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Welsh Affairs Committee

Floating Offshore Wind in Wales

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Welsh Affairs Committee

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Summary

Floating offshore wind is an emerging technology with the potential to harness higher wind speeds and therefore generate more energy than conventional, fixed-bottom offshore wind. The Celtic Sea surrounding Wales and South West England has been identified as a major development opportunity for this technology due to its high average wind speeds in deep waters. The Crown Estate, which owns the seabed out to twelve nautical miles from the coast, is running leasing rounds for up to 4GW of floating offshore wind generation in the Celtic Sea by 2035. It has estimated there is scope for a further 20GW in future leasing rounds.

On 20 October 2022 we launched an inquiry examining how the deployment of floating offshore wind in the region is being driven forward; whether existing infrastructure is prepared for this emerging industry; and how the industry might benefit the region more broadly. We held three evidence sessions between October 2022 and January 2023 and gathered evidence from a range of witnesses including developers, port operators and The Crown Estate, along with UK and Welsh Government Ministers and officials.

We find that floating offshore wind in the Celtic Sea represents perhaps the single biggest investment opportunity for Wales in decades with the potential to create thousands of high-quality, long-term jobs—particularly if the region is able to gain first-mover advantage over other markets. However, developers and port operators need long-term targets and a clear pipeline of projects to unlock investment and make this opportunity a reality. We recommend the UK Government and The Crown Estate set longer-term targets and a clear roadmap at the earliest opportunity to enable this. Consenting bodies will also face a significant increase in applications from developers and it will be critical for these consenting bodies to be adequately staffed and resourced to meet demand.

Local supply chains did not benefit from the rollout of conventional, fixed-bottom offshore wind as much as they could have, with major fabrication and installation works undertaken overseas. We heard real determination not to repeat this with floating offshore wind. While investment in supply chains must be balanced against accelerating programme delivery, the potential for wealth and job creation in Wales from floating offshore wind is too great an opportunity to be missed. We welcome The Crown Estate's requirement for developers to provide supply chain investment plans as part of their bid for a lease. However, there must be a credible mechanism to hold developers to account on delivery of these plans. We also recommend more stringent supply chain requirements be included in Contracts for Difference auctions and for these to be brought into alignment with requirements made in The Crown Estate's leasing rounds.

Port infrastructure will be key to ensuring regional supply chains benefit from floating offshore wind. Port Talbot and the Port of Milford Haven in South Wales have been identified as two early sites for supporting the deployment of floating offshore wind in the Celtic Sea. We believe the highest level of ambition should be set for regional ports to deliver the necessary manufacturing and assembly functions for floating offshore wind. This will require significant levels of investment and we heard that the Floating Offshore Wind Manufacturing and Investment Scheme (FLOWMIS) will be a critical first step to unlock this investment. We recommend the UK Government sets out a clear

timeline for the allocation of funding under this scheme while committing to ensuring Welsh ports receive at least half of available funding. Beyond FLOWMIS, longer-term targets and future funding commitments will be necessary to prepare ports for floating offshore wind.

Following on from our previous inquiry into grid capacity in Wales, we heard that network constraints continue to impede the delivery of future energy generation targets in the Celtic Sea. While we recognise that work is ongoing to plan the grid strategically to provide future capacity, we emphasise that wider decarbonisation goals should be considered when planning grid infrastructure. This should include the potential to decarbonise industry in South Wales using green hydrogen produced from green energy. Long-term targets and a clear roadmap for delivery should be provided at the earliest opportunity to assist National Grid ESO in planning network upgrades. We also recommend the UK Government continues to engage with industry and other stakeholders on finding solutions to accelerate the reinforcement of grid infrastructure as set out in our report on grid capacity in Wales.

Ultimately, the successful delivery of floating offshore wind in the Celtic Sea will require coordination between the UK and Welsh Government, public bodies and industry in a number of interdependent policy areas. Realising its full potential will require leadership and ambition and an approach which recognises this opportunity as a project of national significance.

1 Floating offshore wind and opportunities for Wales

Floating offshore wind

1. Wind farms situated further offshore can access higher wind speeds and therefore generate more energy than those closer to land.[1] However, deeper seabeds present technological and economic challenges for building conventional fixed foundations and 50 metres is generally accepted to be the approximate depth limit for fixed-bottom offshore wind farms.[2] Floating offshore wind projects therefore offer a means to harness the stronger winds typically found further offshore, beyond this limit.

2. Floating offshore wind farms comprise wind turbines installed on floating platforms (substructures) anchored to the seabed by means of flexible anchors, chains or steel cables. There are many different substructure designs under development but they can generally be grouped into one of four types—spar, semi-submersible, barge and tension leg platform—each with their own advantages and disadvantages.[3]

3. The UK has significant wind resources over deep seas and is already the largest offshore wind market in the world.[4] However, floating offshore wind is an emerging technology and to date has been limited in the UK to pilot-scale demonstrator projects off the coast of Scotland. This is consistent with the position of other leading floating offshore wind markets globally.[5]

4. The UK Government has set a target to develop 5GW of floating offshore wind generation by 2030 as part of the British Energy Security Strategy.[6] In 2021 it committed to:

> […] work closely with the Devolved Administrations, The Crown Estate and Crown Estate Scotland to address issues such as seabed leasing and protecting the marine environment and to ensure the UK captures the economic benefits of deploying the technology.[7]

Since the publication of the British Energy Security Strategy the UK Government has provided £160 million of funding to develop port infrastructure capable of mass-producing floating offshore wind components and installing them out at sea. Alongside this funding it announced the appointment of Tim Pick as the first Offshore Wind Champion and Chair of the Offshore Wind Acceleration Taskforce. The taskforce brings together companies from across the offshore wind sector with the aim of coordinating work to accelerate developments in offshore wind. It has also committed £31 million in

1 Parliamentary Office of Science and Technology, Developments in Wind Power, 23 May 2019 (page 4)
2 Floating Offshore Wind Centre of Excellence, Floating Offshore Wind Technology and Operations Review, 28 January 2021 (page 8)
3 Floating Offshore Wind Centre of Excellence, Floating Offshore Wind Technology and Operations Review, 28 January 2021 (page 9)
4 REWind Offshore, Comparative Analysis of International Offshore Wind Energy Development, March 2017 (page 95)
5 Floating Offshore Wind Centre of Excellence, Floating Offshore Wind Technology and Operations Review, 28 January 2021 (page 8)
6 HM Government, British Energy Security Strategy, 7 April 2022 (page 17)
7 HM Government, Powering our Net Zero Future, 14 December 2021 (page 46)

Research and Development funding;[8] launched a £17.5 million competition to support the demonstration of floating offshore wind technologies; and joined the Offshore Renewable Energy (ORE) Catapult's Floating Offshore Wind Centre of Excellence, contributing £2 million.[9]

Resource potential in the Celtic Sea

5. In January 2020 the ORE Catapult (a leading technology innovation and research centre for offshore renewable energy) produced a report in partnership with the Welsh Government on the benefits to Wales and the South West of floating offshore wind. It noted the Celtic Sea surrounding Wales and the South West has high average wind speeds, typically above eight metres per second over water depths of 50 metres and above. The report referred to a resourcing assessment by Bristol-based consultancy ITP Energised which used GIS mapping to identify ten potential zones for development. These zones have average wind speeds exceeding 10 metres per second and ITP Energised estimated between 15–50GW of floating offshore wind (out of a total 150–250GW capacity) could realistically be developed in the Celtic Sea region.[10]

6. The British Energy Security Strategy highlighted the potentially "huge benefits"[11] of floating offshore wind in the Celtic Sea and the UK Government stated in 2021 that "the Celtic Sea is […] a major development opportunity for the offshore wind sector, with a combination of deep waters and strong winds, and […] is set to create significant opportunities for development in Wales".[12] The Welsh Government also cited the "enormous potential off the Welsh coast" in a Written Statement in April 2022 and the opportunities floating offshore wind will bring for the economy and communities in the region.[13]

The Crown Estate's leasing process

7. The Crown Estate is a collection of assets and holdings belonging to the reigning monarch and includes the seabed out to twelve nautical miles. Rights to use the seabed are awarded by The Crown Estate through a leasing process.[14] In August 2020 The Crown Estate awarded seabed rights to the first floating offshore wind demonstration project in Wales as part of its Offshore Wind Test and Demonstration opportunity. The award went to Blue Gem Wind's 96MW Erebus demonstration project in the Celtic Sea, approximately 44km from the Welsh coast.[15] The project is set to commence construction in 2026 and operation in 2027.[16]

