



Supply Chain Report

Industry Perspective on Floating Offshore Wind

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¹ <https://iea-wind.org/task49/>

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0.1	25/08/2024	First draft circulated for internal review and updates	Caoimhe McCarthy	Greg Bohan, Mitra Kamidelivand
0.2	28/09/2024	Final draft – issued to all IDEA-IRL project organisations for review	Caoimhe McCarthy	Mitra Kamidelivand, Greg Bohan
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Executive Summary

This report is the second deliverable of WP5 for the IDEA-IRL (Integrated Design of Floating Wind Arrays Ireland) project. As part of the IDEA-IRL research project, Wind Energy Ireland (WEI) carried out an online survey with industry partners from across the WEI membership base, with an aim of getting a sense from the industry on the challenges and opportunities pertaining to the various aspects of floating offshore wind. The industry perspective for floating offshore wind (FLOW) is critical for identifying the obstacles facing the technology and the supply chain, as well as procuring viable solutions in a timely manner.

This report provides an overview of the supply chain survey as mentioned above, that was conducted earlier in 2024 to obtain a greater level of knowledge and understanding of the opportunities and challenges facing Ireland's FLOW supply chain. It presents the survey's results, which were gathered from 11 WEI member organisations that operate both nationally and internationally. These organisations include supply chain companies, port authorities, offshore wind developers, and consultants.

FLOW technology represents a significant advancement in renewable energy. FLOW allows for deployment in much deeper waters further from shore, further expanding the potential for harnessing wind energy. According to the survey, industry confidence in FLOW is growing, with expectations that it will be deployed in Ireland by the mid-2030s onwards. However, several challenges remain, including technology readiness, port infrastructure development, cost considerations, and uncertainties related to government policies and the identification of future development sites for offshore renewable energy (ORE). Despite these barriers, Ireland has particularly strong opportunities in surveying, consultancy services, and innovative operation and manufacturing services. Focusing on developing port infrastructure and upskilling the workforce will be crucial for realizing FLOW's potential in Ireland.

The results of the supply chain survey will be incorporated into the Irish floating offshore wind scenario analysis by IDEA-IRL WP5, which also offers updates on lessons learnt for Ireland. The international supply chain for FLOW will also be studied in more detail as part of IDEA-IRL WP4. This integration will improve the understanding of the current state and potential development of the FLOW supply chain in Ireland. By analysing these results, IDEA-IRL WP5 can identify key areas where policy interventions are needed to enhance the efficiency, resilience and sustainability of the supply chain.

Introduction

This report has been prepared by the IDEA-IRL project as the second deliverable for WP5 of the project.

The IDEA-IRL (Integrated Design of Floating Wind Arrays Ireland) project started in February 2023. The project is being worked on by University College Cork (UCC), Wind Energy Ireland (WEI), and Gavin & Doherty Geosolutions (GDG) in partnership. Its goal is to accelerate the sustainable development of floating offshore wind arrays (FOWA), both domestically and internationally. This will be achieved by building on significant past knowledge and by planning and exploiting the worldwide FOWA research effort within the constraints of the financed IEA TCP Wind Task 49.

Specific objectives across all the work packages include:

1. Deliver a set of fully defined reference sites characteristic of the international global floating wind deployment pipeline including all relevant technical, social, environmental, and economic parameters.
2. Deliver a set of fully open source and customisable floating wind array reference designs including key engineering tool input files, cost and environmental impact models.
3. Deliver a Failure Mode, Effects & Criticality Analysis framework for floating wind arrays including for coupled / cascading failures.
4. Engage with the international groups developing innovations for the floating wind energy industry, categorise in terms of multidisciplinary impact and ensure that functionality for their development is included in the reference sites and/or reference farm definitions.
5. Engage with the international agencies responsible for Marine Spatial Planning (MSP) to collect open research questions and concerns. Provide responses directly where possible and otherwise ensure that the reference sites and reference farms are defined in such a manner that they enable the required research.
6. Apply the work of Task 49 in an Irish context and engage with the local supply chain to provide specific policy recommendations and development pathways.
7. Raise the profile of floating wind energy technology, related research, and expertise in Ireland through the delivery of a multifaceted communications strategy.

The main purpose of this report is to provide an update on the supply chain survey conducted earlier in 2024 for WP5. The report has mainly examined the opportunities and difficulties associated with the growth of floating offshore wind projects and the supply chain in Ireland. In the following sections, the industry survey results are discussed in more detail, accompanied by visuals for clarity and easy overview. The international supply chain features will also be incorporated into WP4, as part of IDEA-IRL's collaboration with IEA Wind Task 49.

