Regional Growth Prospectuses for Offshore Wind

Commissioned by:

Offshore Wind Industry Council

The Crown Estate

Contents

The delivery of this Regional Growth Prospectus was commissioned by the Offshore Wind Industry Council and The Crown Estate.

The project was led by Everoze, supported by LumenEE and the Offshore Renewable Energy Catapult.

Introduction: the case for regional action

The offshore wind sector has been a major economic success for the UK in the past decade. The Industrial Growth Plan – IGP - (see national case right) established a clear framework and prioritisation for where the UK should focus to make offshore wind a growth opportunity.

The UK offshore wind clusters were actively engaged during the development of the IGP. Their insights were instrumental in highlighting regional capabilities and shaping strategies for distributing supply chain growth across the country, and the IGP highlights the importance of these clusters to continue work developing areas of regional expertise and specialisation.

This Regional Growth Prospectus work provides tailored insights for each cluster to help them align their work with the IGP. It does this by highlighting regional capabilities; different clusters have different strengths based on factors such as the existing supply chain capability, port infrastructure, wider industrial base and future project growth.

Looked at together, the set of prospectuses help to develop a collective framework to support regional growth and in turn support national growth and IGP delivery.

Each prospectus also includes an assessment of ports within each cluster. Ports are vital for regional growth due to their significant role in driving economic, industrial, and logistical development. Without ports, the UK cannot manufacture, assemble, and transport offshore wind components such as turbines, blades, and foundations, or enable maintenance of operating projects.

Put together, this view of supply chain and port capability in each cluster helps build a clear picture of where and how delivery of the five IGP priorities and 26 opportunities can best be supported.

The global competition for offshore wind is a growth opportunity for the UK...

3x
Growth in offshore wind capacity by 2035

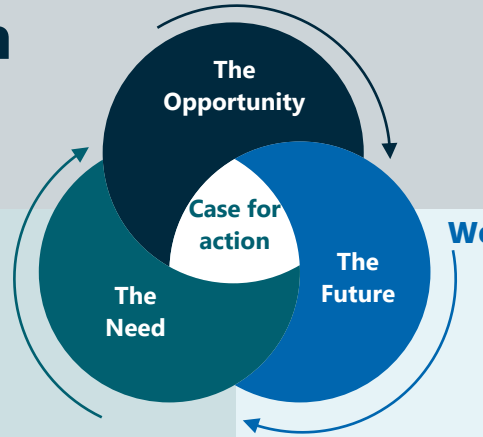
7%
UK's share of offshore wind pipeline to 2035

£270bn
Serviceable domestic market to 2035

5%
Compound annual growth rate for offshore wind expenditure

£8,000bn
Estimated spend on global offshore wind projects to 2050

£1,000bn
Serviceable export market to 2035



Scaling up for net zero...

300
Wind turbine generators required annually (on average) to meet UK demand to 2030 [4]

14x
Increased need for cables in Europe alone to 2030[9]

4x
Increase in UK workforce across 2023-2035[2]

We can lead tech innovation...

100GW
Installed capacity of global deep water and floating projects by 2035

11%
Opportunity for LCOE reduction through O&M improvements[5]

45%
Reduction in global warming impact of materials used through innovation[6]

Building for Success – How the UK currently ranks in offshore wind and innovation

2ND
UK's forward pipeline for offshore wind development

22%
UK's share of the global offshore wind market by operational capacity[4]

4TH
UK's global position in innovation[7]

7%
UK's share of offshore wind research[a,8]

Methodology

- The overarching objectives of this work are to:
  1. Produce an enhanced and detailed understanding of the UK Offshore Wind Clusters' current and future capabilities aligned to IGP & port/infrastructure requirements
  2. Identify investment opportunities and support the region in influencing: (a) The UK Government's Industrial Strategy and subsequent nationally significant investments, (b) Regional/Local Growth Plans, and (c) IGP Delivery Body and Industrial Growth Fund
- This report draws on a range of supply chain data sources and close collaboration with Cluster organisations and regional industry representatives.
- The primary data inputs include background analysis developed by Everoze for the Supply Chain Capability Assessment, along with ORE Catapult's comprehensive supply chain and port capability databases. Mapping has been based on input from OWIC and Clusters to confirm geographical coverage of each cluster
- Using this data, an initial assessment of each regional supply chain was created. This was then refined through detailed consultation with the Cluster organisations led by LumenEE, enabling challenge and adding depth to these assessments. Clusters were further involved in reviewing and providing input to draft reports.
- The resulting insights, combining an updated understanding of current capabilities with a clearer view of future ambitions, formed the basis for eight regionally tailored offshore wind growth prospectuses, alongside a national overview highlighting complementary regional supply chain strengths.