8 HM Government, British Energy Security Strategy, 7 April 2022 (page 17)
9 HM Government, Net Zero Strategy: Build Back Greener, 19 October 2021 (page 30)
10 ORE Catapult and Welsh Government, Benefits of Floating Offshore Wind to Wales and the South West, 30 January 2020 (page 4)
11 HM Government, British Energy Security Strategy, 7 April 2022 (page 16)
12 HM Government, Scotland and Wales could be home to new floating offshore wind ports thanks to £160m UK government funding, 30 October 2021
13 Welsh Government, Written Statement: UK Energy Security Strategy, 8 April 2022
14 Senedd Research, Who owns the seabed, and why it matters, 22 November 2021
15 The Crown Estate, Strong prospects for offshore wind in Wales: Rights awarded for two new projects, including Wales's first ever floating turbines, 19 August 2020
16 Blue Gem Wind, Community Newsletter Winter 2021 (page 7)

8. On 11 November 2021 The Crown Estate published plans for leasing rounds in the Celtic Sea to floating offshore wind developers. Its proposals included:

- A focus on two key project categories: early-commercial scale projects (of 300–350MW); and full-commercial scale projects (of up to 1GW).
- Leasing designed at a pace and scale to support supply chain and infrastructure development.
- An integrated spatial design and plan-level Habitats Regulations Assessment (HRA) ahead of market tender to identify environmental issues at the earliest opportunity with the aim of de-risking investment, minimising environmental risk and streamlining the overall programme.
- Work with the Electricity System Operator and others to support a coordinated grid solution for floating offshore wind projects.[17]

9. The Crown Estate carried out a programme of engagement with the market and stakeholders over the winter of 2021–22 to gather data and evidence on suitable project sites, along with views on wider considerations such as supply chains, ports, grid, and community benefits such as skills and employment.[18] This work was completed in early March 2022.[19] In July 2022 The Crown Estate published its 'Areas of Search'—those areas which represent the most favourable locations for floating offshore wind development, taking account of a variety of factors including navigation routes, fisheries activity and environmental sensitivities.[20] The Crown Estate has stated an intention for these areas to deliver 4GW of energy by 2035, which would provide power to almost four million homes and create an estimated 29,000 jobs in the industry.[21] According to research cited by The Crown Estate, the Celtic Sea has the potential to accommodate up to an additional 20GW of FLOW capacity by 2045.[22]

10. On 10 October 2022 these Areas of Search were further narrowed into 'Refined Areas of Search' following engagement with stakeholders such as fishing communities and environmental groups.[23] Further stakeholder and market feedback will be used to refine these still further into smaller 'Project Development Areas' which will be offered to the market via competitive tender in mid-2023.[24]

17 The Crown Estate, The Crown Estate develops proposals for floating wind in Celtic Sea, outlining 4GW opportunity, 11 November 2021
18 The Crown Estate, The Crown Estate develops proposals for floating wind in Celtic Sea, outlining 4GW opportunity, 11 November 2021
19 The Crown Estate, The Crown Estate progresses market and stakeholder engagement for floating wind plans in the Celtic Sea, 9 March 2022
20 The Crown Estate, The Crown Estate announces areas of search to support growth of floating wind in the Celtic Sea, 5 July 2022
21 BBC News, Floating wind farms at sea to create 29,000 jobs - Crown Estate, 5 July 2022
22 The Crown Estate, The Crown Estate announces areas of search to support growth of floating wind in the Celtic Sea, 5 July 2022
23 The Crown Estate, The Crown Estate updates developers on latest steps in the leasing process for floating wind in the Celtic Sea, 10 October 2022
24 The Crown Estate, The Crown Estate announces areas of search to support growth of floating wind in the Celtic Sea, 5 July 2022

Opportunities for the UK and Wales

11. We heard the deployment of floating offshore wind will ultimately be necessary in order to meet the UK's Net Zero targets as there are not enough areas in the UK in which fixed-bottom offshore wind can be relied on.[25] Moreover, there is a real opportunity for the UK to establish itself as a world leader in floating offshore wind and the industries which supply it, given the UK is already a world leader in conventional offshore wind[26] and has existing, transferable expertise in other sectors. Dan McGrail, Chief Executive Officer of RenewableUK, made the case the UK could take a "global leadership position and establish the industries here in the UK" were its leadership in oil and gas to migrate to floating offshore wind.[27] This point is recognised in the British Energy Security Strategy, which notes in reference to offshore wind that the country's history of expertise in oil and gas will enable the UK to "rapidly […] deploy our rich expertise in sub-sea technology and maximise our natural assets".[28] Tom Glover, UK Country Chair at RWE, pointed to the fact that floating offshore wind is not currently being developed anywhere else in the world at commercial scale, opening up opportunities for the UK and Wales to establish first-mover leadership in the sector.[29] Copenhagen Infrastructure Partners highlighted however that:

> Several global markets are embarking on programmes to develop the [floating offshore wind] opportunity, at pace and scale, and irrespective of previous market presence in fixed bottom offshore wind.[30]

We met representatives of Equinor, a participant in one of these programmes, on our visit to New York. Equinor recently won a provisional lease off the coast of California for floating offshore wind to generate 2GW, powering 750,000 homes.[31] Though in its early planning stages, this demonstrates other markets are moving quickly to develop the industry. Copenhagen Infrastructure Partners emphasised that "the UK can either be a leader in this process, or a follower. But it is important to highlight the massive opportunity that this industry can bring to first-movers […]".[32]

12. We heard that establishing floating offshore wind in the region as a first-mover has the potential to bring significant levels of investment into the country. Tom Glover told us that 10–20GW of floating offshore wind in the Celtic Sea (broadly in line with estimates of the region's capacity according to The Crown Estate[33]) could bring £20 billion of direct capital investment into the domestic market, with indirect investment "two or three times that".[34] Once the industry is established here in the UK, Dan McGrail told us a global export market could open up worth £500 billion by 2050.[35]

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25 Q2
26 REWind Offshore, Comparative Analysis of International Offshore Wind Energy Development, March 2017 (page 95)
27 Q1
28 HM Government, British Energy Security Strategy, 7 April 2022 (page 16)
29 Q2
30 Copenhagen Infrastructure Partners (CIP) (FOW0002)
31 Equinor, Equinor wins commercial-scale lease in California - deepens leading floating offshore wind position, 7 December 2022
32 Copenhagen Infrastructure Partners (CIP) (FOW0002)
33 The Crown Estate, The Crown Estate announces areas of search to support growth of floating wind in the Celtic Sea, 5 July 2022
34 Q2
35 Q1

13. This potential was recognised by witnesses across the board and we heard real enthusiasm for the opportunities floating offshore wind could open up for Wales. Copenhagen Infrastructure Partners made the case that "the confluence of abundant resource potential, industrial decarbonisation opportunity, and existing infrastructure supporting steel and energy markets" made Wales "perfectly positioned to pivot towards the [floating offshore wind] industry now".[36] Tom Sawyer, Chief Executive and Executive Director at the Port of Milford Haven, described floating offshore wind as "probably the most apolitical, widely supported initiative on the political agenda at the moment".[37] Henrik L. Pedersen, Chief Executive Officer and Executive Director of the Board at Associated British Ports, told us that "this is probably the single biggest investment opportunity you will see in Wales"[38] and that "with the right policies and investment, [floating offshore wind] could spark a wider economic and industrial transformation in South Wales".[39]

14. **Floating offshore wind in the Celtic Sea will not only be key to meeting the UK's Net Zero targets, it also presents an opportunity to bring significant investment into Wales and provide high quality jobs. If first-mover advantage can be seized for Wales the economic opportunity will be exponentially greater. We heard real enthusiasm and appetite from industry to seize the opportunities of floating offshore wind in the Celtic Sea, which we agree presents a once in a lifetime opportunity for the region. This appetite and level of ambition from industry must be matched by the UK Government, which should commit to driving this opportunity forward at pace as a project of national importance.**

A strategic approach

15. In response to the publication of the British Energy Security Strategy the Welsh Government stated they would be pressing the UK Government to develop an offshore wind industrial strategy "to maximise the potential opportunities for the economy and our communities in Wales".[40] In our session with Julie James MS, Welsh Government Minister for Climate Change, we asked whether the Welsh Government was still pressing for this strategy. The Minister told us that while the UK Government seemed to understand "the strategic importance of the floating wind opportunity around the whole of the UK shore" the Welsh Government was continuing to press for "a specific strategy that includes the Celtic Sea opportunity" which would "make sure that we do not lose that opportunity by broadening out the focus".[41] Julie James MS described the value of a strategic approach to us as follows:

> A strategy is very important because one of the things that every single developer has said to us, and indeed all the people who want to be part of the supply chain and the ports have said to us, is what they want more than anything else is certainty into the future of an investment stream that enables them to put in up-front investment.[42]