Survey Results

The survey was developed by WEI with input from IDEA-IRL project partners. The survey was designed as an online survey² (via Microsoft Forms) and shared with WEI members for completion. The results were then downloaded and individually analysed, as well as consolidating the responses to inform this report.

The industry survey was completed by 11 WEI member organisations, operating both nationally and internationally, including offshore wind developers, supply chain companies, port authorities and consultancies. The following survey report has condensed these responses into a series of brief discussions, accompanied by figures summarising the industry consensus on FLOW and ORE more broadly in an Irish context.

Confidence in Floating Offshore Wind Industry Growth

All but one industry representative is currently actively involved in the offshore wind supply chain. Many of the respondents are also seeking to gain a foothold in the Irish ORE market. Figure 1 displays that the majority of the industry aims to be involved with the Irish ORE market before 2030, and the remainder from 2030 onwards.

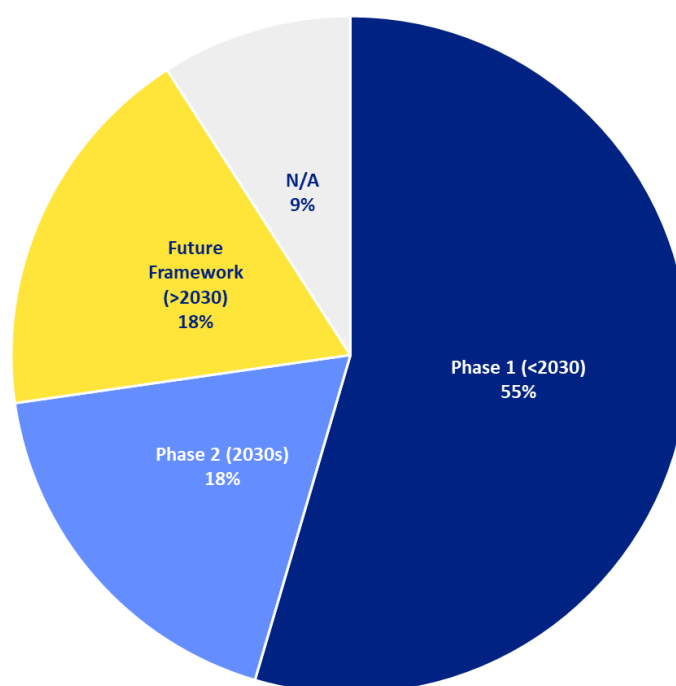


Figure 1: Expected time periods for industry involvement in Irish ORE market.

Furthermore, all but one of the respondents are currently involved in the offshore wind supply chain. The majority of the members involved in the supply chain are doing so both within Ireland and internationally, indicating faith in the technology and in the potential of FLOW. One respondent is currently seeking a pathway for entry into the Irish offshore wind supply chain.

² The survey questions are included in the Appendix – Supply chain questionnaire.

The industry is shown to be eager, with the majority (55%) currently expecting FLOW to be deployed in Ireland from the mid-2030s onwards, as shown in Figure 2. 27% of parties see FLOW being deployed in Ireland by the end of the 2030s. This is reflective of ORE policy development at the time the survey was conducted.

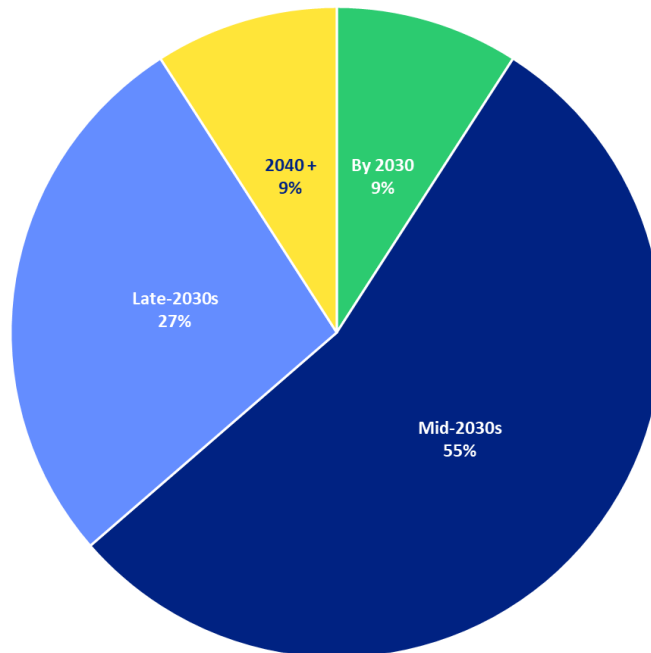


Figure 2: Industry expectation for the earliest timeframe for the deployment of FLOW in Irish waters.

