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North Wales Low Carbon Energy Skills Research

July 2023

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North Wales Regional Skills Partnership

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Date of document: July 2023

Version: Final

Client details

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1. Introduction

The North Wales Regional Skills Partnership (RSP) are exploring the future skills needs for the transition to net zero and how to support the low carbon sector opportunities within the region. Wavehill were commissioned by the RSP to conduct research into the current and future skills needs of the low carbon sector in North Wales to support the shaping of future interventions by the RSP. This report presents the findings of this research.

1.1 Background

The low carbon sector (covering renewable and nuclear energy) has become increasingly important in the context of the transition to Net Zero and the opportunities it presents for levelling up. Other recent events, including the energy crisis following the war in Ukraine, have led to the development of a new British Energy Security Strategy[1] and the Powering Up Britain policy paper[2] where further impetus is put on the adopting domestically generated low carbon energy.

North Wales has a substantial opportunity in low carbon with some of the largest tidal ranges on the globe benefitting marine energy at the Morlais site, and large wind farm sites in Liverpool Bay and further into the Irish Sea such as Gwynt y Môr and Burbo Bank, as well as the Wylfa and Trawsfynydd nuclear power stations. To take advantage of these opportunities a low carbon skilled labour force is required to undertake the design, build and operation of these various technologies. This includes both replacement demand for existing skills and expanding current skills supply. All levels of skills are required, and these are not exclusively in the low carbon sectors, with other facilitating and auxiliary sectors, such as planning and construction, necessary for low carbon industries.

Understanding the scale of the demand for low carbon skills and the types of training and levels that are necessary, however, is somewhat more of a challenge. This research looks to identify some of these needs directly from companies in Wales that operate in the low carbon sector.

1.2 Methodology

The research undertaken involved a review of existing literature as well as primary data gathering. A review of current estimates of labour supply and job roles in the low carbon sector was undertaken looking at the available sources (though these are at a Wales or UK level). This was supported by insight into the potential scale of future projects being considered in North Wales, both offshore and onshore. Together these figures provide a baseline for estimates of labour demand in the low carbon sector in North Wales. Further

[1] British Energy Security Strategy, HM Government, April 2022
[2] Powering Up Britain, HM Government, March 2023

desk reviews were also conducted of the current skills provision in North Wales to compare to the skills needs and allow for identification of any gaps in training availability.

Primary data was then gathered for the research by interviewing low carbon industry stakeholders (see appendix A) to better understand their respective future business needs. A spreadsheet was produced to capture both qualitative insight as well as quantified information on job roles, skill levels and volumes over the next 5, 10 and 15 years. Eleven sector stakeholders were interviewed, and their shared information was then synthesised to show the key skills and labour requirements in North Wales.

While these interviews provided useful insight into the state of the sector and potential challenges and opportunities, it was difficult in many cases for the businesses to make judgements on future skills needs beyond the next few years. This was in a large part due to the uncertainty facing the sector, given delays and barriers in design and planning consent. Some organisations were constrained by things like seabed capacity for offshore and marine initiatives while other businesses had to compete for leasing and therefore struggled to commit to future projects that had not yet been secured (in many cases these are likely to be over a decade away).

To allow for the limited numeric information shared, the research team undertook some modelling based on anticipated renewable energy deployments and ascertained demand for existing nuclear sites. These estimates were produced based on scale of expected projects over 5, 10 and 15 year time periods and modelling of jobs by revenue developed by Wavehill for other research projects.

1.2.1 Caveats

Modelling used sensitivity analysis through scenario planning based on latest models for renewable energy sites currently being developed. These have assumed the latest cost inputs and supply chains in Wales. With time it is expected that costs will reduce, and supply chains will shift in response to the ongoing opportunities. This will change the modelling and therefore the outputs. Some assumptions on supply chain retentions have been assumed to account for this, but these are high level given the lack of actual data. The resultant figures from any modelling should therefore only be treated as indicative.