36 Copenhagen Infrastructure Partners (CIP) (FOW0002)
37 Q38
38 Q23
39 Associated British Ports (FOW0001)
40 Welsh Government, Written Statement: UK Energy Security Strategy, 8 April 2022
41 Q91
42 Q88

16. This need for certainty was a consistent theme among the witnesses we heard from, as was the need for UK Government targets beyond 2030 and the initial 4GW in the Celtic Sea. Mike Scott, Project Managing Director at Blue Gem Wind, told us that "as a developer […] we certainly look for that predictability".[43] Tom Glover emphasised the importance of the UK Government setting targets beyond 2030 to provide "us as developers, the industry, the supply chain and the ports with the confidence to invest".[44] Dan McGrail told us "it is not only important that The Crown Estate signals the 4GW but, also, what is coming after and approximately when".[45] He added that while the details were not necessarily needed at this stage, developers wanted visibility of "that process, that roadmap for opening up beyond the initial 4GW".[46] The case for clear future pipelines and targets beyond 2030 was also made to us by Copenhagen Infrastructure Partners, Henrik L. Pedersen and Mainstream Renewable Power.[47]

17. Given the importance of coordinating across multiple areas of physical and policy infrastructure to reach these targets, we heard there needed to be strong leadership at the top of government to drive the programme forward. Tom Sawyer argued "the way we make all of this happen is with some muscular command and control at the top of the government, to drive this forward as a major project of national significance and interest".[48] Despite significant potential in the Celtic Sea, he went on to say "it feels like, maybe across all of the governments, there is not quite the up-gunning that will be required to move this forward at pace".[49] This point was also made by Mike Scott, who argued that "it has to be a co-ordinated approach".[50] Copenhagen Infrastructure Partners told us that "to create a sustainable industry, a unifying platform or 'vision' is required around which the system for its delivery is structured and sequenced" and that this would require "more significant and co-ordinated Government support, with greater visibility that reduces investment uncertainty".[51] Henrik L. Pedersen summed up by stating "everybody I have met has the same ambition level, but now it is also time to execute".[52]

18. We asked the then Department for Business, Energy and Industrial Strategy how floating offshore wind was being driven forward within government. In response, Dr Nicola Higgins, Offshore Wind Programme Director, told us the Department is "working very closely with industry to look at how to commercialise floating offshore wind".[53] She also referred to the work of the Offshore Wind Acceleration Taskforce, chaired by Tim Pick, the Offshore Wind Champion, and its remit to accelerate developments in offshore wind across the UK.[54]

19. On 7 February 2023 the UK Government established the Department for Energy Security and Net Zero. The Department is tasked with delivering energy security; ensuring properly functioning energy markets; encouraging greater energy efficiency; and seizing

43 Q4
44 Q21
45 Q6
46 Q6
47 Copenhagen Infrastructure Partners (CIP) (FOW0002); Q23; Mainstream Renewable Power (FOW0003)
48 Q37
49 Q28
50 Q21
51 Copenhagen Infrastructure Partners (CIP) (FOW0002)
52 Q38
53 Q62
54 Q62

the economic opportunities of Net Zero.[55] The Department is likely to face competing demands from other sectors including nuclear and it will be important for this not to divert attention away from timely decisions on floating offshore wind. For this reason it will be essential for the sector to be represented by strong leadership within government.

20. **Developers need long-term targets and a clear pipeline of projects to unlock investment. Fully delivering on the opportunities for floating offshore wind in the Celtic Sea will require a high level of coordination across government and among public bodies. Given the scale and significance of this opportunity the UK Government will need to demonstrate clear leadership and a commitment to the industry for the long-term. The future role of the Offshore Wind Champion is uncertain under the new administration but we believe there is a clear benefit to having a champion of the sector able to drive forward developments and coordinate work across government.**

21. ***The UK Government must set targets for floating offshore wind beyond 2030 up to 2045. Alongside these targets it should work with The Crown Estate to provide visibility on future leasing opportunities in the Celtic Sea beyond the current leasing round and bring forward a strategy setting out how this will be delivered. The UK Government should also provide clarity on where leadership for this strategy lies within government. These targets and the strategy for achieving them should be provided prior to the conclusion of the upcoming leasing round.***

Resourcing of consenting bodies

22. We heard that in the short -term consenting bodies such as Natural Resources Wales and the Planning Inspectorate will need to be sufficiently staffed and resourced to deal with the ramp-up in applications from developers of floating offshore wind projects. Henrik L. Pedersen remarked that, in relation to planning, "it will not work if the planning inspectorate is not staffed up"[56] and told us that "it is essential to ensure that consenting bodies are supported to ensure they have adequate capacity and budgetary resource".[57] Copenhagen Infrastructure Partners also told us that "it will be critical for consenting bodies to be appropriately resourced to be able to meet the demands that the acceleration of floating offshore wind projects will have" and that "the ability of relevant consenting bodies to meet demand will impact developers' collective view of the practicality of developing projects on a phased basis".[58] Tim Pick recognised this point, commenting on the importance of "how the parties in the planning system use data, how they are resourced and how they are funded".[59] He went on to say:

> Whether it be in Wales or elsewhere, they are facing a ramp-up in applications and a ramp-up in the complexity of applications. We should not underestimate the demands on those people at the end of the day to implement the planning system.[60]

55 Department for Energy Security and Net Zero, About us [date accessed: 24 February 2023]
56 Q26
57 Associated British Ports (FOW0001)
58 Copenhagen Infrastructure Partners (CIP) (FOW0002)
59 Q43
60 Q43

23. Dr Nicola Higgins, Offshore Wind Programme Director at the then Department for Business, Energy and Industrial Strategy, told us that discussions were ongoing with counterparts in the Department for Levelling Up, Housing and Communities and the Department for Environment, Food and Rural Affairs to ensure consenting bodies are adequately staffed and resourced.[61] She also told us there was an "ongoing conversation" between the UK Government and devolved bodies such as Natural Resources Wales on this issue.[62] However, she went on to say "I cannot sit here and say we have the solution at the moment".[63]

24. **Consenting bodies will face a significant ramp-up in applications from developers of floating offshore wind projects. In order to process these applications in a timely and coordinated manner and accelerate the delivery of floating offshore wind in the Celtic Sea it will be critical for these consenting bodies to be sufficiently staffed and resourced.**

25. ***The UK Government should work with the Welsh Government to identify the staffing and resourcing requirements of consenting bodies necessary for the delivery of floating offshore wind at pace. Subsequent to this review, both governments should bring forward a joint plan and timetable for how these resources will be allocated and shared to meet demand.***

61 Q79
62 Q80
63 Q80

2 Ensuring local supply chains benefit from floating offshore wind

Investment in local supply chains

26. In January 2020 the ORE Catapult, in partnership with the Welsh Government, published a report on securing the benefits of floating offshore wind for Wales and the South West. It highlighted the lack of contribution from UK supply chains in pilot floating offshore wind projects in Scotland, with major fabrication and installation works instead undertaken in Norway and Spain.[64] The report also noted that, with 100GW of global floating offshore wind capacity anticipated by 2050 and much of this expected after 2030 in countries with limited experience in deploying floating offshore wind to date there will be significant opportunities for the region to export its skills and experience.[65]

27. Dan McGrail told us the global export market for floating offshore wind could be worth £500 billion by 2050[66] and that "if we move early in the Celtic Sea, and do the right things to stimulate the market, we can build the industry to approach that market".[67] Copenhagen Infrastructure Partners noted that establishing a regional hub for the fabrication and final assembly of substructures as a first-mover would likely confer a competitive advantage to that area.[68] They also noted that floating offshore wind will afford greater opportunities for local content than fixed-bottom offshore wind due to the size of the substructures and the limitations of transporting these over long distances.[69] Furthermore, additional opportunities for local supply chains will arise in the manufacture of components such as anchoring systems and mooring lines.[70] Tom Glover raised the possibility of Welsh ports servicing Dublin and Northern France, in addition to exporting their expertise.[71] He noted the UK is already "the world leaders in offshore wind"[72] in terms of expertise and intellectual capital but that more needed to be done to attract manufacturing, arguing that "government policy has to be changed" if nacelles (the unit which houses the generating components in a wind turbine including the gearbox, generator, controller, and brake), turbines and blades are to be sourced in the UK.[73] According to Tom Glover, other countries provide incentives for the establishment of the large factories needed to manufacture these items and, if the UK also wishes to attract these factories, it will need to consider "tax incentives, more direct investments and […] state aid".[74]