Challenges and barriers impacting the development of FLOW

A section of the survey focused on the challenges and barriers impacting the development of FLOW. The question was proposed: **“In terms of the current policy landscape in Ireland, what in your view are the top 3 issues or barriers impacting the development of FLOW?”**. Figure 3 summarises the results of this question. As seen in the figure, much of the industry indicated technology readiness as the most significant barrier to the development of FLOW, followed closely by port infrastructure, costs, and Government and funding related issues.

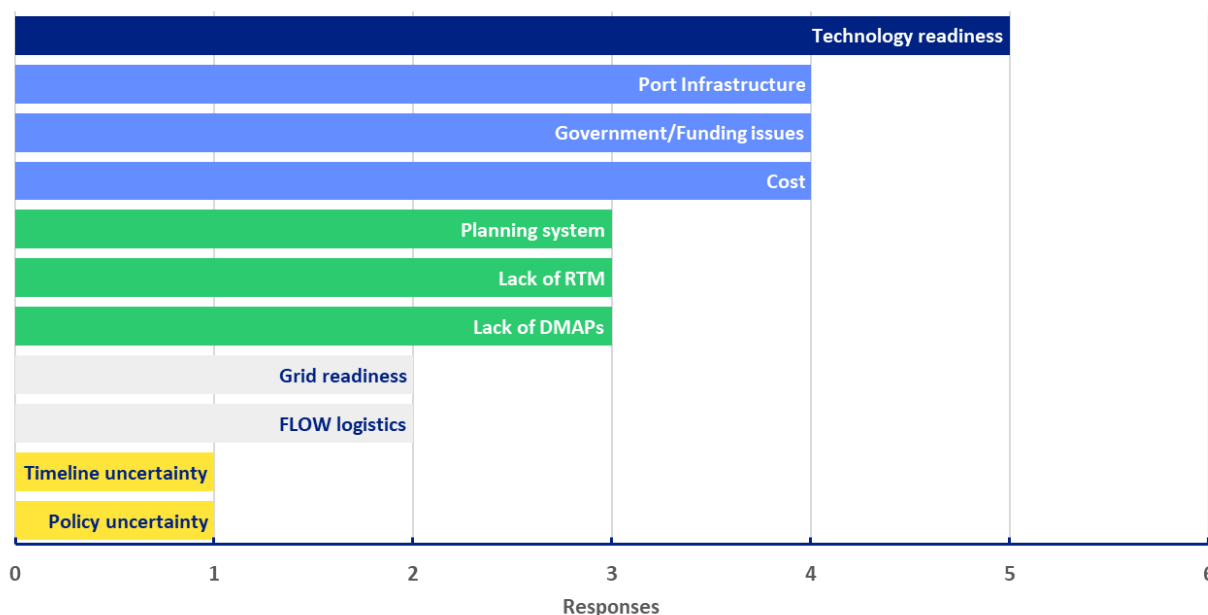


Figure 3: Industry perspective, in terms of the current policy landscape, identifying the key barriers to entry for the development of FLOW in Irish waters. Note: RTM – Route-to-Market, and DMAP – Designated Maritime Area Plan.

Technology readiness was described as an issue due to the current lack of uniformity and standardisation of the technology as well as the lack of a global track record for the technology at present. The current price premium of floating foundations versus a fixed bottom foundation can make it challenging to prioritise designating sites for a FLOW farm.

Port infrastructure was cited as another major roadblock for the deployment of FLOW in Ireland. As the current port infrastructure is not ready and a lack of commitment to the development of port infrastructure to meet the specific needs of FLOW is observed. This is of concern for example, as no Irish port can currently support FLOW foundation manufacturing needs. Port infrastructure requirements to support the requirements of FLOW are discussed as part of IDEA-IRL WP1.