Supply chain review

- Everoze-led review of existing SCCA and OREC supply chain databases
- Data aligned to IGP priorities

Ports analysis

- ORE Catapult-led review of UK ports
- Mapped to cluster geographies, offshore wind requirements and IGP priorities

Consultation, challenge and engagement

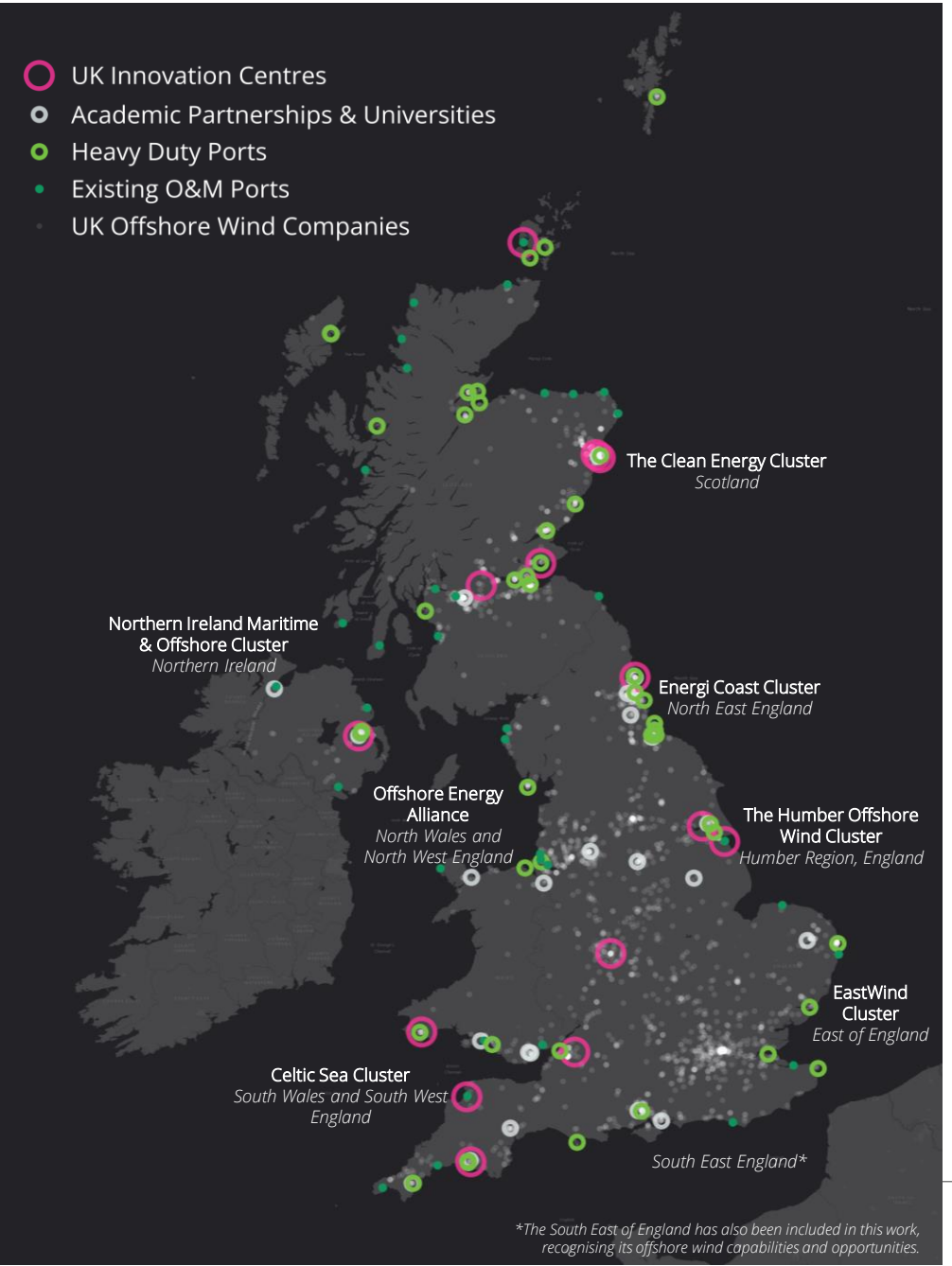
- LumenEE-led deep-dive consultation with cluster organisations
- Series of multi-stakeholder workshops to discuss cluster aspirations and plans
- Structured cluster input on draft findings

Future capability assessment

- Synthesis of existing capability and future potential to develop detailed prospectus for each cluster based on IGP priorities and opportunities

Reporting

- Tailored insights for each cluster/region
- National-level identification of complementary regional strengths aligned to IGP delivery



National capability overview

The Offshore Wind Industrial Growth Plan

In 2024, the Offshore Wind Industrial Growth Plan (IGP) identified key priorities for strengthening the UK's offshore wind industry. Based on a national 'make or buy' analysis of critical components and services, the IGP highlights areas essential to domestic supply or where the UK has the potential to build global competitiveness.

The IGP Priority Areas are:

- Advanced Turbine Technology
- Industrialised Foundations and Substructures
- Future Electricity Systems and Cables
- Smart Environmental Services
- Next Generation Installation, Operations, and Maintenance

The UK Offshore Wind Clusters

Offshore wind capabilities are well distributed across the UK, with regional clusters showing varied industrial specialisations. These clusters have been instrumental in shaping project engagement with local supply chains, and supporting companies move into offshore wind. As the sector continues to industrialise, greater coordination among clusters will be essential to delivering a unified national strategy.

Developed with input from the regional cluster organisations, this set of prospectuses adds a detailed regional perspective to the UK's 'make or buy' strategy.

The work maps existing capabilities and planned capacity growth across all IGP priority areas, region by region, offering the most detailed picture yet of the clusters' complementary offshore wind supply chain propositions.

Also included is a review of how existing & proposed port infrastructure can support these IGP priorities. Ports have been categorised into those able to support O&M and those which are able to support manufacturing and/or installation activities.

Respond, Expand and Disrupt

The IGP sets out 26 specific Opportunities where the UK needs to Respond to current supply chain constraints and maintain the UK's current market position; Expand on the UK's capability and capacity to capture international market share and grow the UK's exports; and/or Disrupt the status quo and address current market challenges to put the UK at the centre of offshore wind advancement.

