HARNESSING THE POTENTIAL

OFFSHORE ENERGIES UK

A roadmap for jobs, economic growth, and innovation for the UK offshore energy supply chain

Build | Enable | Grow and Sustain

OFFSHORE ENERGIES UK

An integrating offshore energy industry which safely provides cleaner fuel, power and products for everyone in the UK.

Working together, we are a driving force of the UK's energy security and net zero ambitions. Our innovative companies, people and communities add value to the UK economy.

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HARNESSING THE POTENTIAL

Contents

Foreword

Katy Heidenreich,
Director, Supply Chain & People
Offshore Energies UK

The UK's offshore energy industry is renowned for its expertise, pioneered in the waters around its coasts and since exported globally. The skills that enabled the first discovery from the *Seaquest* drilling rig in 1969 have since been adapted and applied to Hornsea Project Two, the largest operational offshore windfarm in the world. With 165 turbines generating enough electricity to power 1.3mn homes, our skilled people are at the heart of the UK's future clean energy system and prosperous economy.

Our supply chain trades its goods and services internationally, however for a country with a proud maritime and industrial heritage, we must question why so much of the nation's manufacturing needs are met from outside the UK.

For the first time, OEUK, working with Robert Gordon University (RGU), has produced a *Supply Chain Roadmap* with the goal of securing the future of the nation's integrated offshore energy supply chain. It outlines how we harness the potential of our world-class companies to support jobs, economic growth and innovation well into the future.

Supply chain companies comprise the backbone of the UK's offshore energy industry. They account for more than 80% of OEUK's membership, with the majority consisting of small to medium enterprises, supplying goods and services to oil and gas plus wind farm developers while driving technological innovation.

They exist in almost every UK constituency, supporting jobs related to oil and gas. OEUK data from 2021-2022 showed there were 1,600 jobs in Leeds; 1,000 in Holborn and St Pancras; 600 in Southampton; and 23,700 in Aberdeen South alone.

Delivering the *Roadmap*'s goal by 2030 would enable our supply chain to accelerate the changes required to deliver net zero carbon emissions in the UK by 2050. It could create an additional £10bn of cumulative value from more UK-built and delivered projects and 2,800 more turbines across 40 new wind farms. We could produce 10 GW of low carbon hydrogen and develop four offshore transport and storage hubs with up to 1 mn tonnes/year of carbon stored.

This is the sustainable future we are committed to building. One that recognises there's no simple choice between oil and gas or renewables. Both are needed to keep the lights on and grow our economy. Even in the mid-2030s, most scenarios forecast that 50% of our energy needs will be met by oil and gas. Furthermore, oil and gas provide the essential financial headroom to invest in the UK's decarbonisation solutions.

This *Roadmap* pinpoints opportunities to strengthen supply chain capabilities in good time. Developing UK capacity ahead of final investment decisions is critical. Without this, it's unlikely the vital construction, fabrication, and infrastructure upgrades required for a UK-built net zero emissions future will materialise.

This requires governments and regulators to work with us to develop coherent policies on tax, decarbonisation and energy strategies so there is investment in the supply chain. Achieving that will enable this world-class but struggling supply chain to capitalise on the significant export opportunities that the expansion of domestic energy production could bring.

KM Heidenreich

Sian Lloyd-Rees,
OEUK Supply Chain Champion

We're proud to make a significant contribution to the UK. As the supply chain champion for the North Sea Transition Deal, I support OEUK in its ambition to represent both the capability and opportunity for offshore energy businesses. In 2022/23 alone they will add over £20bn to the UK economy and provide over 200,000 skilled jobs across the length and breadth of the country.

Supply chain transformation is integral to the North Sea Transition Deal, whereby we agreed with the UK government to invest up to £16bn in low-carbon energy. This includes developing new technologies that enable offshore floating wind power; converting offshore oil and gas installations to run on electricity; carbon capture and storage; and mass hydrogen production.

The skilled people producing energy off the coast of Britain today are the same people that will be creating the exciting clean energy systems of tomorrow.

We're aiming for net zero emissions by 2050 but we have significant challenges to overcome. Our steelyards and heavy industry hubs require investment to produce assets like wind turbines. UK companies need to secure early strong positions to compete for both UK and global energy projects, which in turn require early investment in future technologies and infrastructure, in the same way other countries have invested early in their supply chains' industrial capability.