The government and funding associated barriers highlight the overall policy uncertainty around the identification and allocation of seabed for the development of FLOW off the coast of Ireland. Coupled with the lack of dedicated subsidies from the government, credible auctions for the seabed and the lack of a strategic view gives cause for concern for the industry on the current viability of a FLOW supply chain in Ireland.

The planning system, the lack of identification of suitable Designated Maritime Area Plan (DMAP), and lack of clarity for a route to market pathway was also flagged by respondents as a key concern. Again, this echoes the concern of timeline uncertainty and suitable identification of the seabed for FLOW.

The survey followed this up by asking, **“What, in your opinion, are the critical supply chain challenges or constraints (at a European/Global scale) that are or will impact FLOW in Ireland?”**. Figure 4 presents the responses for this question.

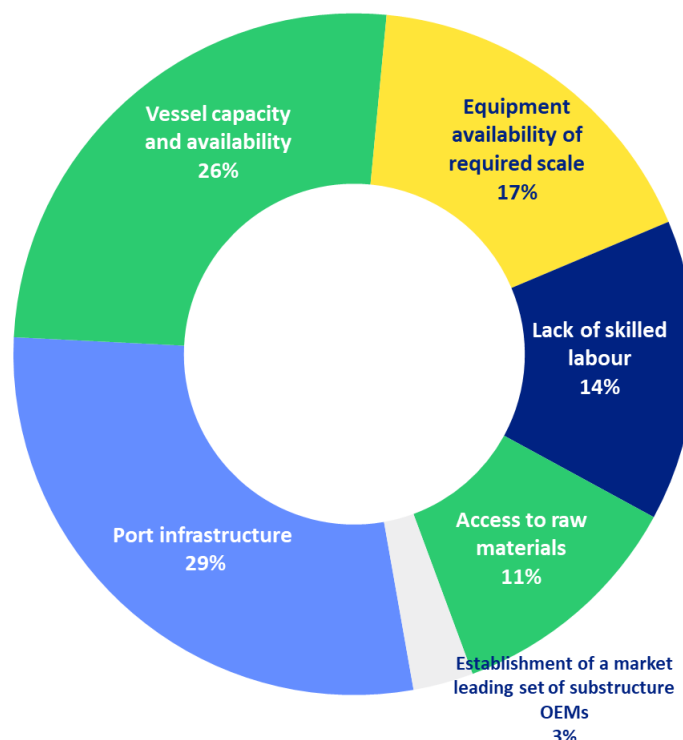


Figure 4: Industry perspective on the critical supply chain challenges & constraints impacting FLOW in Ireland.

Evidently, the critical concern for industry is identified as the maritime sector in the FLOW supply chain, specifically the port infrastructure and the availability and capacity of vessels for the transportation, integration and construction of FLOW components. This highlights the challenge to delivering FLOW at large scale, requiring the creation of new industries in the region. This includes training and upskilling, to investment and infrastructure. The accompanying policy and incentive structures are necessary to allow it all to happen.

Supporting the FLOW supply chain

When discussing the FLOW supply chain, industry was asked: **“What proportion of the existing offshore wind supply chain do you feel could be sufficiently utilised as it is to support FLOW?”**. In response, the industry estimates that 0-20% of the existing offshore wind supply chain can support that of the FLOW supply chain. These results are shown in Figure 5.

While Ireland does not have a strong existing supply chain for fixed-bottom offshore wind either, with measures currently being put in place through ‘Powering Prosperity – Ireland’s Offshore Wind Industrial Strategy’³ to grow this, this response suggests that specific measures will need to be put in place to target growth of the FLOW supply chain.

³ <https://enterprise.gov.ie/en/publications/publication-files/powering-prosperity.pdf>