Each of these 26 Opportunities, plus three related to the materials supply chain around turbines and foundations/ substructures, have been mapped against each region's capabilities.

This gives a detailed route map for each region – helping them understand areas of greatest strength and alignment with the IGP. For the IGP Delivery Body and wider offshore wind sector, this work helps focus effort and shine a spotlight on future areas of coordination and effort.

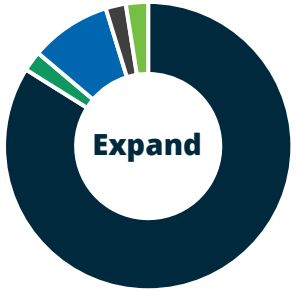
At stake is access to a global £1,300bn serviceable domestic and export market through to 2035, with 10,000 jobs by 2030 with necessary skills development. Clarity over which regions can best work together to support which opportunity is vital to maximise our chances of success.

Total Investment Required – the national picture

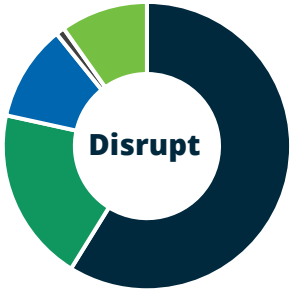
The IGP set out estimates of investment required, whether from private or public sources, to deliver priorities and actions identified within the plan, and estimated GVA over 10 years. IGP investment figures do not cover wider enabling investment in grid or port infrastructure, nor investments in facilities made prior to April 2024. Each Regional Growth Prospectus has sought to identify the supply chain and port capabilities, and growth potential which best aligns with the different priorities and opportunities. This means that this investment can be mapped across clusters of greatest potential.

	Respond	Expand	Disrupt
Total Investment	£800-1,660m	£430-800m	£110-330m
GVA over 10 years*	£9.8-18.2bn	£3.2-5.4bn	£1.2-2.3bn

	Investment need
Increase UK manufacturing capacity of offshore wind blades by 50%	£200-400m
Expand UK foundation manufacturing for designs catering to deep waters	£70-100m
Increase UK capacity of mooring and anchors by 50% from 2023	£20-50m
Add floating foundation manufacturing capacity of 50 units p.a.	£100-200m
Increase HVDC manufacturing capacity by securing two facilities	£200-400m
Build extensive marine datasets	£5-10m
Increase supplier base of EPCI companies	£1-5m
Upgrade fleet of cable laying vessel	£100-200m
Establish a late stage test & demonstration facility	£100-300m



	Investment need
Double UK manufacturing capacity of offshore wind blades to 300% of today	£200-400m
Manufacture advanced composite material blades and towers	£20-30m
Establish one new tower manufacturing facility	£150-250m
Manufacture advanced material for mooring and anchors	£10-20m
Manufacture dynamic inter-array cable at 132kv or more	£30-50m
Deploy autonomous surveys	£10-20m
Develop cable installation technique reducing cable damage	£1-10m
Deploy low carbon vessels for installation and O&M services	£10-20m



	Investment need
Increase automation of wind turbine blade manufacturing process	£20-80m
Develop automation process for high-value component manufacturing	£10-40m
Advance leading edge blade protection	£30-90m
Develop next generation drive train	-
Produce advanced material for part of the floating substructure	£20-50m
Reduce number of cable related failures/reliability issues	£1-5m
Develop interoperable HVDC systems	£10-30m
Develop new cables design and materials	
Develop ML techniques optimising environmental surveys	£1-10m
Integrate Machine Learning (ML) algorithms in O&M services	£1-5m
Commercialise next generation inspection, monitoring and installation	£10-25m

Priorities:

- Advanced Turbine Technology
- Industrialised Foundations & Substructures
- Future Electrical Systems & Cables
- Smart Environmental Services
- Next Generation Installation and O&M
- Cross-cutting

* GVA generated over 10-years calculated for each investment. Note GVA figures have not been mapped across the different clusters, with figures shown at UK level only.

*The South East of England has also been included in this work, recognising its offshore wind capabilities and opportunities.

Advanced Turbine Technology

UK £46bn
2024-35 serviceable market

Global £139bn
2024-35 serviceable market

Investment £0.6-1.3bn
Estimated investment need

Benefit £4.9-8.0bn
Estimated 10-year GVA

The UK currently has significant turbine blade production capacity, with an aspiration to triple current capacity. In towers, we currently lack domestic production capability.

Blades

IGP opportunities for Advanced Turbine Technology relate first to growing blade capacity 50% by end 2027. The regions best placed to support this are **Humber**, **South East England** and **Scotland**.

Siemens Energy has its operational blade factory in **Hull**, while Vestas is considering opening a factory in **Leith**, Scotland. UK efforts to double blade capacity will likely need to be led by those regions where blade production takes place.

However, across the UK lies expertise to support this delivery. Vestas has deep rooted research capability on the **Isle of Wight** able to be utilised as Vestas refocuses its UK activities. The National Composites Centre in **Bristol** brings long experience of working with turbine OEMs to develop new materials and was selected by Siemens as one of three global R&D centres. In **Blyth** the ORE Catapult blade and drive testing facilities have significant experience in supporting OEMs and other supply chain companies test turbine technology.

In the **Humber**, **Solent** and **Northern Ireland** are companies and innovation centres with wider composites and materials expertise gained from maritime and aerospace sectors.

The UK can also potentially supply a greater volume of materials for turbine components. Companies across the UK provide specialist coatings, while glass fibres are manufactured in **Wigan** and Polyethylene terephthalate (PET) - which is increasingly used in blades to replace balsa – is manufactured in **Dumfries**.