Estimated figures from the stakeholders only reflect the direct job needs of consultees and do not factor in job requirements from the industries' supply chains. This is particularly important to consider for roles like planning, environmental specialists, construction and construction management; roles that would mostly be subcontracted and able to offer services to multiple projects.

Further, many stakeholders were unable to provide job numbers due to a high degree of uncertainty about the final scale of their operations, most of which are currently in initial planning and consenting phases. Due to the high levels of uncertainty for each estimate provided, the numbers provided by consultees are very likely to be underestimations of the actual number of jobs that will be required for the Low Carbon Energy sectors in North Wales. The modelling figures look to correct for this to some extent.

2. Low Carbon Skills Policy

Aligned to the clear need to transition to Net Zero, several policies have been introduced to support skills provision in the low carbon sector. At a UK level the Net Zero strategy sets out the goal of supporting 440,000 jobs in Net Zero industries by 2030.[3] This is through encouraging reform to skills provision, helping support those moving from high carbon industries to low carbon and helping businesses to provide equal opportunities. This is underpinned by reinforcing the commitment to STEM in education and built on the recommendations from The Green Jobs Taskforce which had published a report supporting the transition and creation of green jobs. Foremost among these was that government commit to investing more in green jobs and skills to demonstrate a lead that industry could follow.[4]

For the Welsh Government, sustainability and a green economy underpins nearly all policy ambition, from the Wellbeing of Future Generations Act to the latest Programme for Government.[5] Future Wales: The National Plan 2040, sets out how Wales will realise its potential and maximise the social and economic opportunities it has in a sustainable manner.[6] The ambitions of the National Plan 2040 include clean growth, job creation (particularly in rural areas) and tackling inequality driven by a reduction in pollution, decarbonisation and becoming climate resilient.

The Welsh Government highlights these priorities in their Net Zero Skills Action Plan[7] which sets out short term ambitions for creating the right upskilling conditions, raising awareness as well as developing steering groups to direct and plan the way forward. The pilot of the Green Personal Learning Accounts (PLAs) demonstrates the Welsh Government's commitment to development of this industry at this early stage. The Welsh Government have also commissioned the development of a level 3 Environmental Management apprenticeship which will focus on teaching resource analysis and management skills applicable to large organisations such as developers as well as smaller firms which make up the supply chains in the Low Carbon Energy Industries. As Net Zero Skills Action Plan moves into the medium term there needs to be greater embedding of clearer skills and progression pathways, and employer supported options. This is the area in which the Regional Skills Partnerships are well positioned to support.

[3] Net Zero Strategy: Build Back Greener, HM Government, 2021
[4] Green Jobs Taskforce: Report to Government,
[5] Wellbeing of Future Generations Act, Welsh Government, 2015 & Programme for Government, Welsh Government, June 2021
[6] Future Wales: The National Plan 2040, Welsh Government, February 2021, https://gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf
[7] Welsh Government, Stronger, Fairer, Greener Wales: Net Zero Skills Action Plan, 2023

Support for Low Carbon Skills also extends into the Welsh Government's degree apprenticeships. A key example in this arena is the BEng in Low Carbon Energy, Efficiency and Sustainability offered at Wrexham University, the Welsh Government have expressed a commitment to continue expanding degree apprenticeships, acknowledging them as a valuable, skill-oriented route into many industries. The Welsh Government also supply frameworks for non-degree apprenticeships in 23 sectors, such as Advanced Manufacture & Materials, Agriculture and Environment, Construction and Building services, Energy, and Engineering.

It is also important that the transition to Net Zero is just, and supports the stronger, fairer, greener goals and is aligned to the Wellbeing of Future Generations. This needs to accommodate shifting labour market and employment patterns and the Net Zero Skills Action Plan notes the opportunities and risks inherent in "economic churn" where jobs lost in polluting sectors are replaced by those needed in low carbon industries. With many of these skills being transferrable, much of the support interventions will be about reskilling, rather than necessarily new training.