Achieving the supply chain transformation required to deliver a low-carbon future is only possible if we have the collective vision and plan to make this a reality. Our *Roadmap* sets out what that could look like; it shows where we are focusing our efforts; and it explains the need to work with the government and regulators to develop the clear policies that will make it happen.

1. Executive summary

1 The supply chain could be immensely valuable to the UK and the *Supply Chain Roadmap* can be a catalyst to realising it.

Increasing the volume of UK-built and delivered projects brings huge benefits. It will stimulate investment, create jobs and drive economic growth in the UK, for the UK. This means supporting an integrated and competitive regulatory and fiscal environment. It must reflect the industry's way of operating today and how it will collaborate in future.

Recognising the need to outline how to sustain and grow the energy supply chain, OEUK has developed a *Supply Chain Roadmap*. Created in collaboration with Robert Gordon University (RGU) and a cross-section of regional and national trade bodies, it shows how we can realise our vision of a world-leading and resilient supply chain that is agile and sustainable. It contains a clear outline of how this can be achieved and what support is needed from industry leaders, politicians, and regulators.

The first part focuses on where money will be spent in offshore energy production over the coming decade. OEUK, in collaboration with RGU, has also created a Supply Chain Spend Visibility Tool which highlights where supply chain capability and capacity are needed; the supply chain development options; and the sequencing for timely investments. By agreeing on what the future looks like, we can work together to overcome the challenges of today and ensure the 200,000-strong oil and gas workforce continues to thrive, while unlocking investment, growing businesses and generating economic growth.

Steps to delivery:

- Commitment through action from regulators and industry leaders to support and implement the *Supply Chain Roadmap*.
- Embed coherent and far-sighted policy that supports a successful transition of companies and workforce into new energies and ensures a successful and fair transition.
- Government commitment to underpin policy decisions with a thorough and objective analysis of the effects on investment, energy security, and the energy workforce.

2 Supply chain companies won't invest without a predictable, sustainable pipeline of activity. Early investment will build a competitive supply chain that can deliver the energy transition.

Some administrations, such as the US and the EU, have put incentives in place to attract supply chain companies. This is not the case in the UK and if it is to meet its own carbon reduction targets, it needs to have a compelling offering. Otherwise it will risk having to import the goods and services needed to deliver net zero. An attractive fiscal and regulatory regime will incentivise private investment into building capacity now, in readiness for when bigger projects materialise.

The UK offshore energy sector could spend more than £200bn by 2030 alone but final investment decisions depend on planning and design that could last several years. Enduring policy that allows companies to invest over this period is a must.

Delivering the entire forecast pipeline of energy projects looks unlikely in today's environment: the outlook for investment is so uncertain. To avoid bottlenecks, stimulating early investment will be mission-critical. This will also support an industry-level approach to establishing key capabilities. To address this, OEUK has formed a Supply Chain Investment Task Force consisting of representatives from a cross-section of industry and regulation.

Steps to delivery:

- Engagement between government, regulators, the industry and financiers to support early stage, anticipatory investment in the supply chain.
- Embed enduring policies that encourage companies to invest for decades.

3 Misconceptions about the supply chain could undermine its potential and dampen UK job creation.

There is a misconception that supply chain companies work only in oil and gas or hydrogen or wind. This is not the case. There is one integrated energy supply chain. For decades, supply chain companies have moved seamlessly between projects related to oil and gas exploration and production, nuclear plant construction, wind-turbine manufacturing and installation and more.

