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Unlocking investment in the UK's offshore wind supply chain

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The UK offshore wind industry stands at a critical juncture, requiring substantial investment to enhance supply chain capabilities, drive expansion, and build resilience.

The new government’s “Clean Power 2030” mission requires offshore wind build-out rates to roughly double those of the last five years. Additionally, these projects will use larger turbines, be situated in deeper waters, require bigger structures, and be located further from the coastline.

All of this necessitates a significant increase in port capacity, installation vessels, and associated infrastructure.

Offshore wind farm construction

The UK faces a significant risk of market failure, which could jeopardise the “Clean Power 2030” mission.

Simultaneously, and in similar locations, the amount of offshore transmission infrastructure installation is also set to increase by a factor of four, putting further pressure on this essential infrastructure and supply chains, such as offshore cable manufacturing.

In combination, delivering this mission requires a transformation of offshore supply chains and infrastructure.

Presently, the UK faces a significant risk of market failure, which could jeopardise the “Clean Power 2030” mission, legally binding climate goals, and energy security.

The speed at which additional capacity is required cannot be achieved through market forces alone. This is because individual projects can only confirm orders once they pass through their Final Investment Decision (FID) stage gate.

Without intervention, this leaves multiple projects competing for a limited supply of infrastructure and supply chain capacity, both in the UK and internationally. An intervention is necessary to overcome this bottleneck.

The public sector has been a key player in this transformation, spearheading significant initiatives over the past decade.

Arup has also been at the forefront of these market stimulation efforts, playing pivotal roles in the Strategic Investment Model (SIM), the Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS), and the Green Industries Growth Accelerator (GIGA).

To accelerate investment in offshore wind ports, associated infrastructure and manufacturing capacity is crucial for stakeholders across the supply chain to collaborate, reflect on lessons learnt from key initiatives and identify actionable steps to unlock future investment opportunities.

In this insight, we share key takeaways from our recent work on offshore wind and supply chain projects.

We explain how our experience and technical expertise have contributed to building a resilient supply chain that supports the transition to a sustainable energy future and the delivery of the “Clean Power 2030” mission.

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Wind turbines staged for transport in a port in Cromarty, Scotland

Can we stimulate growth through policy alone?

The concept of stimulating growth through targeted investment has long been a cornerstone of government policy, and it is now beginning to yield tangible results, such as the UK Infrastructure Bank (now the National Wealth Fund) committing an initial £20m to XLCC subsea HVDC cable factory in Hunterston.

Concurrently, public and private sector studies focused on identifying and addressing the challenges in Scotland's offshore wind infrastructure have been instrumental in driving policy towards realisation.

In 2019, Arup was commissioned by Crown Estate Scotland to produce a 'Wind Ports Scoping Study' to assess the capability of Scottish ports to support offshore wind development, including floating offshore wind, up until 2040.

The study highlighted the need for significant investment in infrastructure and proposes several co-investment strategies to unlock capital.

These recommendations were later reinforced by those in the 2021 Scottish Offshore Wind Energy Council's 'Strategic Investment Assessment Report.'

A similar systematic approach to targeted co-investment was adopted for the Strategic Investment Model (SIM).

Acting as Programme Manager, Arup facilitated collaboration between the public sector and 27 Scottish offshore wind farm developers who were given the opportunity to prioritise strategically important investments.

Our role involved coordinating efforts while respecting confidentiality and competition laws. The approach of using Arup as a trusted, independent broker, combined with our deep technical expertise, helped build a framework to accelerate offshore wind infrastructure in Scotland.

The collaboration resulted in a collective potential investment of £6.5bn in ports and manufacturing opportunities across the devolved nation.

Coordinated and transparent liaison between the government, supply chain and lenders - such as the Scottish National Investment Bank and the UK Infrastructure Bank - through the work of the SIM, created greater clarity around demand at a programmatic level so that individual investment agreements are more likely to be realised in the future.

This communication also generated valuable viewpoints on alternate methods of infrastructure investment, which were recognised in the recently published Clean Industry Bonus (CIB, previously the Sustainable Industry Rewards).

The CIBs, which will provide additional financial rewards to developers for investing in the local supply chain over and above a minimum threshold, was revised recently so that projects funded through the SIM process, or Industrial Growth Plan, would be eligible for the CIB, regardless of the date of investment.

The SIM has been instrumental in fostering collaboration between offshore wind developers, the Scottish Government, and Enterprise Agencies to realise national policy and enhance local supply chain growth, while balancing this with the commercial realities of offshore development.


