

Offshore Wind Energy, the Construction Sector View Challenges and Recommendations

CEWales champions the construction, built environment industry intent to translate renewable sector opportunities, create efficiencies at scale and support the Welsh Government on its net zero drive which includes its recent target for electricity to be 100% renewable by 2035. Set against the background of the Well-Being of Future Generations Act, CEWales welcomes the [Net Zero Just Transitions Framework](#), [Future Wales: the National Plan 2024](#) and the upcoming [Infrastructure Wales Bill](#) which aims to streamline significant infrastructure projects within renewables such as offshore wind.

Offshore wind energy, is set to create an economic opportunity worth up to 92bn by 2040 for UK which offers an attractive option for cross-sector support. UK Gov. has announced establishing a new British Infrastructure Council with a revived Industrial Strategy Council, placed on a statutory footing. The new strategy will focus on where the UK can develop comparative advantage in crucial sectors like floating offshore wind and carbon capture and storage (CCS). With potential in the Celtic Sea including the [Celtic Freeport Vision](#), as well as CCS and hydrogen generation in the north and south of Wales, there are huge opportunities for Wales. As an example, FLOW presents a 1bn. economic opportunity in the next five years with the Welsh government signalling the importance to develop an [offshore wind industrial strategy](#). This intent is realised in the recent [Offshore wind, Industrial Growth Plan](#) launched in April 2024.

CEWales welcomes this setting of a shared vision as it takes note of the ongoing challenges of consenting, planning, grid connection issues, lack of pipeline visibility and clarity on return of investment within the offshore wind sector. Such issues, in turn can limit the extent to which the construction sector can effectively offer support as it impacts pipeline certainty and market confidence, connections across supply chains, awareness, innovation and capacity building. This is especially relevant as the construction sector requires early sight of the likely resources requirements (volumes & timing) for both port infrastructure and for foundation construction – construction material resource and supply plans for major projects. It therefore, further makes the case for a move towards industrialised construction identified in CEWales MMC Intelligence Report, to achieve an efficient, connected response and make the most of the incoming opportunities.

Importantly, CEWales acknowledges external market interest and the major role of private sector funding within the offshore wind sector and therefore suggests government to explore localised capability and awareness opportunities to better connect cross-sector efficiencies and bridge the gap such that local demand can be met with local supply. Successful alignment can also ensure efficiencies in technology trends and innovation in areas where the wider UK and Wales have cross-sector strengths as identified in [Catapults research](#) and shared through sector insight, such as the efficient re-use of wind turbine parts to enable circular economies as noted by the [Coalition for Wind Industry Circularity](#), use of on-land development (port space, worker housing, place-making), delivery mechanisms through Modern Methods of Construction, Digital Twins/BIM, Co-participatory innovation, and areas of automation and advanced materials which are understood to be key in driving forward offshore wind technologies. Currently innovation can only be undertaken in a fragmented approach limited to improvements in consenting challenges. A joined-up approach as identified in the [Innovation Focus Report 2023-2026](#), can also help re-shape the future of local construction skills whereby construction sector workers can plug the supply gap and achieve a just transition that

benefits Wales, net zero ambition whilst uplifting the local materials market on its drive to net zero carbon.

Ultimately, more needs to be done to maximise the potential for offshore wind in the Welsh Construction Sector. CEWales supports this industry intent and in its' role as conduit between Welsh Government and industry, is well-positioned to facilitate cross-sector working groups and support ongoing work in this area such as the [ORE Catapult F4OR Programme](#) and [Innovation Hub, Marine Energy Wales Celtic Sea Developer Alliance](#) and Floating Wind industrialisation task force, which is run by RenewableUK on behalf of BEIS. CEWales is already in discussions to host a joint roundtable with key industry players including; TATA, RenewableUK CYMRU and have already met with CELSA Steel, Opergy Net Zero, MPA and Supply Chain Sustainability School to explore supply chain collaboration. Together, CEWales aims to develop key recommendations and translate the offshore wind opportunity for the construction sector.

Sector Stakeholder Challenges

Pipeline certainty and confidence

Tier 1 and 2 businesses including supply chain manufacturers have noted the significant potential that offshore wind energy will bring. However, they identified that sector responses remain cautious due to several reasons related to challenges within the offshore wind sector around planning, consenting, licensing issues causing delays. The sector is yet to have a clear picture on requirements and related impact. Increased work in this area is not yet visible with most awaiting decisions from rounds with Crown Estate. For example, sector described limited construction activity even related to enabling infrastructure and pre-development, although noted, material supply is slowly starting. Uncertainties around the commitment to funding is influencing this, such as, regarding a secure pipeline of FLOW manufacturing/assembly. Further, sector requested more insight into what a Freeport Status might bring, especially acting as a cross-sector catalyst for place-based convening of decision-making and funding. SME's mentioned the need for pipeline certainty to build confidence and prepare connected supply chains with some describing no engagement with offshore wind infrastructure and no plans to become involved in the medium term choosing to monitor opportunities for entry if seen as profitable with a better than average rate of investment.