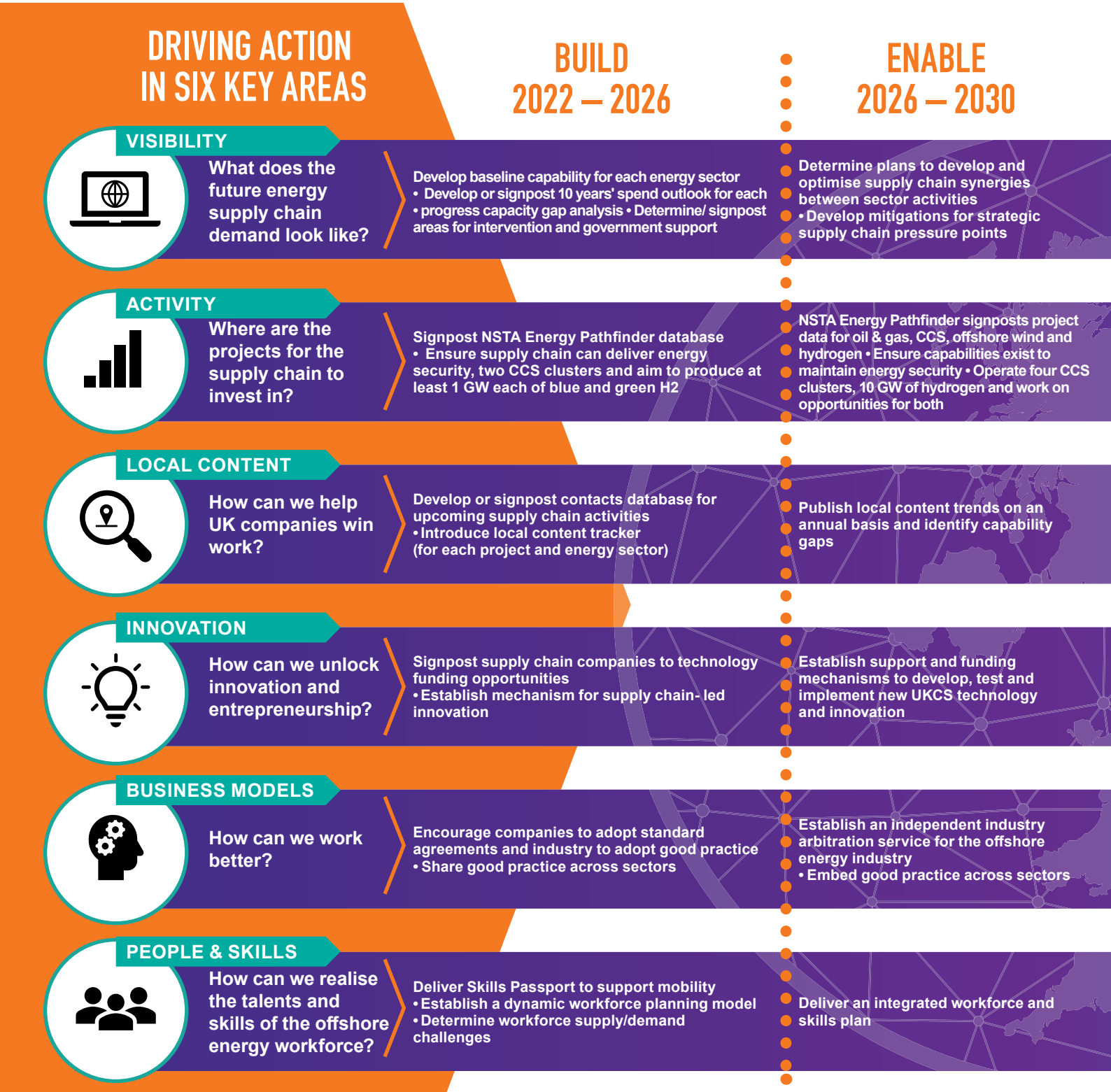
Such misconceptions create artificial impediments to investment, growth, and advancement. It may also have an impact on the highly skilled, very mobile workforce in the energy supply chain. Action is needed to maintain flexibility and mobility within the UK supply chain. The UK offshore energy sector could spend more than £200bn in the remainder of this decade alone and every 1% of additional local spend can add up to £210mn of spending and around 1,600 direct/indirect jobs in 2030. This could yield around £10bn between now and the end of the decade. The government must collaborate with industry to ensure that everyone has an accurate and relevant grasp of the one, integrated supply chain and to ensure the UK secures as much of the investment and jobs prize as it can.

Steps to delivery:

- Government must take a holistic approach to building supply chain capability and increase focus on collaboration over diversification.
- Through policy and regulatory consistency, the government must make it clear that the energy sector supply chain and jobs are at the core of UK plc and are crucial to generating economic growth.
- Members of the UK and Scottish parliaments, as well as local councillors, must continue to ensure that the energy workforce is a fundamental pillar in any decision-making process.
- Government must continue to support the industry to develop a Skills Passport that facilitates workforce mobility between sectors.