3. Skills Needs

The North Wales RSP defines Low Carbon Energy skills as the current and future skills that businesses will need to be able to respond to the resource management, efficiency requirements and emerging business opportunities in onshore, offshore, tidal and nuclear energy sectors.

The key stakeholders consulted as part of this research acknowledged this definition and provided a very broad range of skills and job roles that would be needed to support a Low Carbon Energy Sector in North Wales. **Many of these skills are highly transferable and are therefore subject to competition with other employers and industries**. This means that in cases where multiple industries require the same role, one role may be able to support multiple projects or market players as opposed to many new additional jobs being created. In cases like these, there is also a risk (especially for roles more needed in the development stages of projects) that roles can be fulfilled virtually and will therefore be completed by specialists outside of North Wales.

One of the key findings from the discussion with low carbon industry stakeholders in North Wales was that the skills requirements for the future go far beyond those directly employed in the sector. Multiple consultees noted that the early challenges for developing a sustainable Low Carbon Energy Sector in North Wales are common around the entire UK, namely that the supply chain is currently spread very thinly due to demand outweighing supply. Another finding from the consultations was that **training needed to pay a greater attention to soft skills such as communication, problem solving and leadership** within a Low Carbon context. It was also suggested that staff with Welsh language skills would be useful.

The job and skill needs most commonly highlighted among consultees from multiple industries are discussed below.

3.1 Industry Skills Needs

As a baseline, Data Cymru undertook an analysis of the ONS Low Carbon and Renewable Energy Economy (LCREE) Survey in their report for RSP's: labour market of tomorrow,[8] to show the current labour employment in the sector. Table 3.2 provides a job breakdown by industry in 2019.

[8] Data Cymru, The labour market of tomorrow – jobs skills and transition to a green economy, 2022

Table 3.1: Estimated number of Full-Time Equivalent low carbon employments by sector across Wales in 2019

LCREE Sector	Job Numbers[9] (all Wales)
Offshore Wind	200
Onshore Wind	300
Hydropower	100
Nuclear	>100
Energy Monitoring, Saving or Control Systems	700
Low carbon financial and advisory services	200

Source: ONS LCREE, accessed via Data Cymru

On behalf of the Future Generations Commissioner, the New Economics Foundation (NEF) produced estimates of jobs needs within Wales's Low Carbon Industries[10]. Using project data provided by the Wales Trade Union Congress, the NEF mapped out estimates of the number of jobs there would be in growing industries as a result of green recovery investment. Table 3.2 reports the estimates relevant to Low Carbon Energy Industries.

Table 3.2: Estimated direct job creation in Wales by industry within 2 to 3 years

Project	Direct Job Creation in Wales
R&D for decarbonising heavy industry	3,426
Upgrade ports of shipyards for offshore wind supply chain	1,668
Build manufacturing facilities for offshore and floating wind turbines	240

Source: TUC (2020), accessed via NEF

It is estimated that around 60% of the jobs in these projects will be in construction, the remaining jobs will most likely be in manufacturing, R&D and engineering.

It should be highlighted that although these estimates show that a large number of jobs will need to be created in Wales to sustain these industries, they do not necessarily reflect an overall net increase in the number of jobs in North Wales. An insight into net zero skills produced by the Wales Centre for Public Policy[11] highlights (similarly to the Welsh Government's skills action plan) the many of the jobs in Low Carbon Industries will emerge through the "economic churn". The report highlights that many high emission industries (such as oil and gas) may already possess the transferable skills to move into Low Carbon Energy jobs as their industry declines in time. This labour transfer will have the relevant soft skills and many of the right practical skills, though may need to undergo some retraining for this new industry.

