task Force** report that every job has the potential to be a green job can only be recognised by working with academia, employers, training providers and Government to ensure the present and future workforce has the skills for today and for the emerging jobs in the future. This is matched by the ambitions of NW industry and regional stakeholders who identified a suite of generic and specific skills required.



Skills

- Ability to gain business
- Intelligence
- Adaptability
- Agility
- Appraisal techniques
- Awareness
- Business analysis
- Business skills
- Change management
- Co-creation skills
- Communication
- Construction
- Creativity
- Cross-disciplinary thinking and working skills
- Data analysis
- Digital skills
 - Social media skills
 - Software package skills
- Electrical skills
- Employability
- Enhanced technical skills
- Evaluation tool skills
- Flexibility
- Interpersonal skills
- Interview techniques
- Life cycle assessment
- Management change
- Problem solving
- Project management
- Renewable engineering skills
- Research
- Resilience
- Responsiveness
- Skills beyond specialism
- New technologies and systems
- Skills in a mixture of Net Zero technologies
- Skills linked to smart
- System challenges
- Specialist skills
- STEM skills
 - Chemical engineering
 - Electrical engineering
 - Gas engineering
 - Software engineering
- Sustainability appraisal skills
- Systems analysis
- Technical appraisal skills and techniques
- Transferable skills
- Understanding actions
- Understanding values of courses
- Unidentified skills which need to be uncovered in partnership with the education sector

5 Opportunities

A large range of potential opportunities exist within the net zero agenda across technical, social and economic aspects of local, regional and national demand. In the short term we have to timeline the opportunity to allow for the market opportunities to be recognised alongside skills development.

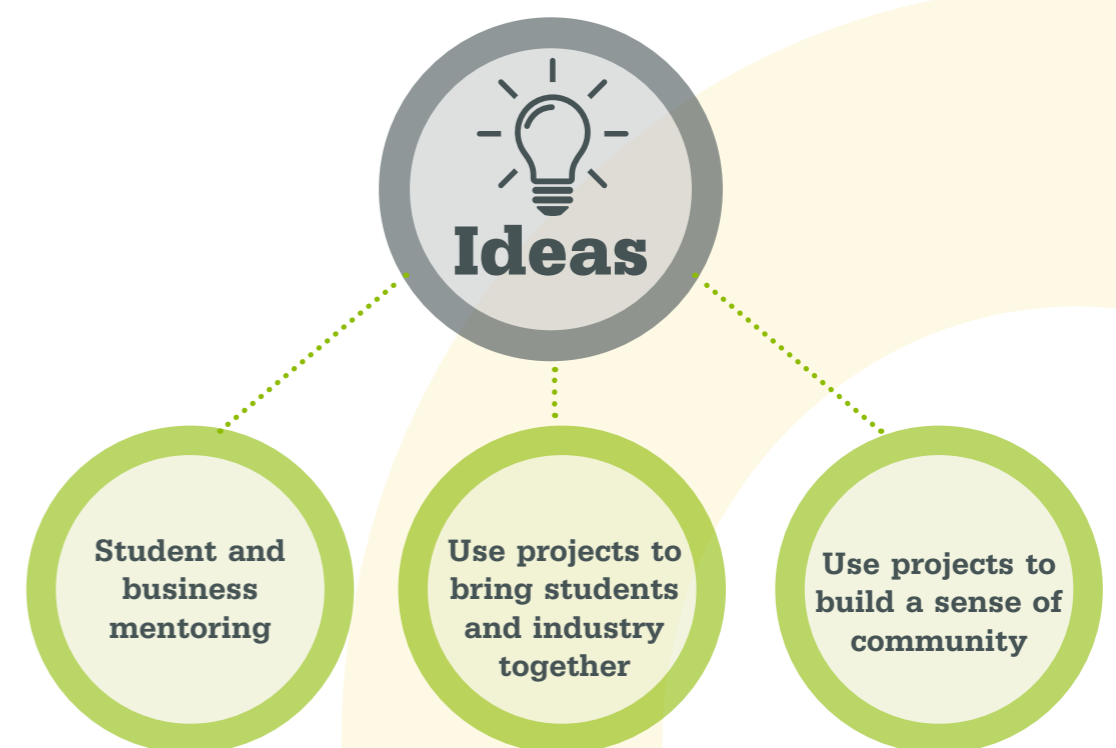
Supporting students from school through to University and workers in high carbon sectors to recognise the opportunities in the emerging economy afforded by a new green industrial revolution is critical. The main objective is to develop a comprehensive and holistic view of the green jobs and skills challenge across the various skills and disciplinary pathways. The **Green Task Force** report makes a critical observation that while the role of government will be crucial, it will not be able to deliver net zero on its own. A societally inclusive, economy-wide effort will be needed, with coordination of activity at all levels. A UK-wide body, including representation from national government and industry, should therefore be established to maintain momentum and coherence in the workforce transition, supported by action from local bodies such as the work of the NZNW skills group.