Timelines, Licensing and its' Connected Impact

Tier 1 and 2 businesses identified difficulties in planning for horizon opportunities due to the unknown nature of the timeline/timescales and wider licensing challenges found in the offshore wind sector. The delays have made it difficult for the construction sector to visualise demand and therefore prepare. However, the sector has noted renewed interest from UK government to fast track enabling environments and indicated their desire for Welsh Government support especially around awareness, visibility and capability roadmaps. Industry has acknowledged some ongoing bidding on offshore wind and the upcoming milestones in this area, in particular within Celtic Sea where securing sea bed leases with Crown Estate will kick start connected demand. For lower tier supply chain manufacturers and SME's, clarity on timescales was mentioned as integral to better prepare and manage lead in times.

Awareness, Cross-Sector Collaboration and Skills Gap

Tier 1s, 2's, supply chain organisations and SME's re-iterated the significant scale, pace of investment and delivery to meet 2050 net zero targets/UK energy targets. Industry research organisations provided insight that mobilisation required for the UK is enormous and beyond the worlds capability at the moment as seen from several studies on [supply chain capabilities](#). A consolidated view of this

using clear metrics is still missing and therefore awareness on its linked impact and translatable cross-sector opportunity not yet fully realised. For example, once seabed leases, environmental licenses and consenting in Wales kickstarts, offshore wind projects will develop at pace and require to be port ready. As offshore wind does not operate on 'just in time' delivery, it currently requires land space to place all components. There is currently no port in Wales that can accommodate this when seen through the full picture, the resulting delay will impact timescales and enhance lead in times. For example, some places, such as Port Talbot may have space available, but it is not yet connected in a way that is feasible, i.e. with surrounding infrastructure. Other linked challenges will be around needing to build

housing for labour both temporary and long-term that may involve designing new neighbourhoods, connecting to existing communities and ensuring it is undertaken embedding the principles of the Well-Being of Future Generations Act- mindful of future resilience i.e. flood impact etc. Supply chain organisations mentioned that as the market develops, there will be a need to build facilities like warehouses, sheds, manufacturing facilities which are within the remit of the construction sector. It will be important to note this connected impact of offshore wind and what it will bring for the local areas and local economy such as increases in housing, schools, health facilities etc. Early cross-sector collaboration to identify areas for efficiency such as potential sites, supply pre-orders and design dependencies was mentioned as integral. Tier 1's outlined the importance of planning for wider placemaking outcomes as part of the evolving industrial transformation - not just roads and buildings, but also aspects like parks, community facilities, nature-based solutions, flood defence. Supply chain and SME's noted opportunity for cross-sector support in design, for example those designs that are repeatable at scale, using efficiencies from manufacturing and construction sector approaches, moving to modular components, potential for innovation on standardisation feeding into demand for floating wind. These can be explored with advanced manufacturing and composite manufacturing sectors. Full awareness of the challenge will enable greater connection between the sectors especially as the scale and resources needed will apply great pressure on both sectors and divert from each other - pressure on supply of materials and management for example.

From a skills perspective, the gap will only widen. Within the renewable sector, lots is being done to increase awareness through Marine Energy Wales, Developers themselves, WG, ORE Catapult. However, there will be a gap in skills due to uncertainty of timeline – organic growth will need to occur. The unknown nature of the timeline has made it difficult to plan staged labour/resource delivery from large companies shutting down. Due to shared dependencies, the impact of increased work in the renewables sector will influence the existing construction sector and lead to an increased need for similar skills (housing, buildings, road, grid). It will also influence the future construction sector offering the potential to transition to automation skills and [transfer from Oil and Gas Markets](#) for a just transition. Automation will be necessary to ensure the renewables sector remains competitive with foreign markets. This is an opportunity for the construction sector to bridge the gap and provide automation management skills. This is still positive, as there will be a need for labour to operate such machines. Hinkley Point C, Sizewell etc. are in discussion to manage their forecast transition to supplement their knowledge and workforce for offshore wind and construction + infrastructure sectors.