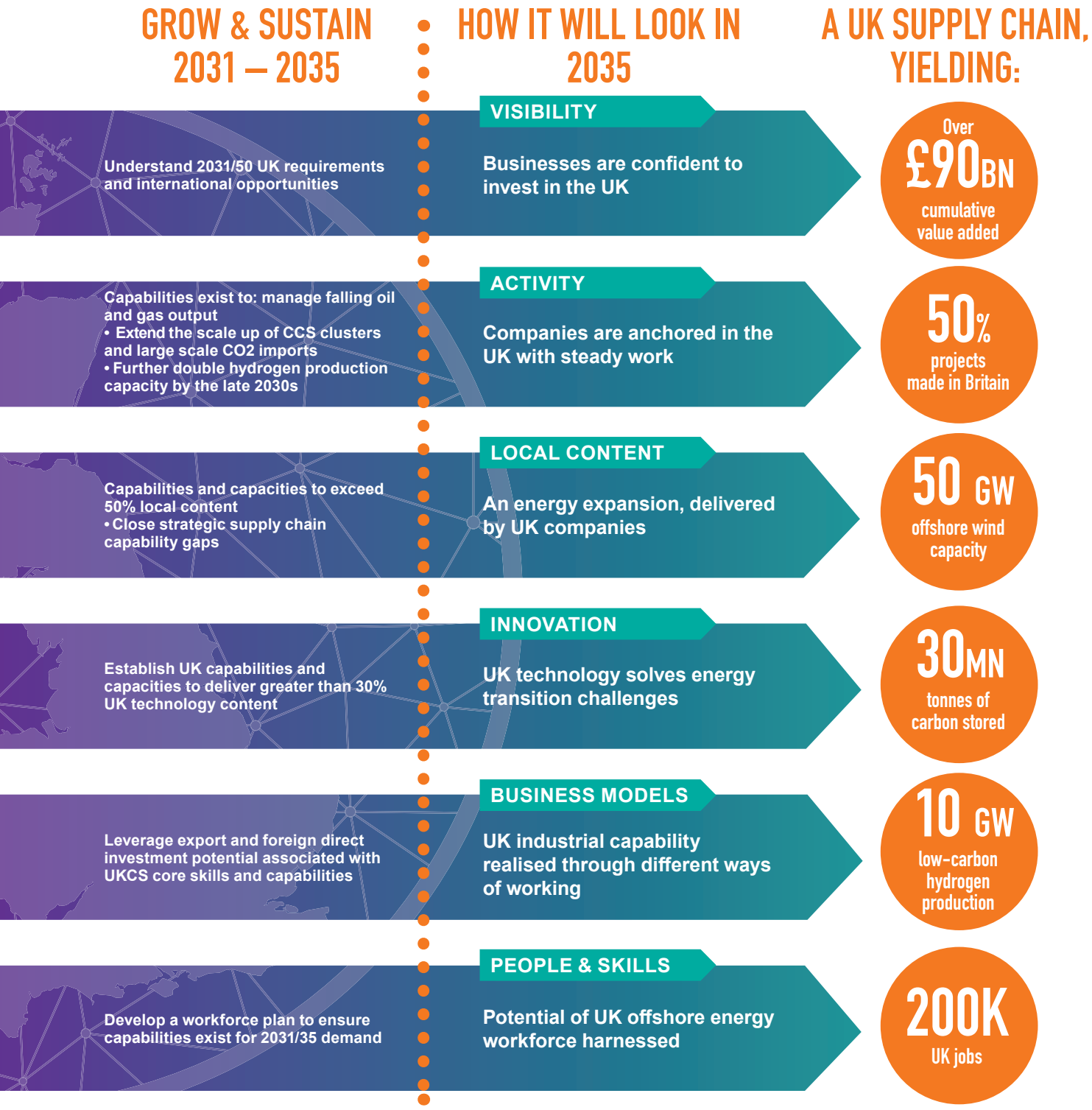
2. Harnessing the potential

A roadmap for jobs, economic growth and innovation in the UK offshore energy supply chain



This report sets out how we can harness the potential of the UK offshore energy sector.

Working with our members, OEUK has produced a roadmap outlining steps we need to take across industry, governments and regulators to **build, enable, grow** and sustain a world class offshore energy supply chain. A more detailed actionable roadmap is available on **www.oeuk.org.uk/supply-chain/**



Read the full report to find out how governments, regulators and industry can help deliver the Roadmap.

Supply chain investment in the UK

JDR Cable Systems Cable Manufacturing, Cambois

JDR Cables, part of TFKable Group, is developing a **£130mn** subsea cable manufacturing facility in Cambois, near Blyth, Northumberland. This project, supported by government, will bring essential subsea cable manufacturing technology to the offshore wind industry, creating **171 local jobs** during construction.