64 ORE Catapult and Welsh Government, Benefits of Floating Offshore Wind to Wales and the South West, 30 January 2020 (page 3)
65 ORE Catapult and Welsh Government, Benefits of Floating Offshore Wind to Wales and the South West, 30 January 2020 (page 35)
66 Q1
67 Q1
68 Copenhagen Infrastructure Partners (CIP) (FOW0002)
69 Copenhagen Infrastructure Partners (CIP) (FOW0002)
70 Copenhagen Infrastructure Partners (CIP) (FOW0002)
71 Q2
72 Q16
73 Q15
74 Q15

28. However, in the short-term we heard a careful balance should be struck between accelerating the deployment of floating offshore wind and giving the supply chain adequate time to develop. Tom Glover compared The Crown Estate's 4GW target favourably to ScotWind's (the leasing opportunity in Scottish waters administered by the Crown Estate Scotland) more ambitious 25GW target, claiming the latter could potentially "blow the supply chain" as it will not be able to deliver such a high target.[75] According to Tom Glover, long-term targets will be more important than speed in order to give the supply chain time to build.[76] Tom Sawyer supported mandating a minimum quantity of UK-produced content in floating offshore wind projects but argued it must be "a managed pathway to achieving that that is realistic and does not interfere with the acceleration of the delivery of the programme" and "to mandate 60% [local content] off the bat would be difficult".[77] Henrik L. Pedersen agreed that a balance must be struck between accelerating the delivery of floating offshore wind and supporting local manufacturing, remarking that if the former is prioritised at the expense of the latter "manufacturing plants will be built overseas".[78] He argued mandating minimum local content will be necessary in an environment in which this is the norm among competitors, stating:

> I look at all the ports we compete with and all the countries we compete with. By and large, they all have hard requirements for local content. […] If we do not have these requirements, from a port side I fear that we will never be able to host these manufacturing sites.[79]

29. While not mandating minimum local content, The Crown Estate has advised developers they will be expected to provide supply chain investment plans as part of their bid for a lease. Developers will only progress to the final stage of the tender if they can demonstrate "investment in support of an internationally competitive supply chain," along with other legal, financial and technical elements.[80] We asked The Crown Estate for detail on how supply chain plans will be assessed and were told that demonstrating investment in supply chains will be "mandatory" with "a firm pass or fail" marked against bidding plans.[81]

30. However, we heard concerns raised over how these commitments will be delivered. In a letter to us, Henrik L. Pedersen expressed concern about "the lack of detail on supply chain and local content requirements".[82] He urged the UK and Welsh Governments to work with The Crown Estate "to provide further detail on the local content commitment developers will have to give as part of the bidding process and to formulate a mechanism which ensures that these commitments are achieved".[83] He also emphasised that "such mechanisms must have real 'teeth' in order to turn bidders' commitments into real action".[84] Julie James MS also commented that a simple pass or fail will not be enough to

75 Q7
76 Q7
77 Q37
78 Q37
79 Q25
80 The Crown Estate, Celtic Sea Floating Wind: October 2022 update, 10 October 2022
81 Q55
82 Associated British Ports (FOW0001)
83 Associated British Ports (FOW0001)
84 Associated British Ports (FOW0001)

ensure developers follow through on their commitments and that the Welsh Government wanted to see "robust plans that are part of the contract, so that if you breach them, you are in breach of your auction contract".[85]

31. We pressed the then Department for Business, Energy and Industrial Strategy on this issue and Dr Nicola Higgins told us this was the first time The Crown Estate had encouraged investment in supply chains at an early stage in the process and that the details were still being worked through.[86] Rt Hon Graham Stuart MP, then Minister for Climate at the Department for Business, Energy and Industrial Strategy, stressed the importance of building and investing in local supply chains, describing the benefits of doing so as follows:

> If we can make this work then we will be bringing well-paid jobs and prosperity to communities which had historically been reliant on high carbon and are currently looking at a bleak future.[87]

However, he told us that any requirements for supply chain investment must be "compliant with our legal obligations in terms of the World Trade Organisation" and that "you cannot just specify local content". He described the situation as:

> A balancing act between requirements that observe those rules and keep fair competition—and thus also help keep prices down for consumers—while also providing that pipeline certainty, especially in products which are so vast, and use that to make it more likely that more of the supply chain exists in and close to where they are deployed.[88]

32. **We recognise that investment in local supply chains must be balanced against accelerating programme delivery, bringing costs down for consumers and compliance with international treaty obligations. However, the potential for wealth and job creation in Wales from floating offshore wind is too great to be missed. There is a real opportunity for the region to gain first-mover advantage as a hub for the manufacture and assembly of floating offshore wind components and to export its skills and expertise into a growing global market. We welcome The Crown Estate's requirement for developers to provide supply chain investment plans as part of their bid for a lease. However, these plans must be commitments and The Crown Estate should ensure developers are held to them.**

33. ***We recommend The Crown Estate bring forward further detail on its supply chain requirements at the earliest opportunity to assist developers in preparing their bids. Alongside this it should formulate a credible mechanism for holding developers to their supply chain investment plans and ensuring these commitments are followed through.***

85 Q97
86 Q67
87 Q68
88 Q67

Contracts for Difference

34. Contracts for Difference are fifteen-year contracts between renewable energy generators and the Low Carbon Contracts Company (LCCC)—a UK Government-owned company that manages Contracts for Difference at arm's length. Contracts for Difference aim to incentivise investment in renewable energy by providing developers with protection from volatile wholesale prices and protect consumers from paying increased support costs when electricity prices are high. Successful developers are paid a flat rate for the electricity they produce over a fifteen-year period—the difference between the 'strike price' and the 'reference price' (or market price). In the auction process, the lowest priced bids within each pot or ringfence are successful, which aims to drive efficiency and cost reduction. Contracts are awarded in a series of competitive allocation rounds which have been run approximately every two years.[89]

35. Allocation rounds are run across Great Britain meaning floating offshore wind projects in the Celtic Sea will be in competition with projects in Scotland.[90] Unlike auction bids for leasing in Scottish waters which are capped at £100,000 per square kilometre of seabed (raised from an earlier cap of £10,000) there is no cap on auction bids for leasing in the Celtic Sea.[91]

36. We asked developers whether projects in the Celtic Sea would find themselves at a competitive disadvantage in Contracts for Difference auctions given this discrepancy. Though we heard the uncapped nature of bids was of slight concern, developers told us the relative economics of the Celtic Sea versus Scotwind, including leasing costs, would be taken into account by developers and bids would therefore reach a competitive level via normal market processes.[92] Mainstream Renewable Power made the further point that redesigning the tender process at this stage "would significantly delay the upcoming leasing round".[93]

37. However, we heard concerns around the nature of Contracts for Difference auctions more generally, specifically developers being judged on price and the tension between this and The Crown Estate's leasing rounds. Tim Pick explained the situation as follows:

> We have a system in the UK of two auctions as you develop a wind farm. You have an auction with The Crown Estate to get your lease site where you effectively bid high and then you have an auction to get your CFD where you bid low. It is no surprise that in between those two auctions the supply chain is getting squeezed.[94]

38. Tim Pick claimed "if people are only judged on price in the CFD they will buy the cheapest they can get away with" which may not include local supply chains[95] and argued one of the reasons a strong supply chain for fixed-bottom offshore wind had not been achieved was due to "those fundamental upward and downward price pressures".[96] He

89 Department for Business, Energy and Industrial Strategy, Contracts for Difference, 14 December 2022
90 Department for Business, Energy and Industrial Strategy, Contracts for Difference, 14 December 2022
91 BBC News, Will ScotWind auction deliver a renewables revolution?, 15 January 2022
92 Q11
93 Mainstream Renewable Power (FOW0003)
94 Q46
95 Q54
96 Q46

advocated some reform to Contracts for Difference auctions[97] and told us challenging the Department for Business, Energy and Industrial Strategy on the design of Contracts for Difference auctions was "probably the key thing that I am doing to assist".[98] Julie James MS also argued there needed to be better alignment between The Crown Estate's leasing rounds and Contracts for Difference auctions.[99] She told us without this:

> There is a real danger that big international firms will simply resort to their most convenient and already tested supply chain networks and we will have lost much of the wealth-creating opportunity for Wales and for the UK.[100]

39. We put these points to the then Department for Business, Energy and Industrial Strategy. Dr Nicola Higgins told us Contracts for Difference auctions had been reformed to include supply chain plans for floating offshore wind projects.[101] These reforms require all applicants to provide National Grid ESO with a statement from the Secretary of State for Business, Energy and Industrial Strategy approving a supply chain plan. Eligibility to participate in the Contracts for Difference scheme will be dependent on this statement of approval.[102]

40. However, approval is dependent on responses to a questionnaire which refers to voluntary, developer-led targets rather than enforceable local content requirements.[103] It is also unclear, given The Crown Estate is still consulting with developers, port operators and other stakeholders on their own supply chain requirements[104] whether alignment between The Crown Estate's leasing rounds and Contracts for Difference auctions will be realised.