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Crown Estate Scotland

Crown Estate Scotland

Ports for offshore wind

A review of the net-zero opportunity for ports in Scotland

Issue | 2nd September 2020

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Strategic government investment underpinned by independent technical assessment.

In parallel to co-investment strategies, various government investment schemes are also coming to market to support the renewables supply chain and accelerate its pace.

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Arup recently supported the Department for Energy Security & Net Zero (DESNZ) in fast-tracking funding for shovel-ready port infrastructure projects to support national targets for floating offshore wind deployment through the Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS).

The private sector was invited to apply for up to 50% of capital investment grant funding for projects that would provide additional UK-based capacity to facilitate the floating offshore wind sector. Our energy consultants conducted an in-depth technical review and risk assessment of the applications. The objective was to ensure that the projects met the key criteria for funding and to review the proposals to ensure that public money was directed only towards credible and impactful projects.

Similarly, through the Green Industries Growth Accelerator (GIGA), the government is offering to fund projects up to 50% of their CapEx to foster economic growth, enable decarbonisation, bolster local supply chain resilience, and secure energy security in the UK.

Arup is providing strategic advice and process design for project assessments, initially focusing on hydrogen and carbon capture and storage, and more recently the assessment of other energy technologies, including nuclear and offshore wind.

These two initiatives are fantastic examples of offshore wind supply chain investment schemes underpinned and enabled by technical assessment.

FLOWMIS is supporting the development of the port capacity and capability required to deploy the offshore wind technology, and GIGA is accelerating the growth of green energy industries through targeted investment and support.

The following diagram shows how the three schemes fit together:

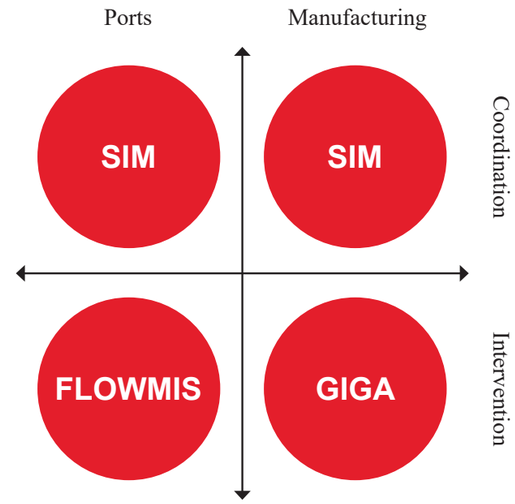

Figure 1
Matrix of collaboration and intervention across the supply chain.

Moving towards a collaborative systems-led approach to supply chain investment.

Effective supply chain investment requires a collaborative approach.

By integrating the perspectives and expertise of all stakeholders—government bodies, private sector entities, local communities, and industry experts—it is possible to consider every aspect of the value chain, from manufacturing to logistics and installation, and support an optimised solution for all.

Appropriate levels of transparency and independent oversight are crucial for understanding capacity needs, sharing and reducing risks, and making strategic decisions that benefit the entire supply chain.

Unbiased expert analysis and open communication throughout the investment process foster a culture of trust and cooperation among diverse stakeholders, including those who traditionally work independently or under legal protections.

Our extensive experience across multiple sectors provides a comprehensive understanding of the complexities involved in offshore wind supply chain development.

Our work with a wide range of stakeholders has shown that a shared vision and structured approach to building trust and collaboration can lead to significant advancements in infrastructure and investment confidence.

Through its novel approach, the SIM has increased investor confidence and fostered a developer-supply chain network, paving the way for innovative commercial agreements. Its inclusion in the CIBs, and recent agreements such as the below early examples, highlights the approach's effectiveness.

The Port of Cromarty Firth, located within the Cromarty Green Freeport, boasts excellent connections with other regional ports and a strong history in offshore wind installation. Since the ScotWind and INTOG leasing rounds, it has engaged in numerous discussions with most Scottish offshore wind developers.

However, it wasn't until they were able to engage with all the developers in one room via the SIM were they able to gain a complete picture of their ports' worth and understand the level of interest in securing capacity from this community. The SIM facilitated collaboration, effectively removing a layer of secrecy and enabling them to shape and present the investment opportunity to a broader range of financial investors.

"The SIM process provided further evidence to offshore wind developers of Scottish Government and Crown Estate Scotland's commitments to the sector. It highlighted the Scottish supply chain's proactive role in developing infrastructure to capitalise on renewable energy opportunities. For Port of Cromarty Firth's project, it added value to discussions with prospective partners and raised awareness of the levels of interest in prime port facilities. It also emphasized the importance of certainty and bankable commitments for this necessary infrastructure."