[9] The numbers cited from the table were reported in 2019, following years show a significant drop in the survey's response rate due to the COVID-19 pandemic.
[10] New Economics Foundation, Skills Through Crisis, 2021
[11] Wales Centre for Public Policy, Net zero skills: insights and evidence from emission sectors in Wales, 2023

3.1.1 Planning and Consent

Skills in this field were the most frequently cited among stakeholders when asked about their needs in the next 5 years. Capacity for planning and consent specialists needs to significantly expand among all market players including the energy operators and developers, firms in the supply chain, local authorities, public bodies like Natural Resources Wales and Welsh Government. As the number of Low Carbon projects expands in the short term, there will be a greater demand for the robust collection and analysis of environmental data to construct site plans and environmental impact assessments, this will lead to a growth in demand for these skills from the operators as well as supply chain firms that provide specific aspects of the impact assessment of prospective low carbon energy developments (e.g. noise pollution or social impact). Some of these roles may be able to be undertaken virtually, however local expertise will still be valuable for some consultants involved in the planning process. Furthermore, local authorities and the Welsh Government will need to expand internal planning capacity in order to process a greater volume of planning applications.

3.1.2 Construction and Civil Engineers

Demand for construction workers (namely labourers, scaffolders, electricians, surveyors and civil engineers) as well as specialists in welding and marine, mechanical and electrical engineering will be needed in both the short and medium term to develop a Low Carbon Energy Sector in Wales. Stakeholders were unable to provide numerical estimates of the amount of construction workers needed, given the these will almost exclusively be procured from firms within the supply chain and are highly dependent on projects coming forward. **In the shorter term construction workers will be needed to strengthen North Wales's electrical infrastructure and connection to the grid.** In the medium term a large number of workers will be needed to undertake the construction of sites, with many requiring specialisms for work at sea as well as maritime certifications to work at sea in their respective roles and in personal safety, some will also need maritime certifications in first aid, firefighting, and survival or rescue craft. These roles will be in high demand during the construction and operational phases of projects and will need to be occupied by locally based workers.

3.1.3 Mechanical and Electrical Engineers

The development of low carbon projects will require a large number of mechanical and electrical engineers regardless of the specific subsector. These jobs will be necessary at every development stage, however demand is likely to peak during the construction phases. For many projects in North Wales this is likely to be in the next 5-10 years. Engineers will also be needed to undertake regular maintenance of these projects during operational phases.

3.1.4 Supporting Roles

An expansion of operations in North Wales will necessitate an expanded business infrastructure to manage it. Stakeholders listed a variety of roles that would need to be filled in order to manage a new suite of projects as well as existing sites and infrastructure. **The roles included operations and project managers, business development staff, strategic leads, commercial and procurement specialists, office managers, IT support, caterers and security.** In most cases, stakeholders were unable to provide numeric estimates of how many of these jobs will be needed going forward, therefore many of them have not been included in Table 3.3 below.

3.1.5 Industry Job Estimates

The table below summarises the direct job needs of the key stakeholders consulted as part of this research. The estimates should be interpreted with a great deal of caution and the caveats set out in section 1.2.1 should be considered in any use of these numbers.

Table 3.3: Future direct employments needs for Low Carbon Energy Industries in North Wales

Job	No. of jobs	Certainty of estimate[12]	Qualification Required		Estimated peak demand
			Starter	Senior	
Planning, consent and permissions	70		Level 6	Level 7	Next 5 years
Engineers (Electrical, Mechanical and Marine)	70		Level 4	Level 7	5-15 years
Operations Manager	44		Level 6	Level 7	5-15 years
Project Manager	32		Level 6	Level 7	5-15 years
Radiation Specialists and Technicians	20		Level 6	Level 7	5-15 years
Technicians	15		Level 4	Level 6	5-15 years
Admin and Office Management	14		Level 4	Level 6	Next 5 years
Construction Management	11		Level 5	Level 6	5-15 years
Commercial Specialist	8		Level 6	Level 7	Next 5 years
Environment and Ecology Specialists	6		Level 7	Level 8	Next 5 years
Strategic Leads	5		Level 6	Level 7	Next 5 years
Stakeholder and skills engagement	3		Level 6	Level 6	Next 5 years

Source: Stakeholder Interviews and Skills Scoping Reports provided by Stakeholders

[12] Certainty of estimate has been assigned based on whether stakeholders could provide numerical estimates for their job needs. Orange denotes that every stakeholder provided a numerical estimate, red indicates when one or more stakeholders named the role as a future requirement but could not provide a numerical estimate. Any numbers from these results are therefore based on fewer respondents.