As the world's offshore wind sector seeks to build bigger turbines access to UK materials innovation and knowledge could open up new opportunities.

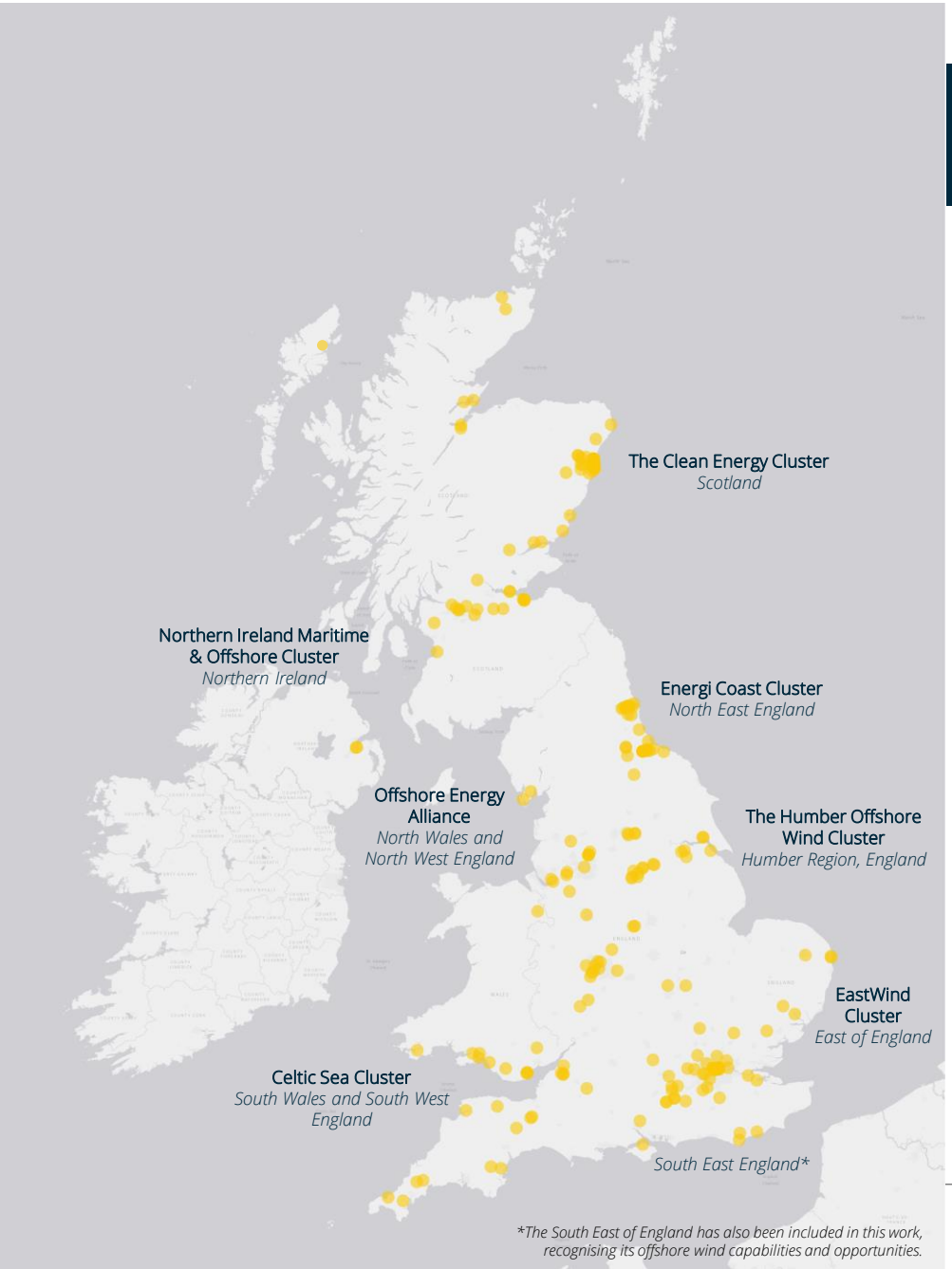
The OWGP's new Manufacturing Facility Support Programme (MFSP) is supporting companies such as the **Solent** based DFS Composites as well as Global Energy Group at **Nigg** in Scotland.

Towers

Global Energy **Nigg**'s MFSP funding is to enable development of a Rolled Tubular Facility. Such a facility would support the IGP's "Make" priority of tower manufacturing.

Drive train

Finally, the IGP also has a priority to develop a next generation of drive train technologies and is expected to be explored for future competitions. Under this banner, companies of note are **Stockton-on-Tees** based GreenSpur Wind, **Sheffield**'s Magnomatics and **Stirling**'s Myriad Wind Energy Systems.



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Industrialised Foundations & Substructures

UK £47bn
2024-35 serviceable market

Global £209bn
2024-35 serviceable market

Investment £0.2-0.4bn
Estimated investment need

Benefit £6.3-12.1bn
Estimated 10-year GVA

Offshore wind foundations and substructures can be monopiles, jackets, gravity-based or floating foundations with substructures anchored by mooring lines or chains.

IGP opportunities for Industrialised Foundations & Substructures can be found across the UK.

The **North East of England** is already a manufacturing centre of fixed foundations, with SeAH's XXL monopile facility on **Teeside** now in pre-production, as well as jacket and topside production in Smulders' **Tyneside** facility. The UK is increasingly securing work in secondary steel for foundations, with Severfield (**Dalton**) and Hutchinson Engineering (**Widnes**) both recently winning high profile contracts.