6 Ideas

The opportunity to co-create a skills agenda has the potential to create and distribute a new curriculum on co-design. A set of valuable net zero skills which have increased relevance is essential and will require a number of organisations to develop the vision together.

Allowing education institutions, training providers and employers across the North West to provide their students and staff with all the hands-on knowledge they will need to apply net zero understanding to their future professional roles is as critical as providing a new way of thinking about the net zero agenda for businesses and their employees. Co-design of ideas and ultimately courses will take an approach to design that attempts to actively involve all stakeholders (e.g. employees, partners, customers, residents, end users) in the design process to ensure the result meets their needs and is ultimately fit for purpose for net zero. For such an important agenda there has to be a sense of community that can accelerate the timeline to making the shift change happen now.



7

Develop and Implement Action Plan 2030

The transition to net zero will take place over many years, but we have to act now. The Net Zero Skills 2030 action plan will focus on both immediate action as well as the longer-term systemic change that will need to take place up to and beyond 2030 leading up to 2040 for the ambition of Net Zero NW to achieve UK's first net zero region.

The key to our transition to net zero will ensure that everyone benefits from new opportunities. It will be important to mitigate potential risks and provide targeted support to communities and parts of the population who are most likely to lose out from structural changes in employment. Our 2030 action plan will look at both opportunities and jobs that are declining and will need focus and action.

8

Cross-cutting Issues

There are a number of cross-cutting issues that can be addressed with a marked shift in our economy towards net zero. There is an opportunity to narrow labour market inequalities and ensure that the diverse timelines of green job creation and skills demands across the economy are matched with those of skills and education provision, taking account of institutional capacities.

The build and roll-out times for new courses may require reform as the process is time consuming especially when we consider other competing demands (such as maintaining core education or business delivery). It is also critical that learning should be underpinned by a collective whole-system approach so that issues of Gender, Race, Equality and Ethics will be supported, reinforced and embedded across the North West in the net zero agenda.

Net Zero Skills Charter

The task-based outcomes model being adopted by the project team is a critical step towards achieving a comprehensive and thorough Net Zero Skills 2030 action plan and should help incorporate sustainable principles and practice throughout the business, educational and professional services sectors.

In our analysis for net-zero skills we looked at what skills are needed to meet net-zero targets and how industry, government and academia can work together to co create a place-based action plan. Our analysis shows that skills are central to meeting the challenges of climate change and helping the UK achieve its goal to be net zero by 2050.

The proposed charter will be signed by all NetZero NW members together with regional leaders and north west academic HE, FE and relevant skills providers and technical bodies. The commitment will be to address the eight key areas together with the 11 areas of thematic interest identified by the stakeholders through a set of eight key objectives:

Pre-analysis - Establishing the parameters of the Net Zero Skills requirement

- Identify skills requirements in the North West of England for a net-zero industrial cluster.
.....
- Identify opportunities related to skills requirements in the North West of England for a net-zero industrial cluster.
.....
- Identify graduate and Further Education courses that are relevant to these opportunities.
.....
- Identify skills gaps related to a net-zero carbon North West industrial cluster.
.....
- Seek renewed commitment to collaboration and sharing of opportunities and challenges to address the skills gap.

Next Steps - Agree Objectives and Sign Charter

Charter to Focus on Design and Implementation of a North West 2030 action plan

1. Supporting understanding of the net zero market
Lead: All parties to the charter
.....
2. Building better understanding and evidence of future skills needs to support the North West and UK transition to net zero
Lead: All parties to the charter
.....
3. Driving awareness and action to support reskilling and upskilling for the transition to net zero
Lead: Employers
.....
4. Developing the future workforce for the transition to net zero
Lead: HE, FE sector
.....
5. Ensuring fairness and inclusion in the net zero skills system as part of a just transition to net zero
Lead: All parties to the charter
.....
6. Taking a collaborative approach to ensure a skills system responsive to changing demands
Lead: All parties to the charter
.....
7. Working towards the development and agreed actions of the plan to 2030
Lead: All parties to the charter
.....
8. Communicating net zero skills – North West Campaign
Lead: All parties to the charter

The net-zero transition will require long term commitment and action over many years. Our focus will be on the collective action that needs to be undertaken from 2021 through to 2030.

While there is clear early action that needs to be addressed, it is also clear that this action plan will need to be agile, responsive and critically task-based so there is accountability and actions undertaken which are timelined have ownership. The plan will be a living document, that adapts both its focus and its timing in response to changes in the policy environment, economy and the emergence of new and emerging technologies.

ⁱThe ten point plan for a green industrial revolution - GOV.UK (www.gov.uk)

ⁱⁱNZNW Economic Investment Prospectus (netzeronw.co.uk)

ⁱⁱⁱSkills for jobs: lifelong learning for opportunity and growth - GOV.UK (www.gov.uk)

^{iv}Green Jobs Taskforce report - GOV.UK (www.gov.uk)

^v<https://sciencebasedtargets.org/how-it-works>

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