Other jobs listed during the consultations (where no numerical estimations were provided) included, finance specialist, security, business development, procurement specialists, lawyers and data analysts. Although no direct numerical estimate for provided for construction workers, stakeholders estimated that each project's needs would be in the hundreds.

3.2 Sector Specific Skills Needs

Some stakeholders provided specific insight on the types of skills and training needed and these figures are presented below.

3.2.1 Wind and Marine

In the short term, National Grid connection is paramount to ensuring the success of offshore wind and marine installations, which necessitates having construction workers with specialisms in horizontal directional drilling (HDD) as well as accreditations to undertake construction work at sea. Cohorts of marine and electrical engineers will be needed to sustain offshore windfarms and marine turbines during their operational phase, a larger presence of turbines off North Wales's coast has the potential to develop an economy of scale that would necessitate a dedicated local team of engineers responsible for turbines' maintenance.

3.2.2 Nuclear

Currently, the specific needs of the nuclear industry in North Wales centre around decommissioning, which requires the recruitment of technicians that specialise in irradiated waste disposal. Health Physicists are also a key need as decommissioning continues. Furthermore, additional documentation provided by stakeholders has highlighted a need to develop programmes to train scaffolders, asbestos workers, lagging thermal insulation operatives, heavy plant operatives and operations specialists, which combined make up roughly 360 jobs working on decommissioning the Wylfa and Trawsfynydd sites.

The needs of the nuclear industry in North Wales may alter dramatically depending primarily on whether the UK Government choose to pursue a new development at the Wylfa or Trawsfynydd sites. Innovations in the development of Small Modular Reactors may also trigger a flux in demand for relevant skills if project were to be developed near the decommissioned Trawsfynydd site, however the development of SMR technology is at too early a stage to estimate the kinds of roles which will be required if one were to be built. Stakeholders noted that the nuclear industry in particular is facing a shortfall in skills in the near future due to a reduced number of learners and changes to the regulations that govern nuclear energy consultants. When considered alongside the high demand for these skills from the heavy engineering industry, significant skills planning must be undertaken to accommodate changes in North Wales's nuclear industry. It was noted that there is a high likelihood of skill displacement if new nuclear projects were to begin in Wales, therefore the workforce needs to expand appropriately to accommodate industry demand as a whole.

3.3 Barriers to Skills Development

For many of the job roles required during the capital and operational phases of low carbon projects, **stakeholders broadly felt that the current skills provision in many cases was already strong**. One of the main themes to emerge from the stakeholder consultations related to timing; jobs had to be offered and filled at the time that learners were completing their training, therefore one of the greatest threats to a strong Low Carbon Energy industry in North Wales were bottlenecks in any of the development phases. Stakeholders were able to highlight a series of key risks that would negatively impact North Wales's ability to provide the skills necessary to sustain Low Carbon Industries.

3.3.1 Planning capacity and bottlenecks

As outlined above most stakeholders highlighted an urgent need to expand the planning capacity of the low carbon industry as well as local authorities and government. A slow rate of both submitted applications but particularly planning decisions to undertake the projects is restricting the delivery and therefore demand for other low carbon skills.

This bottleneck has the knock-on effect on the development of skills required during the later phases of energy projects by risking training workers for roles that are not yet in demand due to planning and consent delays. This increased risk could reduce the willingness of training providers to offer related courses. Certainty and timeliness in the early stages of project development, through improving the capacity of planning is therefore paramount.

This threat is particularly relevant to North Wales, where currently no post-graduate degrees in planning are currently offered, with the nearest planning Master's degrees being taught in Liverpool and Cardiff.