Joanne Allday (Senior Executive at Port of Cromarty Firth).

Moving towards a collaborative systems-led approach to supply chain investment.

One of the unanticipated results of the SIM was the network cultivated among the wider supply chain. With a variety of ports, OEMs, fabricators, and innovation projects participating, a comprehensive picture of available services and opportunities emerged. Similarly to the larger ports, Arup provided all SIM projects with anonymised information directly from the developer community regarding the interest and relevance of their offerings.

This developer-driven market engagement supplied key data inputs for project business plans and opened partnership opportunities, such as the collaboration between SENSEWind and Aberdeen-based steel fabricator Forsyths for the construction of their self-erecting 2MW onshore wind turbine demonstrator.

On FLOWMIS, our technical advisory role involved in-depth reviews and risk assessments of grant applications. By providing detailed evaluation criteria and engaging with ports, we ensured public funds were allocated to high-potential projects, safeguarding public investment and enhancing industry clarity and investor confidence.

The following diagram provides a visual representation of the overall eco-system and how the three interventions contributed in pulling together Developers and Supply Chain across policy and funding stimuli.

> "It was refreshing for Forsyths to experience a different process and form of engagement from the norm. The SIM process acted as a mechanism that facilitated collaboration by default and added significant value to the pre-SIM preparatory business development activity. Great to see and experience developers taking a holistic and sustainable approach to what's needed."