Wider opportunities to future capability exist in the **North East of England**, **Northern Ireland**, **Scotland** and **South Wales** where the UK has wider fabrication expertise.

In the longer term, there are opportunities to grow UK footprint in manufacture of substructures for floating offshore wind. The UK has several ports suitable for floating offshore wind substructure production, with potential facilities at different stages of development in the **Celtic Sea**, **Scotland** and **NE England**.

There is strong capability for steel fabrication in **NE England**, **Northern Ireland**, **Scotland** and **South Wales,** particularly suited to steel substructures. The entry into the market of Navantia (with its four UK yards) offers a route for further development, as well as alignment with UK shipbuilding and defence.

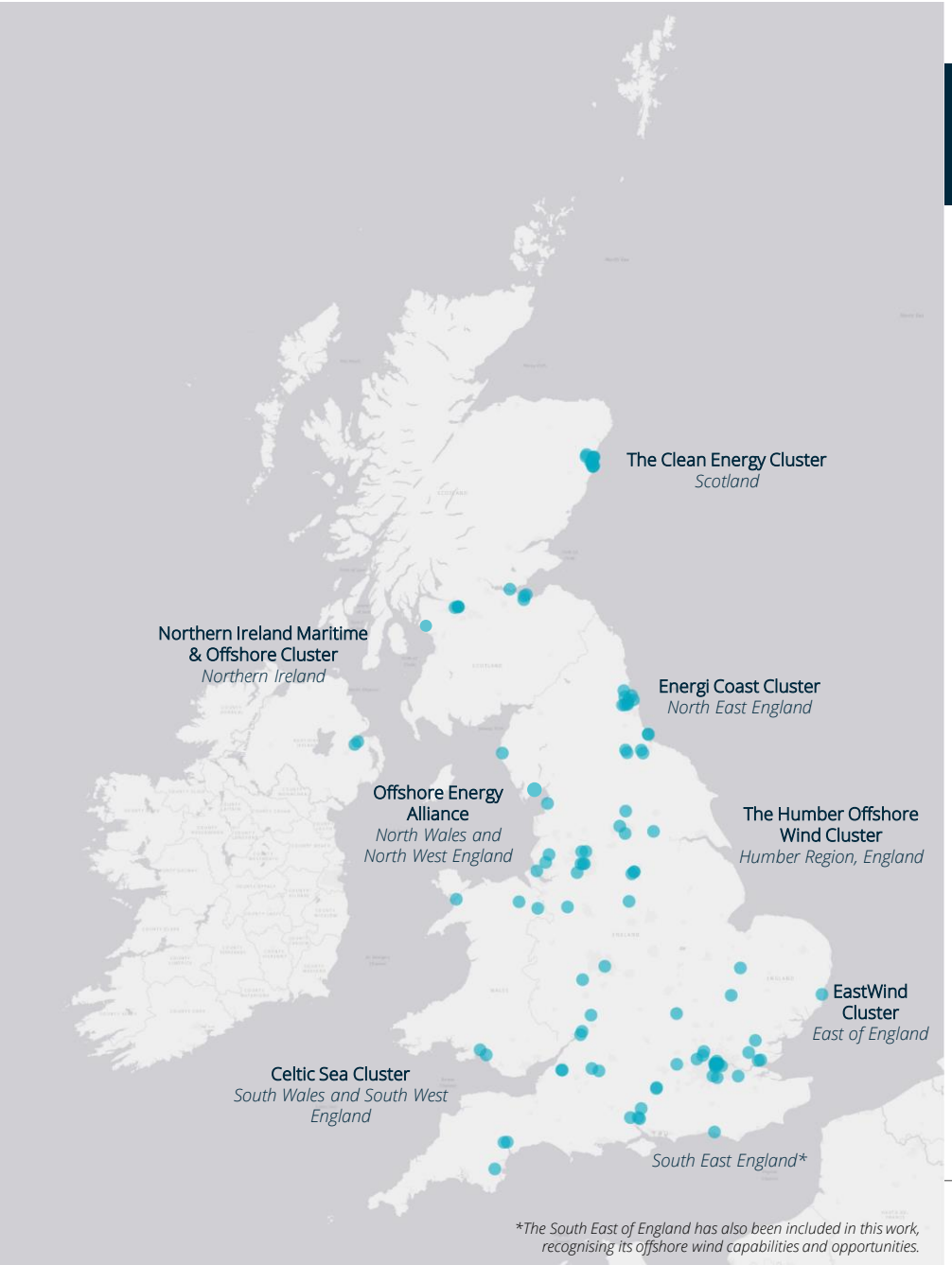
UK steel mills making steel slabs as well as furnaces producing plate, rebar and other steel products could also potentially supply into UK substructure manufacturers.

In **South West England** and **East of England** there is capability for concrete manufacturing, in part due to the UK's current nuclear build out. **Ardersier** in the Highlands is set to manufacture concrete substructures, and Hunterston has also been proposed for gravity base foundation production.

Expertise in moorings and anchors is strong in Scotland, in particular in **Aberdeen** as well as **Montrose**, **NE England** and **East of England**.

Of note is the UK presence of OSI Renewables in **West Lothian** and Marine Power Systems in **Swansea**. Both companies are seeking to bring deep water foundations designs to market from a UK base.

Finally, it is worth noting wider UK capability in advanced materials in **Northern Ireland**, **North Wales**, **Scotland** and **SW England** that will be required to commercialise this opportunity.