SeAH Wind Monopile Manufacturing, Teesside

SeAH has announced a **£450+mn** monopile manufacturing facility at Teesworks, Teesside. It is anticipated that the facility will be one of the world's largest monopile facilities in the offshore wind sector. The investment **will create up to 750 direct jobs by 2030**. SeAH's OWMIS funding grant was made available as part of the prime minister's green economy plan, which includes a pledge to build enough new offshore windfarms to power the equivalent of every home in the UK by 2030.

Industry groups claim that jobs linked directly and indirectly to the offshore wind industry could grow from 26,000 to more than **69,800** in the next five years, particularly in coastal regions that would benefit from some 'levelling up'.

New report shows jobs in UK offshore wind industry will grow to **100,000** - RenewableUK.

OPPORTUNITIES ARE STILL EVIDENT

– and can be secured through investment
(*see pp27-29*)

3. The UK offshore energy supply chain landscape

The UK benefits from the skills of a well-developed domestic energy supply chain, built up over the course of 50 years of oil and gas production. Many companies within this chain are diversifying their business strategies to capture value from newer areas such as offshore wind, CCS and hydrogen.

However, they also face unsustainable margins with limited profitability. Not only is international growth outpacing the UK in both speed and scale, but companies also have poor visibility of, and low confidence in, the UK pipeline of work in oil, gas and energy transition opportunities.

The buoyancy of markets and initiatives such as the Inflation Reduction Act 2022 (IRA) in the US are leading many to redirect resources abroad as a business imperative. Continued focus is needed to ensure a strong, sustainable, and well-resourced supply chain that remains anchored in the UK.

Better visibility on capacity and spend, prior to contracting, would enable the supply chain to build at scale and be competitive. Delivering net zero to the benefit of UK companies means investing in supply chain capability and capacity.

OEUK's 2023 priority supply chain workstreams are therefore focused on four key pillars, illustrated in the figure below, with the overall aim of supporting companies' decisions to invest in the UK and promoting oil and gas supply chain capability.

The *Supply Chain Roadmap* and Spend Visibility tool are two core activities within the strategic work being done to strengthen confidence. The *Roadmap* describes what must be done to strengthen the footprint of UK businesses, to service both domestic and international markets through exports.

The supply chain spend visibility tool provides insights on where supply chain capability and capacity are needed, along with supply chain development options and sequencing for timely investments. OEUK's work is complemented by the NSTA Energy Pathfinder contracts portal **(bit.ly/3PTzNUh)** which features live opportunities for oil and gas, offshore wind and carbon capture and storage projects.

OEUK's 2023 priority supply chain workstreams

4. What is the *Supply Chain Roadmap* and why do we need one?

The *Supply Chain Roadmap* represents weighty industry and stakeholder involvement built on an agreed methodology to establish the mission-critical, all-energy supply chain. It describes what must be done to expand the footprint of domestic businesses so that they can service demand at home and export goods and services.

It shows where we are now and how we intend to proceed towards the secure, low-carbon energy that will foster growth across the economy.

The *Roadmap* is divided into three time periods: Build (2022-25); Enable (2026-30); Grow & Sustain (2031-35).

The UK offshore energy sector could spend more than £200bn in the rest of this decade alone on oil and gas, offshore wind, hydrogen production and carbon capture, transport, and storage. In the 2030s, achieving energy independence and further emission reductions will mean even more investment. This shows the scale of the opportunity for energy developers and supply chain organisations.

The North Sea Transition Deal, agreed between government and the offshore energy industry, aims to harness industrial strength and anchor it in the UK for the energy transition. Planned properly and done well, this will not only restructure the sector as the UK cuts emissions, but it will also accelerate economic growth.

The Deal sets voluntary targets: 30% locally sourced technology and 50% UK content over the life-cycle of all low-carbon projects, including capital investment and offshore decommissioning. However, these targets are not 'flat' or overarching and will be focussed on priority areas where there is confidence that the necessary capability and capacity can be developed and embedded first in the UK.

But companies will not invest more in expertise and capacity unless they have a sustainable pipeline of activity with reasonably certain timeframes. If the UK is not globally competitive and fails to offer early investment assistance where appropriate, companies will invest in less risky jurisdictions. Indeed OEUK's *Business Outlook Report 2023* found that two ouf of three supply chain companies lacked the confidence to invest, attract and retain resources in their UK businesses, given more attractive opportunities elsewhere in the world.