Brian Donaldson, Forsyths

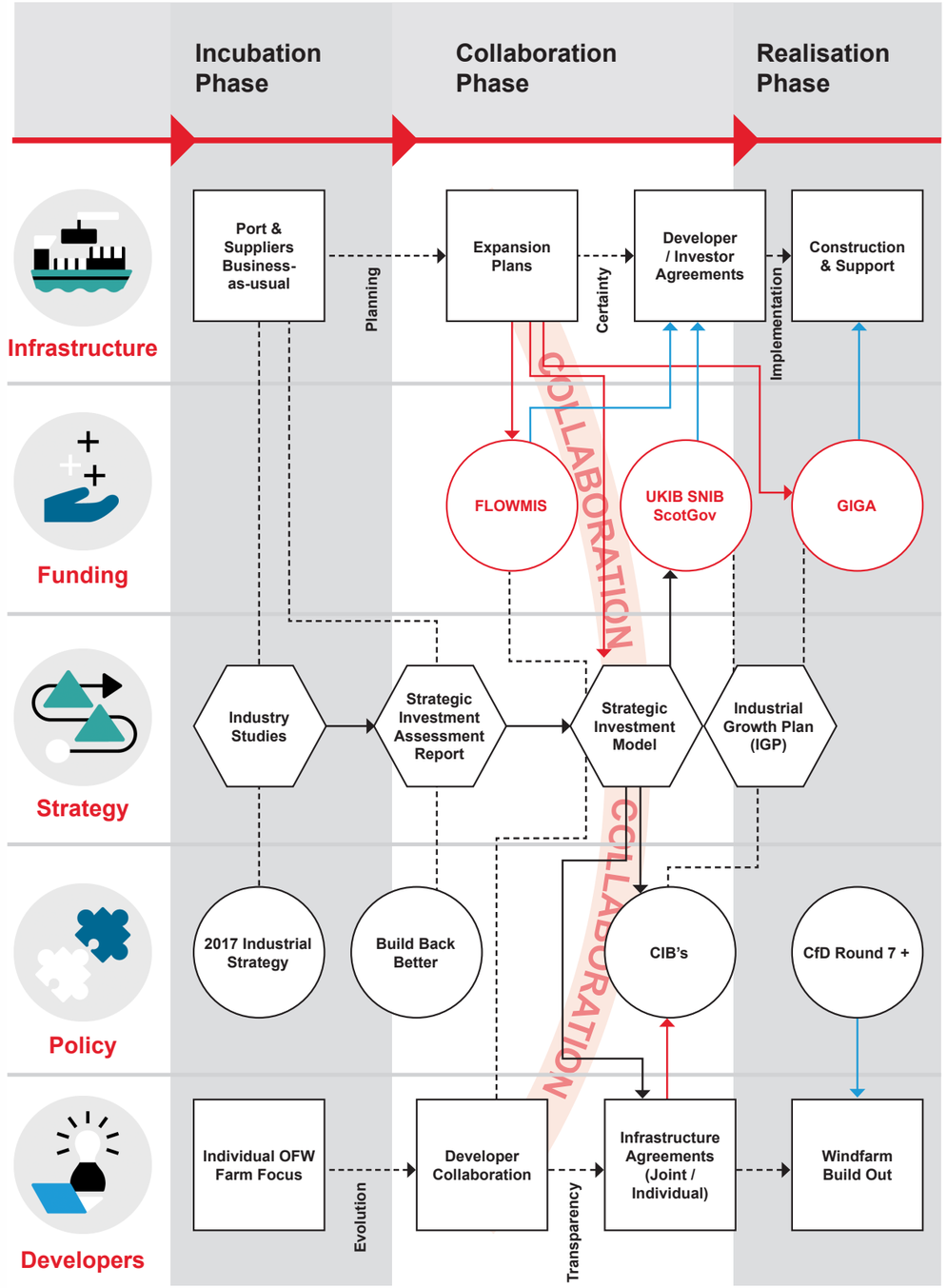

Figure 2
Strategic Investment through Collaborative Networks

Recommendations

To address energy decarbonisation, supply chain security, and overall energy security, it is crucial to enhance the effectiveness of offshore wind supply chain investment schemes in the UK.

There is also an enormous opportunity to generate economic growth and jobs that is essential for the social value needed to ensure local communities are comfortable hosting the energy infrastructure required. Below, we outline our recommendations for the industry:

Provide clear and consistent policy frameworks

It is essential that governments bring forward policy frameworks that provide greater long-term certainty and encourage sustained investment across the entire value chain. Arup's expertise in policy advisory ensures these frameworks are robust and aligned with industry needs, fostering a resilient and competitive supply chain.

Investment

Investment in expanding port infrastructure is essential as build-out rates in offshore wind and other offshore energy assets increase. A proactive government approach to overcoming market failures through a programmatic approach and transparent information exchange can boost investor confidence.

The role of an independent, trusted technical and commercial advisor like Arup is crucial in creating the right environment for attracting investment in an internationally competitive market. The sector also faces supply chain and skills bottlenecks.

Governments can provide targeted grant funding for these areas, especially when aligned with a long-term industrial strategy that promotes job creation and economic growth.

Arup's expertise in infrastructure development, co-investment facilitation, supply chain management and navigating government schemes can help maximise the impact of these investments, ensuring value for money for taxpayers, efficient deployment of offshore wind technologies, and the long-term success of the industry.

Increase funding for research and development (R&D)

Innovation is vital for the growth of the offshore wind sector, and investment into R&D is necessary to drive technological advancements and reduce costs.

Strategic investment in R&D can lead to more efficient turbines, improved floating structures, and advanced manufacturing techniques, positioning the UK as a leader in offshore wind technology.

Arup's deep technical knowledge and experience in managing projects and providing support to developers along the full project life cycle ensures that investments are strategically directed to maximise impact and drive the UK's leadership in offshore wind technology.

"Collaboration between industry and government will be an important part of ensuring this happens. SOWEC's Strategic Investment Model is an important tool in achieving this, and the appointment of Arup as Programme Manager is an important next step to ensuring we identify and deliver on the priorities that will maximise the benefits that will come from ScotWind."

Former Scottish Energy Minister, Gillian Martin MSP.
Source: www.offshorewindscotland.org.uk

Position sustainability at the core of supply chain investments

The necessary ramp up in infrastructure and deployment will require significant volumes of materials. Adopting sustainable practices, such as circular economy principles and reducing the carbon footprint of manufacturing and installation processes, ensures the long-term viability of offshore wind projects and the supporting infrastructure.

Arup's commitment to sustainability enhances the social license to operate and gains broader public and stakeholder support. Our strategic insights, technical expertise, and experience can help to build a resilient supply chain that supports the transition to a sustainable energy future.

Implement digital tools to map and manage supply chains

With huge numbers of moving parts across the supply chain, digital tools can significantly enhance efficiency and transparency.

Real-time tracking of materials, components, and capacity enables better coordination and decision-making.

Arup's expertise in digital transformation and data analytics ensures these tools are effectively deployed, creating smarter, more agile supply chains equipped to handle the complexities of offshore wind projects.

Conclusion

By adopting a strategic, collaborative, and innovative approach, governments and other public sector entities can build the delivery capability needed in their jurisdictions to achieve energy system transformation. This approach can unlock significant opportunities for job creation and economic growth through inward investment.

Arup's ongoing, widespread involvement in various complementary initiatives to expand and accelerate local supply chain investment and development has provided us with valuable insights into its complexities. This makes us well-positioned to support those looking to achieve similar outcomes.

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