3.3.2 High Demand for Skills Across the UK

The Low Carbon Energy industry is expanding in many geographies across the UK with significant investment in offshore energy occurring on the Coasts of both England and Scotland as well as the development of Hinkley Point C Nuclear power station. **High demand for these skills across the UK may present a challenge for developing the sector in North Wales without sufficient pull factors to retain a local workforce**. An inability to retain these skills at an early stage will have a knock-on impact on the development of skills needed further into the lifetime of Low Carbon Energy projects.

3.3.3 Perception of Industry Among Future Learners

Many stakeholders highlighted that Hitachi's withdrawal from the development of Wylfa Newydd in 2020 has fed into an increased cynicism among learners and education providers about large scale low carbon opportunities in North Wales. **It was felt that North Wales RSP could play a stronger role in ensuring certainty for the future of the industry by helping to market future opportunities and coordinate training provision**. **There is also a role for Government sponsorship to provide stakeholder, investor and community confidence**, which allows the mobilisation of the supply chain and skills providers. If there is not the demonstrable ambition between policy and industry within an area, then it is less likely that

others will see the opportunity and invest. A critical mass is required to ensure there is a positive perception of the future to encourage learners to undertake training that reflects the coming opportunities.

3.3.4 Funding Training in the Supply Chain

When asked about training shortcomings in North Wales, some stakeholders expressed concern about supply chain companies' ability to develop their skills. Large energy operators often have the capacity and setup in place to train new employees with relevant skills. **However, smaller firms in the supply chain that provide more specialised services may have less resource available to upskill their workforce**.

3.4 Low Carbon Labour Demand Scenarios

With much of the demand for jobs in the low carbon sector in North Wales contingent on renewable energy projects coming forward, some scenarios have been modelled to provide an indication of potential job requirements. These have used Wavehill's models developed for wind farms alongside literature and insight provided by the stakeholders. Scenarios are used to allow for varying numbers of projects over different time periods.

There are several renewable energy projects being brought forward by developers in the next five years in North Wales, including onshore and offshore wind farms (the latter also likely covering North West England). In addition, developers are considering other opportunities within this time period and several other sites are being explored for feasibility. Further, in the next five to ten years several large offshore wind farms are expected to commence construction following the leasing of more seabed between North Wales, Isle of Man and Lancashire such as Morgan and Mona (EnBw bp) and Awel y Môr (RWE Renewables). Along with acceleration of other marine and onshore developments are likely to bring through a lot of low carbon skills and labour demand in North Wales and North West England.

The modelling outlined below therefore considers scenarios of 1.5-2.5GW of projects in North Wales in the next five years. A further 2-3GW of new infrastructure are considered in the second period of between five and ten years. These estimates cover a local area which includes North West England demand given the likely coverage of offshore wind will extend round the coast (and potentially to Ireland). As highlighted above these may not all be 'new' jobs but give a better sense of the scale that the opportunities might bring.

Due to a lack of data on the nuclear and tidal industries, these estimates only account for jobs produced in the onshore and offshore wind sectors. Therefore, the outputs of this model may be an underestimation of the jobs produced across the entire Low Carbon Sector in North Wales.

3.4.1 Next 5 Years

Several large offshore projects are likely to come through in the next five years though onshore sites in North Wales may face some delays due to planning and getting grid

connection in that timeframe. The low estimate scenario of 1.5GW produces a total job demand for North Wales and North West England of ~900 direct jobs for renewable energy. A high-end scenario of 2.5GW by 2028 would require ~1,500 direct jobs.

3.4.2 Next 10 Years

By 2033 job requirements are likely to be far higher to meet the growing number of large offshore sites and other low carbon infrastructure that should be coming through, particularly following the substantial leasing of seabed by The Crown Estate in Round 4.[13] A low end of 2GW of renewable energy being introduced in this period alongside existing operations would require ~1,300 jobs for North Wales and North West England. 3GW of developed and installed sites would generate ~1,950 jobs in these areas in the next 10 years.