41. Furthermore, concerns have been raised by developers that the strike price for the latest Contracts for Difference allocation round has been set too low, having failed to take into account increased costs from supply chains and other factors due to global economic pressures. This could mean a reluctance on the part of developers to enter into long-term agreements and the UK being outcompeted for investment.[105] Given competition from Europe and the United States and the importance of establishing supply chains here in the UK, there is a real need to ensure Contracts for Difference remain competitive.

42. **Given the importance of ensuring local supply chains benefit from floating offshore wind it will be essential for supply chain requirements in Contracts for Difference auctions to be enforceable and brought into alignment with The Crown Estate's leasing rounds. Contracts for Difference auction parameters must also take into account increased costs to developers arising from global economic pressures to remain internationally competitive.**

97 Q46
98 Q54
99 Q97
100 Q97
101 Q76
102 Department for Business, Energy & Industrial Strategy, Contracts for Difference (CfD) Allocation Round 5: Supply Chain Plan questionnaire and guidance, 9 August 2022
103 Department for Business, Energy & Industrial Strategy, Contracts for Difference (CfD) Allocation Round 5: Supply Chain Plan questionnaire and guidance, 9 August 2022
104 The Crown Estate, Celtic Sea Floating Wind: January 2023 update, 6 January 2023
105 Bloomberg, UK Offshore Wind Push at Risk of Stalling Without Higher Prices, 20 January 2023

43. ***The UK Government should reform future Contracts for Difference auctions for floating offshore wind to include enforceable local content requirements as a condition of the contract. These requirements should be designed to align with those in The Crown Estate's upcoming leasing rounds. It should also re-examine the parameters for Allocation Round 5 and take action to ensure the strike price fully reflects increased costs to developers arising from global economic pressures.***

3 Preparing ports for floating offshore wind

Port requirements for floating offshore wind

44. Floating offshore wind turbines and substructures are vast engineering projects—substructures alone can measure up to 80 metres across and weigh thousands of tonnes.[106] By the early 2030s, with turbine capacities expected to reach 15MW, turbines could reach as high as 300 metres, or as tall as The Shard.[107] Port requirements for the manufacture and assembly of floating offshore wind components are therefore significant and include sufficient laydown space to hold substructure components and run parallel substructure assembly lines; adequate quayside ground bearing capacity, as well as quay length and draft; and available crane capacity.[108]

45. We heard from Henrik L. Pedersen that the role of ports in relation to floating offshore wind will be determined by the level of ambition around domestic production:

> In simple terms, do we continue to manufacture the components overseas, import it here to Port Talbot and then assemble it, or do we repurpose the port for what I really hope we are going to do, which is to bring in a lot of manufacturing.[109]

He went on to describe the scale of repurposing needed to make ports ready for the manufacture and assembly of floating offshore wind components:

> The platforms will be as big as football pitches. They are 100 by 50 metres in either steel or concrete. That is a floating pontoon. Then you put a 300-metre tower on top. These are huge industrial structures. The port needs to handle one every week or maybe two or maybe three every three weeks. This has not been done at this scale before.[110]

Tom Sawyer told us that:

> For every gigawatt, you are talking about 20 kilometres of blades and something like 10 kilometres of towers. A single anchor chain link weighs about a quarter of a tonne. The scale is enormous.[111]

46. Despite the scale of these requirements we heard agreement from witnesses that regional ports should be prepared for manufacturing and assembly functions if the region is to fully benefit from floating offshore wind. Tim Pick told us that "the supply chains will only exist if the ports get moving, if the port infrastructure is there for them".[112] Henrik L. Pedersen made the point that "once these manufacturing bases are established elsewhere, it will take 20 years before the next wave will roll in".[113] Several witnesses drew

106 ORE Catapult, The opportunities and challenges of floating offshore wind, 30 November 2022
107 ORE Catapult, Floating Offshore Wind Technology and Operations Review, 28 January 2021 (page 33)
108 ORE Catapult, Floating Offshore Wind Technology and Operations Review, 28 January 2021 (page 46)
109 Q23
110 Q25
111 Q25
112 Q54
113 Q37

comparisons with fixed bottom offshore wind, namely the missed opportunities for local supply chains and manufacturing jobs and expressed the intention not to repeat the same mistakes with floating offshore wind.[114]

47. The importance of preparing ports for floating offshore wind was also recognised by the UK and Welsh Government Ministers and officials we heard from. Rt Hon Graham Stuart MP told us that ports and manufacturing capability were key to building the supply chain and bringing costs down.[115] Julie James MS told us that:

> If we can't […] get our ports into a position where they can take advantage of the supply chain, we might get the renewable energy in the Celtic Sea […] but what we might not get is the wealth creation and the job creation for Wales that could come out of the same opportunity. […] We don't want to see just the renewables being exported by international companies with no obligation for local supply chain and local employment opportunities.[116]

48. **Developing regional port infrastructure for the manufacture and assembly of floating offshore wind components will require significant investment but will be necessary for local supply chains and jobs. The full economic benefits of floating offshore wind should go to the region and not be lost overseas. To ensure this happens the highest level of ambition should be set for regional ports to deliver all the necessary manufacturing and assembly functions of floating offshore wind.**

Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS)

49. On 30 October 2021 the UK Government announced the Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS) to "develop port infrastructure capable of mass-producing floating offshore wind turbines and installing them out at sea".[117] Developers and manufacturers would be able to bid for a share of up to £160 million and the scheme opened to expressions of interest on 20 May 2022.[118]

50. We heard widespread agreement from witnesses that FLOWMIS will be a critical first step to unlock private sector investment in ports. Henrik L. Pedersen claimed that FLOWMIS will be "integral to unlock the required timely investment in port infrastructure" and urged "the UK Government to maintain its commitment to this grant support".[119] Mainstream Renewable Power commented that "port investments will be vital for timely deployment for floating offshore wind in the Celtic Sea" and that "certainty on the FLOWMIS scheme for port enabling investments is required soon".[120] Julie James MS told us that "we need […] FLOWMIS […] to unlock the additional private sector investment".[121] Dan McGrail described FLOWMIS as "vital"[122] and Tim Pick stated "the

114 Q23; Q46; Q97
115 Q62
116 Q92
117 HM Government, Scotland and Wales could be home to new floating offshore wind ports thanks to £160m UK government funding, 30 October 2021
118 HM Government, Scotland and Wales could be home to new floating offshore wind ports thanks to £160m UK government funding, 30 October 2021
119 Associated British Ports (FOW0001)
120 Mainstream Renewable Power (FOW0003)
121 Q100
122 Q5

FLOWMIS scheme is absolutely key to building confidence in the ports,"[123] describing it as "the Government's contribution to the de-risking of that investment by the likes of ABP and Milford Haven".[124]

51. We heard some concern however that funding from FLOWMIS will be shared between the Celtic Sea and ScotWind projects, meaning Welsh ports may not receive all the investment they need.[125] Funding will also be shared across a number of sites in Wales, further diluting funding received by individual ports.[126] When we put this to the Department for Business, Energy and Industrial Strategy, Dr Nicola Higgins, Offshore Wind Programme Director, told us:

> We cannot prejudge the outcomes of the competitive FLOWMIS scheme. […] No decision on funding splits have been made for the FLOWMIS scheme yet. […] We recognise that we need the local infrastructure for both the Celtic Sea and the ScotWind projects.[127]

52. **FLOWMIS will be critical for unlocking private sector investment in Welsh ports and making them ready for floating offshore wind. Investors require certainty on the UK Government's commitment to this funding.**

53. ***The UK Government should set out a clear timeline for the allocation of FLOWMIS and commit to ensuring Welsh ports receive at least half of the available funding.***

Future investment into ports

54. In September 2021 the ORE Catapult in collaboration with the Welsh Government published a review of port infrastructure across Wales with respect to its suitability for floating offshore wind. The review found that no single port in Wales currently has the capacity to deliver all the functions and services required for floating offshore wind but concluded that Port Talbot and the Port of Milford Haven could form the basis of a consortium of ports with the ability to deliver most of the required activities and, with sufficient investment, all the necessary activities for floating offshore wind.[128] To capture maximum benefit the review noted significant investment in port infrastructure would be required, though it did not attempt to quantify this investment. It did, however, note that a key enabler of such investment would be the existence of a credible pipeline of projects to be developed over the next twenty years.[129]