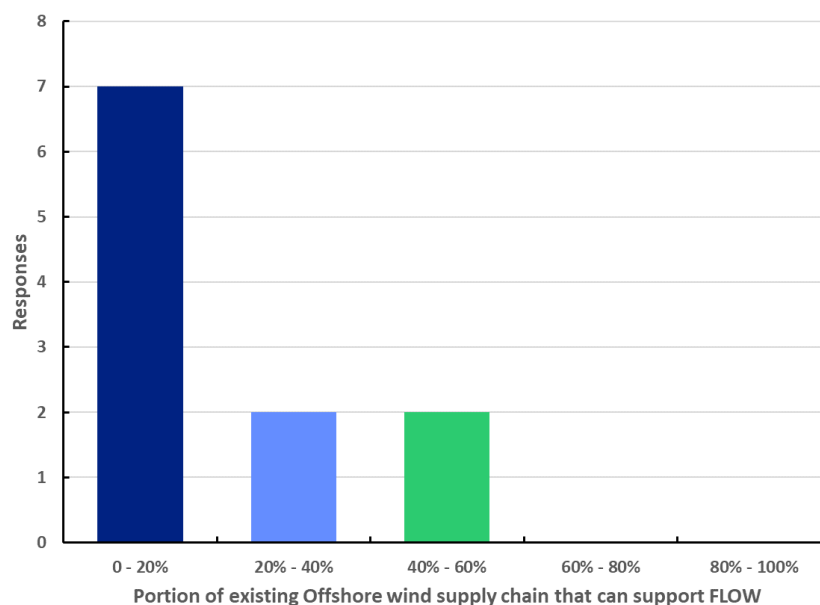


Figure 5: Industry estimate for the fraction of the existing OW supply chain which can support the FLOW supply chain.

When asked what the industry **“consider[s] to be the most appropriate substructure / floating platform for FLOW projects to be deployed in Irish waters?”**, it was found that most common response was the use of the semi-submersible platform. However, it was also expressed that one must tailor the technology to the demands of the site, leading to other technology suitability⁴.

Upskilling the workforce

When asked, **“In terms of upskilling or reskilling, what in your opinion, are the key areas which require the most focus to support the development of FLOW?”** The response from industry agreed that the necessity for the training of skilled labour is the priority, particularly in relation to marine and quayside operations. As equipment and capital can be sourced, skilled labour is expected to become the bottleneck in the supply chain, with mention of specific roles such as offshore technicians, project delivery teams, civil servants, onshore assembly crews, and other skilled labour. There is opportunity for reskilling through the knowledge of fixed bottom offshore wind projects, where skillsets could be readily transferrable to floating offshore projects. Other key areas mentioned included heavy engineering, operation & maintenance, planning and the skillsets necessary for working at sea in harsh environments.

It was highlighted that the ORE market will be competing with other industries in attracting talent. In light of this, consideration must be given as to how to attract talent towards a career in ORE. This could be achieved in many ways, such as salary premiums, incentives and relocation opportunities. However, at a local level there needs to be consideration given to the incentives for Original Equipment Manufacturers (OEMs) to hire locally, capitalising on tax incentives and training budgets.

Visibility of Opportunities:

The survey also asked the question: **“What do you see as being the key opportunities for Ireland in relation to FLOW? Are there opportunities for first mover advantage or for the Irish supply chain to**

⁴ The farm design criteria for various sites will be addressed in the IDEA-IRL WP1 combined deliverables with IEA Wind Task 49.

take the lead on (niche areas)?". The industry responded with the most common area of opportunity for Ireland being surveying (Figure 6). This was followed by consultancy services and innovative operation & manufacture services. These opportunities could allow for the Irish supply chain to contribute on a global scale.

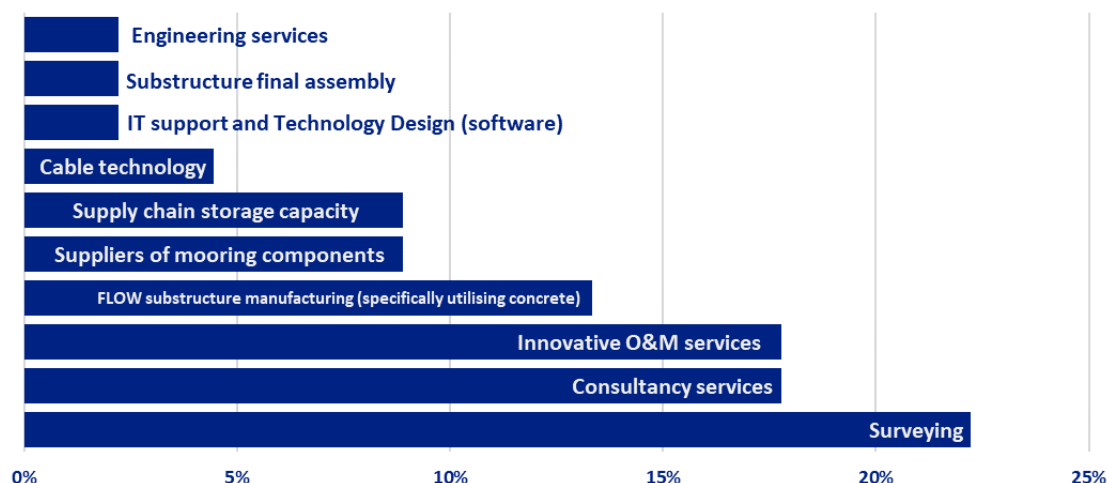


Figure 6: Key opportunities for Ireland in relation to FLOW and opportunities for the Irish supply chain to take the lead on. Note: O&M – Operation & Maintenance.