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Future Electrical Systems & Cables

UK £19bn
2024-35 serviceable market

Global £77bn
2024-35 serviceable market

Investment £0.2-0.5bn
Estimated investment need

Benefit £1.7-3.4bn
Estimated 10-year GVA

Electrical systems and cables includes array, offshore and onshore export cables, electrical system and SCADA design and offshore and onshore substations.

IGP opportunities for Future Electrical Systems & Cables are focused primarily in **North East England** and **Scotland**, but with important wider contributions required from **North West England** and across the UK.

In North East England, the construction of the new JDR Cable Systems factory at **Cambois**, north of Blyth, will enable UK production of 132kV inter array cables, as well as establishment of HVDC cable capacity. **Port of Tyne** has also signed a heads of terms agreement with LS Eco Advanced Cables and discussions are underway over a lease for a potential HVDC cable factory.

In Scotland, the new Sumitomo HVDC cable factory is under construction at **Nigg**, while work is also continuing progressing the potential XLCC HVDC cable factory at **Hunterston**.

As well as new cable manufacturing investments, both regions also have significant wider capability in cable protection systems, accessories and installation. **Aberdeen**'s subsea heritage means the North East of Scotland has a strong cluster of companies able to supply into offshore wind cable installation. Similarly there is an active cluster of specialist cable companies around the **Tyne** and **Blyth** rivers that are active in both offshore wind and oil and gas cabling systems, as well as ORE Catapult cable testing capability in **Blyth** and **Aberdeen**.

In the North West of England, the presence of Siemens Transmission & Distribution in **Manchester**, as well as its Siemens Energy Subsea facility in **Ulverston**, Cumbria, plus First Subsea in **Lancaster** make the region important for IGP work on cables and connector technologies. The IGP has a focus on opportunities around cable reliability, inter-operable HVDC systems and new cable designs, and regional expertise can support this focus.

Wider UK strengths around advanced manufacturing and advanced materials will also be beneficial to the longer term IGP focus on the development of new cable designs and materials.

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Smart Environmental Services

UK £0.5bn
2024-35 serviceable market

Global £0.5bn
2024-35 serviceable market

Investment £20-40m
Estimated investment need

Benefit £0.2-0.5bn
Estimated 10-year GVA

Environmental services during early development including surveys, land clearance activities, buoys and vessels.

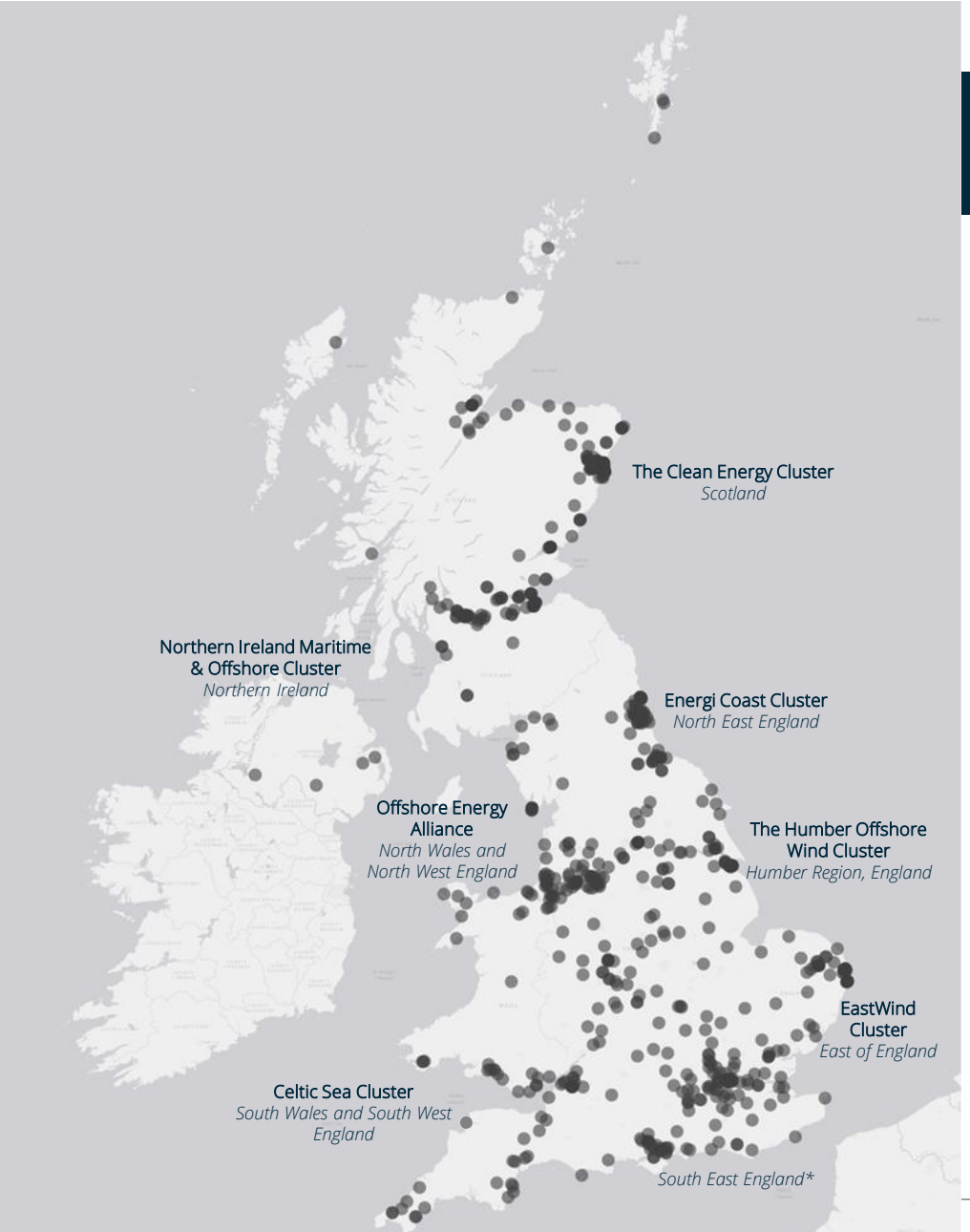
IGP opportunities for Smart Environmental Services can be found across the UK, with a particular strength in depth found along the south coast of England from **Plymouth**, through to the **Solent**. The Solent's strong maritime heritage, plus initiatives such as Plymouth Smart Sound highlight the UK's strength in maritime capabilities, as well as the overlaps between offshore wind, maritime and defence capabilities.