55. These findings were reiterated to us over the course of our inquiry. Henrik L. Pedersen told us that "floating offshore wind in Wales will take off only if we repurpose and build out Port Talbot" due to the infrastructure surrounding the port; its large, sheltered water area; and its deep basin.[130] Tom Sawyer, Chief Executive and Executive Director of the Port of Milford Haven, added that "in south-west Wales, to address the opportunity and

123 Q45
124 Q54
125 Q25
126 Q25
127 Q74
128 ORE Catapult and Welsh Government, Floating Wind in Wales Substructure and Port Review, 27 September 2021 (page 24)
129 ORE Catapult and Welsh Government, Floating Wind in Wales Substructure and Port Review, 27 September 2021 (page 24)
130 Q22

the scale of what is required of the Celtic Sea array, it needs to be a dual port solution".[131] He remarked that Port Talbot would play a central role "because of the scale and size of the place and the area where a lot of the manufacturing and assembly will take place"[132] while the Port of Milford Haven could play an operations and maintenance role due to its proximity to the Celtic Sea array.[133] He clarified this role would include "seabed preparation, seabed survey robotics, automation, autonomy" and grow "great content for the south-west of Wales in terms of jobs, technology and innovation".[134]

56. In September 2022 a consortium consisting of Associated British Ports, Neath Port Talbot Council, Pembrokeshire County Council and the Port of Milford Haven revealed plans to combine the ports of Port Talbot and Milford Haven into a green energy-focused 'virtual' freeport, citing opportunities in floating offshore wind, hydrogen and sustainable fuels. The consortium has said it will work with established and emerging industry representatives, unions, academics and other key stakeholders to map out a bid to the Freeport Programme in Wales.[135] Successful bids are due to be announced in early spring 2023.[136]

57. Julie James MS, Minister for Climate Change at the Welsh Government, told us that the Welsh Government were "very keen" not to be "constrained to a geographical location"[137] and that "there is a possibility to operate ports along the south Wales coast as if they were a single port for some purposes". She added that freeports provide a model for attracting investment and there exists an opportunity for more than one freeport depending on funding, stating she "would like to see the most creative use of that funding in collaborations where that is possible".[138]

58. We heard the level of investment needed will be many times higher than that provided by FLOWMIS, irrespective of the role played by individual ports. Dan McGrail told us that, while £160 million for port infrastructure was "a very important step" it "does not go that far when it comes to building the kind of port infrastructure we need".[139] Henrik L. Pedersen told us that Associated British Ports would need to invest £500 million "to make this work"[140] but "that is only for the port infrastructure" and "to create the manufacturing sites and so on […] would be literally billions more".[141]

59. Given the level of investment needed to make ports ready for floating offshore wind, Tom Sawyer emphasised the importance of following through on ambitions and targets, remarking that:

131 Q24
132 Q24
133 Q24
134 Q24
135 Business Live, Plans for multi-site green energy focused freeport in south-west Wales, 30 September 2022
136 HM Government, Freeport Programme in Wales: bidding prospectus, 29 September 2022
137 Q95
138 Q104
139 Q5
140 Q23
141 Q25

> We do not want to be in a position where our money or, worse still, public money has been used to create something that ultimately is not used or does not realise its return on investment, either in direct business terms or in terms of a societal benefit.[142]

Copenhagen Infrastructure Partners reiterated to us that FLOWMIS will not be enough "to kick-start an industry from a standing start" and that "to continue to send a strong signal and drive investor confidence" the UK Government should "provide clarity regarding its future funding commitment to the sector".[143] Dan McGrail highlighted that investment in port infrastructure will be long-term investments of thirty to fifty years and that it will be important to signal what comes after the initial 4GW target has been achieved.[144] Tom Glover agreed with this view, stating that "more transparency" over future targets would be welcome[145] and that these would provide ports with the confidence to invest.[146] Mainstream Renewable Power told us that "the industry needs visibility on a subsequent scheme to underwrite larger ports and manufacturing investments, preferably within the coming year and prior to conclusion of the leasing process".[147] Julie James MS told us that "what [ports] want more than anything else is certainty into the future of an investment stream that enables them to put in up front investment" and that "to unlock the investment boards for the ports […] and the investment opportunities for the big renewable developers, we need to have a foreseeable pipeline into the future".[148] She also told us that "we need some certainty from the UK Government that the investment they put in, although very welcome indeed, is not the end of it but the beginning of it".[149]

60. **A consistent theme throughout our inquiry was the need for long-term certainty to provide confidence to the sector and unlock investment. Much of this investment is likely to go to Port Talbot and the Port of Milford Haven which are set to play a key role in the delivery of floating offshore wind in the Celtic Sea. Preparing these ports will require significant investment and this will only be forthcoming with a credible pipeline of projects over future decades matched by a commitment from government to support the sector.**

61. ***To provide ports with the confidence to make long-term investments in infrastructure The Crown Estate should set further targets for floating offshore wind in the Celtic Sea beyond its initial target of 4GW. Alongside this the UK Government should set out its future funding commitments to ports beyond the allocation of FLOWMIS.***

142 Q25
143 Copenhagen Infrastructure Partners (CIP) (FOW0002)
144 Q6
145 Q6
146 Q21
147 Mainstream Renewable Power (FOW0003)
148 Q88
149 Q92

4 Preparing the grid for floating offshore wind

National Grid ESO's Holistic Network Design

62. In July 2022 the National Grid ESO published The Pathway to 2030 Holistic Network Design which sets out a coordinated approach for connecting 23GW of offshore wind. According to the National Grid ESO, the Holistic Network Design represents "a first step towards more centralised, strategic network planning that is critical for delivering affordable, clean and secure power".[150] The summary report notes that:

> In the South West Region, the locations and capacities of the in scope wind farms are not yet known and will depend on the outcome of The Crown Estate's upcoming seabed leasing round in the Celtic Sea, which currently expects to see rights awarded by the end of 2023. To allow us to develop an indicative design in advance of the leasing round we have made assumptions on the capacity and locations of the wind farms. The design provides a proposal for how 1GW of offshore wind could be connected in the Celtic Sea, but no fixed design recommendations are made at this stage.[151]

63. The recommendation of the report is to connect all three assumed wind farms through a coordinated HVAC link to Pembroke, which would provide "significant benefits" to the alternative 'radial' design considered by the review. However, the report notes there are "significant onshore and offshore constraints around the Pembroke site" and that "careful consideration will need to be given to future developments in this location". It concludes that further consideration on how to develop the network in the region will be given "when more detail is known on the capacity and location of seabed leases in the Celtic Sea".[152]

Grid capacity in Wales

64. In October 2022 we published our report into grid capacity in Wales.[153] One of the findings of our inquiry was that grid constraints had impeded the deployment of renewable energy generation in Wales.[154] We recommended the UK Government produce a projected timeline for how to reduce processing times by 50% within a year.[155] We also found that, until the South Wales transmission line could be reinforced to support offshore developments in the Celtic Sea, developers were being offered connections into North Devon instead.[156]

150 National Grid ESO, The Pathway to 2030 Holistic Network Design [date accessed: 16 February 2023]
151 National Grid ESO, Pathway to 2030, July 2022 (page 50)
152 National Grid ESO, Pathway to 2030, July 2022 (page 51)
153 Welsh Affairs Committee, Grid capacity in Wales, First Report of Session 2022–23, 21 October 2022
154 Welsh Affairs Committee, Grid capacity in Wales, First Report of Session 2022–23, 21 October 2022 (pp. 17–18)
155 Welsh Affairs Committee, Grid capacity in Wales, First Report of Session 2022–23, 21 October 2022 (page 23)
156 Welsh Affairs Committee, Grid capacity in Wales, First Report of Session 2022–23, 21 October 2022 (page 18)

65. This situation does not appear to have changed over the course of our inquiry. Tom Glover told us that relevant "grid connections are still to Alverdiscott in North Devon. They have not moved to Wales yet" and made the case that it was important for developers to connect into Wales, stating:

> It is important to go into Wales [...] because we want to build a decarbonisation hub in Pembrokeshire. We want to use that green electricity directly to make green hydrogen and provide green hydrogen to local industry, which starts to decarbonise that important economic area for Wales.[157]

Henrik L. Pedersen also made this case and proposed a holistic "closed-loop cycle in South Wales" whereby floating offshore wind is not only used for electricity but to make green hydrogen for the heavy industry in the area.[158] Tom Sawyer was also "enthusiastic" about green hydrogen and Tim Pick described it as a "win-win" if green energy could be used to assist the decarbonisation of Tata Steel Port Talbot.[159] Julie James MS made the further point that "wherever the energy from the Celtic Sea comes ashore, assuming it is in the UK, it will need investment, but Wales would still need investment, so why on earth wouldn't you do both of those at the same time?"[160]