The last question of the survey asked: **“What would success look like to you in relation to the Irish supply chain?”**

The industry perspective on what a successful Irish supply chain would be, emphasised the development of the Irish port infrastructure focused near the locations of future FLOW projects such as the Cork Harbour and the Shannon Estuary. These ports can support the vessels working on offshore projects in Ireland.

A successful Irish supply chain would be supported by Irish companies, which are well-positioned to compete for contracts across various domains, including surveying, consenting and port infrastructure. The goal for the supply chain would be for Ireland to produce at least two of the major components in Ireland (Substructures, Cables, WTGs). In order to attract such investment, there needs to be corresponding investment in government incentives to attract said businesses. The industry would provide balanced regional growth and economic resilience. Irish companies using the generated electricity by FLOW could then offset carbon fuel imports, all of which would facilitate a long-term sustainable industry in Ireland. In any case, relying solely on the free market to bring established offshore wind to Ireland will only result in missed national targets and opportunities for the local supply chain.

The function of such an Irish supply chain could be demonstrated by the assembly of FLOW foundations for commercial scale projects and could start with a smaller scale, offering a starting position for improving port capacity for future projects.

For Ireland to have a chance in meeting the 37GW target by 2050, or even its 2040 targets, the ORE industry needs to advocate in unison for the development of FLOW technology. A diluted sectoral approach will only delay Ireland’s transition to ORE.

Conclusions and Next Steps

The survey report sheds light on the immense potential of FLOW technology in Ireland's renewable energy landscape. Industry confidence is growing, with many industry partners anticipating FLOW deployment in Ireland from the mid-2030s onwards. However, several critical challenges persist. Technology readiness remains a key barrier, necessitating further development of routes to market. Additionally, port infrastructure development is crucial to support FLOW projects, particularly in locations like Cork Harbour and the Shannon Estuary. The report highlights the need for government incentives, including tax breaks and training budgets, to attract investment and foster a robust supply chain. To achieve Ireland's ambitious 37GW target by 2050, a coordinated effort across the offshore renewable energy (ORE) industry is essential. A fragmented approach could delay the transition to sustainable energy sources. Therefore, advocating for FLOW technology and fostering a balanced regional growth strategy will be pivotal in realizing Ireland's renewable energy goals.

The findings of this survey, and the results of the global supply chain survey in WP4, will be used to benchmark Ireland's supply chain against current global best practices. This will include policy recommendations for fostering FLOW growth in Ireland as part of IDEA-IRL WP5 (Irish Pathway).

Appendix – Supply chain questionnaire

Survey Questions

Section 1 – Your Information

1. Name of organisation
2. Key contact person
3. Please categorise the primary role of your organisation
4. Are you currently involved in the offshore wind supply chain?
5. When do you expect to initially become involved in the Irish ORE market?

Section 2 – Floating Offshore Wind in Ireland

6. In terms of the current policy landscape in Ireland, what in your view are the top 3 issues or barriers impacting the development of FLOW?
7. What, in your view, needs to be done to enable FLOW development in Ireland?
8. What do you see, realistically, as being the earliest timeframe for deploying FLOW in Irish waters?
9. What are your thoughts on FLOW demonstration projects?

Section 3 – Supply Chain

10. In general terms, what proportion of the existing offshore wind supply chain do you feel could be sufficiently utilised as it is to support FLOW?
11. What do you consider to be the most appropriate substructure / floating platform for FLOW projects to be deployed in Irish waters?
12. What do you see as being the key opportunities for Ireland in relation to FLOW? Are there opportunities for first mover advantage or for the Irish supply chain to take the lead on (niche areas)?
13. What, in your opinion, are the critical supply chain challenges or constraints (at a European/Global scale) that are or will impact FLOW in Ireland?
14. In terms of upskilling or reskilling, what in your opinion, are the key areas which require the most focus to support the development of FLOW?
15. What would success look like to you in relation to the Irish supply chain?
16. Do you have any other related comments or insights you would like to share?