There is wider maritime expertise across **South East England** and **London**. This expertise includes specialist suppliers such as Sonardyne with its **Hampshire** HQ and many specialist maritime and engineering consultancies in the region working in offshore wind.

In addition to this specialisation in the south of England, there are defined clusters around the OEA cluster in **North West England/North Wales**, and in the **Forth and Tay** area of the Clean Energy Cluster, as well as expertise in East Wind around **Norwich** and in Scotland around **Aberdeen**.

Overall, the Regional Growth Prospectus analysis has identified widespread capabilities in the development phase across the UK, with many opportunities for leveraging wider UK digital capabilities into offshore wind development. Many regions identified specific examples of wider digital capability, including research expertise, innovation programmes and important tech clusters.

As offshore wind seeks to integrate machine learning, robotics and other digital tools into both its development activity and across the whole lifecycle of offshore wind, it will be important to continue to reach out to other tech sectors in the UK, and to support existing providers of environmental services to adopt and quickly integrate new digital innovations into their service offering so that they can maintain competitiveness and growth in the UK and other markets.



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Next Generation Installation and O&M

UK £71bn
2024-35 serviceable market

Global £211bn
2024-35 serviceable market

Investment £120-260m
Estimated investment need

Benefit £1.0-2.0bn
Estimated 10-year GVA

Installation, operations and maintenance services including the vessels related to initial construction and ongoing maintenance of all components of a wind farm.

The IGP has identified an opportunity to increase the UK supplier base of EPCI companies. The UK's existing larger installation bases - for example **Nigg**, **Dundee**, **Seaton**, **Humber**, **Great Yarmouth**, **Lowestoft**, **Mostyn** and **Belfast** – could all act as potential sites of activity to attract in greater UK EPCI presence. However, there is a wider network of suitable ports identified with suitable depths and port facilities that could also accommodate vessels and wider capability.

A challenge for the UK is low ownership of vessels required for installation of turbines, foundations and cables. It is worth noting the recent success of Enshore Subsea in **Blyth** in securing export cable installation.

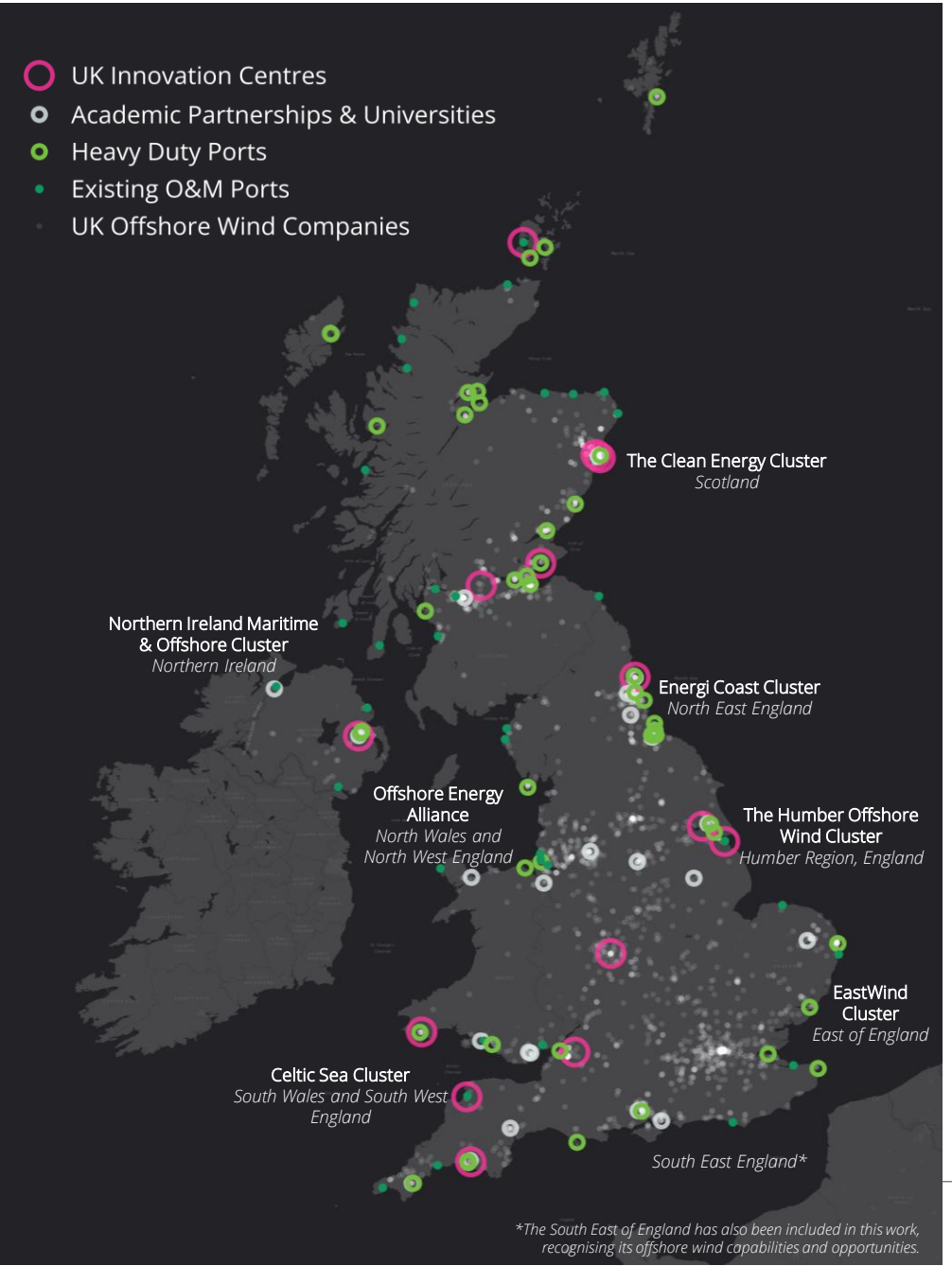
The UK has widespread expertise in vessels with experienced CTV yards and designers around the UK, including a strong presence in **Solent** and **East of England**. There are also a large number of experienced CTV operators around the UK. There is a continued need for CTVs in the UK and global market, as well as opportunities for using this expertise in the growing SOV market.