Innovation and Efficiency

Tier 1's, 2's and research organisations mentioned that innovation within the offshore wind sector depends as the designs are not yet finalised. For example, for the floating structures, material emphasis is on concrete but there is potential for it to be fully steel. Wales appears more prepared for concrete structures with re-enforced steel. Both approaches need to be in line with Wales Net Zero drive. The decision on this will impact which industry develops and types of innovation within it. Supply chain material manufacturers have described offshore wind as a huge opportunity on enhancing the

existing capability in Wales and developing a Welsh/UK supply chain supplying products made locally. However, this requires alignment of the sectors, to prepare the supply chain and make the most of the local opportunity which favours local industries, local skills and economy and has the added benefit of a smaller carbon footprint in comparison to international supply chain resources which will create the necessary competitive advantage. The potential to develop innovations at the current stage will need to be at a micro scale which offers significant potential for SME's to get involved as part of the supply chain. For companies within the construction sector, understanding the problems around funnel efficiency (sea bed lease, environmental licencing and consenting in Wales including grid efficiencies) is required with the root cause being consenting. Finding innovation within this area is important and the construction sector can help through localised innovations. For example, there is a requirement for a two year bird and mammal survey and currently no way to do at a regional scale. This can cause major delays and is therefore a huge opportunity area for data mapping at a regional scale which can reduce consenting delays.

Other solutions can range from shifting traditional design and construction to an engineer-procure-construct (EPC) project delivery model, innovation in climate technology, data analysis, land identification/characterisation surveys, [biodiversity drone mapping](#), feasibility assessments to design/delivery efficiencies of offshore wind components and onshore infrastructure requirements using digital twins, analytics & machine learning, MMC. These improve efficiency and lower costs associated with site development, installation, condition monitoring, decommissioning and more. Intervention examples include the use of Innovation Challenges such as [adapting Hywind](#), a platform for a turbines, to be more efficient and [PelaFlex](#). Others like the Strategic Innovation Funds to advance technology readiness for [implementation of Direct Current Circuit Breakers](#) integral to the development of energy capacity. Further examples provide innovative design responses such as [floating foundations](#), [Wind Catching Systems](#), [self-installing substations](#). A new generation of tools may include advanced ocean weather forecasting and robotic solutions.

Perception and appetite – Sector organisations described perception as an issue with fatigue in the workforce and supply chains around the opportunities of the offshore wind markets and their translation within the sector. SME's in the construction sector shared previous experiences with renewables as difficult to predict with investments in staff and operatives wound back from 2010 to 2024. This is an area that will benefit from increased pipeline visibility and confidence through a well-aligned cross-sector industrial strategy which ties in with a Wales Energy just transition plan, built from the [Just Transition to Net Zero Framework](#) similar to [Scotland's plan](#), to secure surrounding infrastructure and enable a joined up approach. Connected governmental leadership will improve appetite and set the stage for further efficiencies beyond offshore wind, such as in hydrogen and tidal for Wales.

Sector Stakeholder Recommendations

Key patterns were identified within stakeholder recommendations. These are shared below:

- Need for pipeline certainty and visibility as the catalyst to enable cross-sector efficiencies at scale and pace - Recommendation to improve the challenges within renewable sector around planning, consenting, grid connectivity felt cross-sector. In particular to create a clear road plan and action plan for Wales to meet 100% renewable energy target and to provide clear policy direction under the Infrastructure (Wales) Bill in reference to [Renewables UK Recommendations](#). Further



recommendation to buy risk through take or pay contracts, where companies build and invest in offshore wind, however if no take-up, government to underwrite risk. Due to the significant opportunities for parallel sector support (including automotive, manufacturing) a publicly funded cross-sector joint pipeline tracker could be useful to give full transparency and visibility for the entire supply chain, including SME's.

- Need for connected awareness and translating the offshore wind opportunity to the construction sector – Recommendation to move the construction sector towards industrialised construction linking with offsite industrialisation strategy. Once the overarching ambition is highlighted, need for mechanisms to monitor. Therefore, a further recommendation to organise joint, cross-sector delivery bodies comprising WG Departments, CEWales, Marine Energy, RenewablesUKCYMRU, Catapult and others. Such an expert working group can facilitate the transition, provide rapid advice and build local supply chains involving key cross-sector players. Setting an enabling environment for connected awareness will ensure connected demand is better planned for. Especially as such demand will have significant impact on land to not only prepare the ports, surrounding infrastructure, but house an agile workforce. Currently this type of collaboration is limited and can benefit from governmental endorsement given the perception challenges and reduce appetite from sector. CEWales is in initial talks to host a roundtable discussion on bridging the gaps from renewables to construction with the industry bodies mentioned above.
- Need for local supply chain capability expansion – skills – Recommendation to better prepare the construction sector supply chain by connecting the dots with the renewables awareness campaign (Marine Energy, Developers, WG, Catapult) and construction sector skills bodies, signalling capability requirements around new skills such as automation and transitioning of existing skills towards low carbon approaches, at pace. Both will be necessary to make the most of the offshore wind opportunity once demand launches. Further recommendation to host a skills bodies roundtable and ensure their presence as part of the expert working group.