3.4.3 Next 15 Years

It is hard to predict the scale of the sector in North Wales in fifteen years' time as this will depend on available technology. While there are likely to be further sites, these may not be of the scale that has come through Round 4 leasing and job demand may shift more into operations.

3.5 Skills Provision

The Green Personal Learning Accounts (PLAs) funded by Welsh Government[14] offers a strong starting point to address some of the challenges that will face Low Carbon Industries in North Wales over the coming years, however the courses cannot be accessed by employers, only individuals are eligible. The Green PLAs currently offer to fund the following courses at Grŵp Llandrillo Menai that may be relevant to Low Carbon Industries.

- HNC Construction and built environment (Level 4)
- Welding (Levels 1 and 2)
- HNC in Mechanical/Manufacturing Engineering (Level 4)
- Thermal Cutting Techniques (Level 2)
- PRINCE2 Foundation and Practitioner

The Green PLAs currently offer to fund the following courses at Coleg Cambria.

- HNC in Construction (Building Services) (Level 4)
- Welding (Levels 1 and 2)
- HNC in Mechanical/Manufacturing Engineering (Level 4)
- Degree in Manufacturing Engineering

Courses funded through this stream should be frequently updated to reflect industry needs.

[13] https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/offshore-wind-leasing-round-4/

[14] Welsh Government, Green PLAs approved courses, March 2023

Non-degree apprenticeships are also available in 23 sectors, such as Advanced Manufacture & Materials, Agriculture and Environment, Construction and Building services, Energy, and Engineering. Section 2 of the report discusses some of the relevant degree apprenticeships currently available for the low carbon energy sector, further to those a level 6 degree apprenticeship in construction is currently being developed.

3.5.1 Planning and Consent

Stakeholders noted that there is very little local training provision to develop planning and consent specialism in North Wales. Although a master's degree isn't essential, it is in high demand among many firms. The nearest planning master's degree being taught in Liverpool and Cardiff. Both areas are close to other geographic area which are exhibiting high demand for planning skills, reducing the likelihood of retaining these skills even further due to competition.

3.5.2 Construction and Civil Engineers

It was felt by stakeholders that there was currently quite strong provision for construction and civil engineers available across the colleges and Universities in the region. Although the right courses are mostly in place, student capacity may need to increase in response to a growth in demand.

3.5.3 Mechanical and Electrical Engineers

Electrical and mechanical engineering courses are offered at University level as well as through FE and Work-based learning courses at Colleges in the region. Wrexham University also offers a BEng in Renewable and Sustainable Engineering, containing modules which could provide the relevant skills for many businesses in Low Carbon Industries.

4. Key Findings

- Need for certainty from Government and Investors in the flow of projects that come through planning. Many stakeholders noted that North Wales had been burnt by Wylfa Newydd not going through, which had created some cynicism among young people and training providers for future opportunities.

- Large shortage of people with planning and consent skills or not finding the opportunities in Wales attractive enough. The lack of planning Masters course in North Wales may lead to graduates not considering this as a potential destination.

- The skills that are in demand are highly transferable to other industries, creating lots of competition. This leads to displacement and industries not working together to maximise the opportunities of critical mass in an area. There needs to be coordination of skills provision and need across the various subsectors.

- According to the literature, there are industries that are currently in decline (such as oil and gas) which contain a large number of workers that have the potential to be reskilled or upskilled to work in the Low Carbon Energy sector.

- Strengthening talent in North Wales to create a workforce that has a propensity to stay in the area is likely to be more successful than trying to compete to attract people to the area.

- Some stakeholders raised concerns that there was not sufficient funding to support the training of workers in the small firms within the supply chain.

Appendix A

Below is a list of the organisations consulted as part of the primary research.

Organisation	Industry
Cwmni Egino	Nuclear
DP Energy	Onshore and Offshore Wind
EDF Renewables	Onshore and Offshore Wind
EnBw BP	Offshore Wind
Magnox	Nuclear
Morlais (Menter Môn)	Hydro
RWE	Onshore and Offshore Wind

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