66. The UK Government stated in their response to our report on grid capacity that "strategic planning of the network will always take account of network needs in Wales along with other parts of Great Britain". It also noted the Holistic Network Design's recommendation to connect 1GW of initial capacity from floating offshore wind in the Celtic Sea to Pembroke Dock and that a follow up exercise will "consider the most appropriate connection points and associated onshore reinforcements" for 4GW of capacity. The response further notes that:

> All potential connection points in South Wales will be assessed while balancing cost, technical feasibility, environmental impact, and community impact design objectives.[161]

67. **We recognise the benefits of a grid planned strategically for the whole of Great Britain. However, the UK's decarbonisation efforts should also be planned strategically and there are distinct opportunities that arise from ensuring floating offshore wind in the Celtic Sea connects into Wales. This is the case particularly given the heavy industry in the region and the potential opportunity to decarbonise this industry using green hydrogen produced from green energy.**

68. ***Wider decarbonisation goals should be considered when planning grid infrastructure. The UK Government should continue to appraise National Grid ESO's Holistic Network Design and follow-up exercise with this in mind and ensure opportunities for decarbonisation in Wales are not missed when decisions over where to connect floating offshore wind in the Celtic Sea are made. The UK Government should update us on work to strengthen the grid in South West Wales to accommodate future generation in the Celtic Sea.***

157 Q19
158 Q28
159 Q55
160 Q108
161 Welsh Affairs Committee, Grid capacity in Wales: Government response to the Committee's First Report of Session 2022–23, Third Special Report of Session 2022–23, 24 January 2023 (page 3)

69. For the reasons outlined in Chapter 2 of this report, if regional supply chains are to fully benefit from floating offshore wind then initial targets must be set at a level that is realistic for those supply chains to supply into. Tom Glover emphasised this point to us, commenting that the initial 4GW target in the Celtic Sea was a realistic target for a growing industry and "nothing to do with grid capacity".[162]

70. However, we heard that grid constraints will impede the delivery of future targets and there was real concern expressed by witnesses about the time it may take to prepare the grid for these developments. Tim Pick, Offshore Wind Champion and Co-Chair at Offshore Wind Acceleration Taskforce, told us that grid capacity was "a regular standing item" for the Offshore Wind Acceleration Taskforce and that he considered it to be "essentially the rate limiting factor" for achieving future targets.[163] Copenhagen Infrastructure Partners told us that the "grid is the lifeline of offshore projects, and current uncertainty around timings acts as a brake on investment," emphasising that "investments will be adjusted to fit within the expected grid availability timings".[164] Mike Scott pointed to The Crown Estate's ambition for over 20GW to follow the 4GW target, pointing out that it "has to go somewhere"[165] and asked whether capacity in the region was being looked at, adding that he was not convinced that "it is being planned right now, because of the length of time that it takes to get new substations built and new lines up ready to run".[166] Dan McGrail added that it was important "not [to] underestimate the significance of the challenge of building the grid that is needed. The amount of time that it takes and the complexity from a consenting point of view is significant".[167] Copenhagen Infrastructure Partners called for discussions between the UK Government and industry on "alternative pathways to securing quicker, consentable solutions" and stated that:

> Given the scale of the challenge and the requirement to establish the Celtic Sea as an entity capable of deploying at commercial scale, this should also contemplate accelerating projects outside of Holistic Network Design parameters.[168]

Mainstream Renewable Power emphasised that a roadmap of future leasing opportunities in the Celtic Sea will help to facilitate a coordinated grid design and that, if anticipatory investments are made, this "should allow grid connection to be removed as the critical path for commissioning of projects leased in future rounds".[169]

71. The importance of a strategic solution to grid capacity was emphasised by the Government Ministers and officials we heard from. Julie James MS told us that "we need a holistic grid solution for the whole of the Celtic Sea region that recognises the needs of the project developers coming forward" and one which takes account of "future demand for reliable supply of renewable electricity to underpin all of our decarbonisation pathways".[170] Edward Sherriff, Deputy Director of Energy at the Welsh Government, told us the Welsh Government is currently working with National Grid ESO on a strategic solution to

162 Q19
163 Q43
164 Copenhagen Infrastructure Partners (CIP) (FOW0002)
165 Q20
166 Q20
167 Q20
168 Copenhagen Infrastructure Partners (CIP) (FOW0002)
169 Mainstream Renewable Power (FOW0003)
170 Q106

bringing in a potential 20GW of floating offshore wind.[171] Rt Hon Graham Stuart MP, Minister for Climate at the Department for Business, Energy and Industrial Strategy, also told us that "we need to have a strategic plan rather than just leaving it to the market and leaving it to developers" and that coordination will be essential in "such a crowded landscape".[172]

72. **Strategic planning of grid infrastructure will be essential for accommodating future GW targets in the Celtic Sea. National Grid ESO have stated that proposals on how to develop the network in the region will be given when more detail is known on the capacity and location of future floating offshore wind projects. Visibility of future targets in the Celtic Sea and a clear roadmap will therefore be essential for the timely planning of grid infrastructure. To accommodate these targets in time the UK Government will also need to provide anticipatory investment and seek ways to overcome delays in improving the network.**

73. ***Long-term targets and a clear roadmap for delivery, as recommended elsewhere in this report, should be provided at the earliest opportunity to assist National Grid ESO in planning for improvements to grid infrastructure. Alongside this, the UK Government should continue to appraise National Grid ESO's proposals, ensure these are fit for purpose and, where necessary, back proposals with anticipatory investment. We also recommend the UK Government continue to engage with industry and other stakeholders on finding solutions to grid infrastructure acceleration. These solutions should be sought in accordance with the target of reducing processing times by a minimum of 50% within a year.***

171 Q107
172 Q85

Conclusions and recommendations

Floating offshore wind and opportunities for Wales

1. Floating offshore wind in the Celtic Sea will not only be key to meeting the UK's Net Zero targets, it also presents an opportunity to bring significant investment into Wales and provide high quality jobs. If first-mover advantage can be seized for Wales the economic opportunity will be exponentially greater. We heard real enthusiasm and appetite from industry to seize the opportunities of floating offshore wind in the Celtic Sea, which we agree presents a once in a lifetime opportunity for the region. This appetite and level of ambition from industry must be matched by the UK Government, which should commit to driving this opportunity forward at pace as a project of national importance. (Paragraph 14)

2. Developers need long-term targets and a clear pipeline of projects to unlock investment. Fully delivering on the opportunities for floating offshore wind in the Celtic Sea will require a high level of coordination across government and among public bodies. Given the scale and significance of this opportunity the UK Government will need to demonstrate clear leadership and a commitment to the industry for the long-term. The future role of the Offshore Wind Champion is uncertain under the new administration but we believe there is a clear benefit to having a champion of the sector able to drive forward developments and coordinate work across government. (Paragraph 20)

3. *The UK Government must set targets for floating offshore wind beyond 2030 up to 2045. Alongside these targets it should work with The Crown Estate to provide visibility on future leasing opportunities in the Celtic Sea beyond the current leasing round and bring forward a strategy setting out how this will be delivered. The UK Government should also provide clarity on where leadership for this strategy lies within government. These targets and the strategy for achieving them should be provided prior to the conclusion of the upcoming leasing round.* (Paragraph 21)

4. Consenting bodies will face a significant ramp-up in applications from developers of floating offshore wind projects. In order to process these applications in a timely and coordinated manner and accelerate the delivery of floating offshore wind in the Celtic Sea it will be critical for these consenting bodies to be sufficiently staffed and resourced. (Paragraph 24)

5. *The UK Government should work with the Welsh Government to identify the staffing and resourcing requirements of consenting bodies necessary for the delivery of floating offshore wind at pace. Subsequent to this review, both governments should bring forward a joint plan and timetable for how these resources will be allocated and shared to meet demand.* (Paragraph 25)

Ensuring local supply chains benefit from floating offshore wind

6. We recognise that investment in local supply chains must be balanced against accelerating programme delivery, bringing costs down for consumers and compliance with international treaty obligations. However, the potential for wealth

and job creation in Wales from floating offshore wind is too great to be missed. There is a real opportunity for the region to gain first-mover advantage as a hub for the manufacture and assembly of floating offshore wind components and to export its skills and expertise into a growing global market. We welcome The Crown Estate's requirement for developers to provide supply chain investment plans as part of their bid for a lease. However, these plans must be commitments and The Crown Estate should ensure developers are held to them. (Paragraph 32)