Aberdeen's North Star Shipping has also successfully entered the offshore wind SOV market and has become a significant player in the market. Wider capability such as the Harland & Wolff owned **Appledore** yard, Cammel Laird's **Birkenhead** yard and Babcock's **Rosyth** yard also offer expertise for the UK to nurture. Companies such as Artemis in **Belfast** are also active in bringing a next generation of vessels to market. UK maritime and naval architecture expertise clustered in the South East and South West will also be important.

The importance of floating offshore wind offers installation and O&M opportunities for the UK, particularly around **Celtic Sea** and **Scotland** floating projects. Existing installation and O&M execution strategies will need to be adapted, providing opportunities in both regions and across the UK for different vessels and work packages.

A UK strength is specialist engineering and fabrication for offshore wind installation. **Blyth** based Osbit and Texo (also in **Aberdeen** & **Dundee**) are just two examples of engineering capability focused particularly in North East Scotland and North East England which the UK can grow.

The UK also has widespread digital capability, which is expected to be utilised in IGP actions to support adoption of machine learning into O&M services as well as wider actions to commercialise a next generation of inspection, monitoring and installation services. The UK has leading experts such as ProServ in **Lowestoft,** as well as many other examples of this digital capability UK wide.



Adding value through coordinated regional delivery

Coordination, not competition

The eight Regional Growth Prospectuses that emerge from this work identify capabilities that will be needed if the UK is to build global competitiveness in the five priorities and related opportunities identified in the 2024 Offshore Wind Industrial Growth Plan. This work identifies strength in depth across the different nations and regions of the UK. To be successful, the IGP Delivery Body and Offshore Wind Industry Council have an important role nurturing this by fostering coordination above regional competition.

This spirit of partnership will be critical for UK success. The UK faces competition from a mature supply chain in Europe and Asia which is organised and experienced. Other countries are actively supporting their own supply chains and have track records in partnership and collaboration.

Delivery of this Regional Growth Prospectus work was only made possible through the support and input of companies and stakeholders in each region. There is a clear depth of expertise and no shortage of ambition. There is also practical support and regional funding available to supplement UK wide activity.

This work identifying regional strengths will enable each cluster to continue in their work developing areas of regional expertise and specialisation.

Ports as regional and national assets

Each Regional Growth Prospectus includes a review of port capability, with particular focus on which ports can support large scale manufacturing and installation activities linked to the five IGP priorities. There are multiple ports around the UK already active in offshore wind supporting development, manufacturing, installation and operation.

Ports are set to play a crucial role in delivering many of the IGP opportunities. To do that will require regional and national coordination so that ports are working together and are clear on where relative strengths lie. Initiatives such as the Scottish Offshore Wind Ports Alliance, the work of Energi Coast and combined authorities in using a “four rivers” frame to guide their work, plus the Greater South West Partnership’s multi-port statement, all show that ports and regional authorities are able to coordinate together and see that the prize will come from this partnership approach, not through competition over each supply chain opportunity.

Next steps for RGP delivery

The eight Regional Growth Prospectuses work gives local partners intelligence and analysis to help their ongoing supply chain and investment activities, demonstrating more clearly their role and alignment with the IGP.

It was intended that each prospectus would identify specific investment opportunities. In many cases, it has not been possible to include these due to confidentiality and/or commercial sensitivities. However, this work will enable updated IGP regional breakdowns with port capex, timelines and GVA data as well as a cross-check with potential Clean Industry Bonus projects.

The IGP Delivery Body, OWIC and regional partners can also play an important role raising the profile of Clusters. Using this work helps deepen UK-wide understanding of investment opportunities for each region. It also identifies opportunities for synergy across clusters based on identified shared regional capabilities.