7. *We recommend The Crown Estate bring forward further detail on its supply chain requirements at the earliest opportunity to assist developers in preparing their bids. Alongside this it should formulate a credible mechanism for holding developers to their supply chain investment plans and ensuring these commitments are followed through.* (Paragraph 33)

8. Given the importance of ensuring local supply chains benefit from floating offshore wind it will be essential for supply chain requirements in Contracts for Difference auctions to be enforceable and brought into alignment with The Crown Estate's leasing rounds. Contracts for Difference auction parameters must also take into account increased costs to developers arising from global economic pressures to remain internationally competitive. (Paragraph 42)

9. *The UK Government should reform future Contracts for Difference auctions for floating offshore wind to include enforceable local content requirements as a condition of the contract. These requirements should be designed to align with those in The Crown Estate's upcoming leasing rounds. It should also re-examine the parameters for Allocation Round 5 and take action to ensure the strike price fully reflects increased costs to developers arising from global economic pressures.* (Paragraph 43)

Preparing ports for floating offshore wind

10. Developing regional port infrastructure for the manufacture and assembly of floating offshore wind components will require significant investment but will be necessary for local supply chains and jobs. The full economic benefits of floating offshore wind should go to the region and not be lost overseas. To ensure this happens the highest level of ambition should be set for regional ports to deliver all the necessary manufacturing and assembly functions of floating offshore wind. (Paragraph 48)

11. FLOWMIS will be critical for unlocking private sector investment in Welsh ports and making them ready for floating offshore wind. Investors require certainty on the UK Government's commitment to this funding. (Paragraph 52)

12. *The UK Government should set out a clear timeline for the allocation of FLOWMIS and commit to ensuring Welsh ports receive at least half of the available funding.* (Paragraph 53)

13. A consistent theme throughout our inquiry was the need for long-term certainty to provide confidence to the sector and unlock investment. Much of this investment is likely to go to Port Talbot and the Port of Milford Haven which are set to play a key role in the delivery of floating offshore wind in the Celtic Sea. Preparing these

ports will require significant investment and this will only be forthcoming with a credible pipeline of projects over future decades matched by a commitment from government to support the sector. (Paragraph 60)

14. *To provide ports with the confidence to make long-term investments in infrastructure The Crown Estate should set further targets for floating offshore wind in the Celtic Sea beyond its initial target of 4GW. Alongside this the UK Government should set out its future funding commitments to ports beyond the allocation of FLOWMIS.* (Paragraph 61)

Preparing the grid for floating offshore wind

15. We recognise the benefits of a grid planned strategically for the whole of Great Britain. However, the UK's decarbonisation efforts should also be planned strategically and there are distinct opportunities that arise from ensuring floating offshore wind in the Celtic Sea connects into Wales. This is the case particularly given the heavy industry in the region and the potential opportunity to decarbonise this industry using green hydrogen produced from green energy. (Paragraph 67)

16. *Wider decarbonisation goals should be considered when planning grid infrastructure. The UK Government should continue to appraise National Grid ESO's Holistic Network Design and follow-up exercise with this in mind and ensure opportunities for decarbonisation in Wales are not missed when decisions over where to connect floating offshore wind in the Celtic Sea are made. The UK Government should update us on work to strengthen the grid in South West Wales to accommodate future generation in the Celtic Sea.* (Paragraph 68)

17. Strategic planning of grid infrastructure will be essential for accommodating future GW targets in the Celtic Sea. National Grid ESO have stated that proposals on how to develop the network in the region will be given when more detail is known on the capacity and location of future floating offshore wind projects. Visibility of future targets in the Celtic Sea and a clear roadmap will therefore be essential for the timely planning of grid infrastructure. To accommodate these targets in time the UK Government will also need to provide anticipatory investment and seek ways to overcome delays in improving the network. (Paragraph 72)

18. *Long-term targets and a clear roadmap for delivery, as recommended elsewhere in this report, should be provided at the earliest opportunity to assist National Grid ESO in planning for improvements to grid infrastructure. Alongside this, the UK Government should continue to appraise National Grid ESO's proposals, ensure these are fit for purpose and, where necessary, back proposals with anticipatory investment. We also recommend the UK Government continue to engage with industry and other stakeholders on finding solutions to grid infrastructure acceleration. These solutions should be sought in accordance with the target of reducing processing times by a minimum of 50% within a year.* (Paragraph 73)

Formal minutes

Wednesday 1 March 2023

Members present

Rt Hon Stephen Crabb, in the Chair

Simon Baynes

Virginia Crosbie

Ben Lake

Rob Roberts

Beth Winter

Floating Offshore Wind in Wales

Draft report (*Floating Offshore Wind in Wales*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 73 read and agreed to.

Summary agreed to.

Resolved, That the Report be the Second Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

Adjournment

Adjourned till Wednesday 15 March at 9.00am.

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the inquiry publications page of the Committee's website.

Wednesday 26 October 2022

Tom Glover, UK Country Chair at RWE; **Dan McGrail,** Chief Executive Officer, RenewableUK; and **Mike Scott**, Project Managing Director, Blue Gem Wind — Q1–21

Henrik L. Pedersen, Chief Executive Officer and Executive Director of the Board, Associated British Ports; and **Tom Sawyer,** Chief Executive and Executive Director, Port of Milford Haven — Q22–38

Gus Jaspert, Managing Director, Marine, The Crown Estate; **Tim Stiven,** Senior Development Manager, Marine, The Crown Estate; and **Tim Pick**, Offshore Wind Champion and Co-Chair, Offshore Wind Acceleration Taskforce — Q39–58

Wednesday 23 November 2022

Rt Hon Graham Stuart MP, Minister for Climate, Department for Business, Energy and Industrial Strategy; and **Dr Nicola Higgins**, Offshore Wind Programme Director, Department for Business, Energy and Industrial Strategy — Q59–87

Wednesday 19 January 2023

Julie James MS, Minister for Climate Change, Welsh Government; **Edward Sherriff**, Deputy Director of Energy, Welsh Government — Q88–115

Published written evidence

The following written evidence was received and can be viewed on the inquiry publications page of the Committee's website.

FOW numbers are generated by the evidence processing system and so may not be complete.

1 Associated British Ports (FOW0001)

2 Copenhagen Infrastructure Partners (FOW0002)

3 Mainstream Renewable Power (FOW0003)

4 The Crown Estate (FOW0004)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the publications page of the Committee's website.

Session 2022–23

Number	Title	Reference
1st Report	Grid Capacity in Wales	HC 218
1st Special Report	The Benefits System in Wales: Government response to the Committee's Fourth Report of Session 2021–22, and correspondence from the Welsh Government	HC 402
2nd Special Report	The economic and cultural impacts of trade and environmental policy on family farms in Wales: Government response to the Committee's Fifth Report of Session 2021–22	HC 470
3rd Special Report	Grid capacity in Wales: Government response	HC 1063

Session 2021–22

Number	Title	Reference
1st Report	Railway Infrastructure in Wales	HC 438
2nd Report	Renewable energy in Wales	HC 439
3rd Report	Implications of the UK-Australia FTA for Wales	HC 481
4th Report	The benefits system in Wales	HC 337
5th Report	The economic and cultural impacts of trade and environmental policy on family farms in Wales	HC 607
1st Special Report	Railway infrastructure in Wales: Government response to the Committee's First Report of Session 2021–22	HC 715
2nd Special Report	Renewable energy in Wales	HC 756
3rd Special Report	Implications of the UK/ Australia FTA for Wales: Government response to the Committee's Third Report of Session 2021–22	HC 895

Session 2019–21

Number	Title	Reference
1st Report	Pre-appointment hearing with the Government's preferred candidate for the Chair of S4C	HC 89
2nd Report	Freeports and Wales	HC 205

Number	Title	Reference
3rd Report	The Welsh economy and Covid-19: Interim Report	HC 324
4th Report	Wales and the Shared Prosperity Fund: Priorities for the replacement of EU structural funding	HC 90
5th Report	Brexit and trade: implications for Wales	HC 176
1st Special Report	The Armed Forces and Defence Industry in Wales: Government Response to the Committee's First Report of Session 2019	HC 97
2nd Special Report	City Deals and Growth Deals in Wales: Government Response to the Committee's Second Report of Session 2019	HC 146
3rd Special Report	Freeports and Wales: Government Response to Committee's Second Report of Session 2019–21	HC 667
4th Special Report	Wales and the Shared Prosperity Fund: Priorities for the replacement of EU structural funding: Government response to the Committee's Fourth Report of Session 2019–21	HC 1083
5th Special Report	Brexit and trade: implications for Wales: Government response to the Committee's Fifth Report of Session 2019–21	HC 1223