The first part of the *Roadmap* focuses on helping companies visualise future supply chain demand. Hence the OEUK spend visibility tool, launched in December 2022. Its versatile scenario-based approach allows businesses to envision what demand profiles might look like more than three years ahead and how future possibilities might materialise. It also provides a valuable evidence base for the UK and Scottish governments' policy responses.

The North Sea Transition Deal and the supply chain transformation commitment:

- Create a world-class, low-carbon supply chain in the UK.
- Anchor UK content in the supply chain.
- Develop industrial scale capability in the UK for low-carbon industry.
- Promote energy supply chain's net-zero capability and services to the world.
- Attract further inward investment for net zero.
- Incubate new technology development.
- Develop the Global Underwater Hub **(bit.ly/3O8Cwbo)**
- Speed up invoice payment by championing the government's Prompt Payment Code.

The prize to the UK is immense and the *Supply Chain Roadmap* can be a catalyst for realising it.

Steps to delivery:

- Commitment through action by regulators and industry leaders to support and implement the *Roadmap*
- Embed coherent and far-sighted policy that supports a successful transition of companies and workforce into new energies and ensures a successful and fair transition.

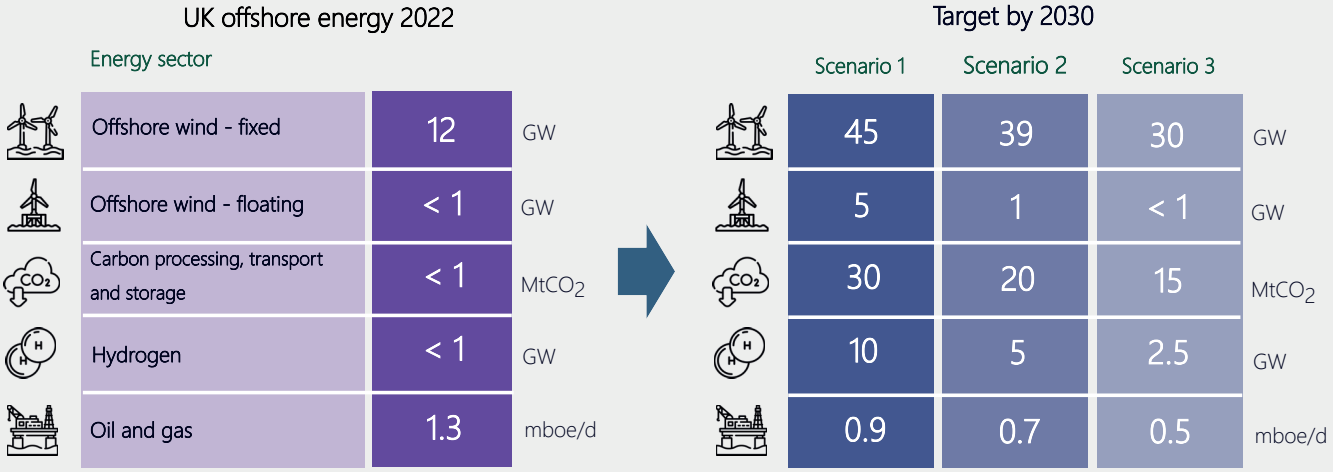
Supply Chain Spend Visibility tool

The Supply Chain Spend Visibility tool provides a holistic view of demand, shining a spotlight on UK energy project spending plans in oil and gas, CCS, offshore wind and hydrogen over the next decade.

There is a misconception that supply chain companies work only in oil and gas or hydrogen or wind. This is not the case. There is one integrated energy supply chain. For decades, supply chain companies have moved seamlessly between projects related to oil and gas exploration and production, nuclear plant

Supply Chain Spend Visibility Tool: scenarios	
Scenario 1	Based on the projects required to meet British Energy Security strategy ambitions
Scenario 2	Investment in new projects is not enough to meet government targets
Scenario 3	No new oil & gas investment, slow pace of investment in new energies

Local content explanation	
100%	Assume 100% UK based supply chain – illustrates total size of the prize
Offshore Wind Sector Deal & North Sea Transition Deal	As agreed between government and industry – 60% and 50% respectively
Selective growth	Assumed and reasonable estimate of what is practically possible
Status quo	Assumes nothing changes – 25%-35% local content, the rest imported



construction, wind turbine manufacturing and installation and more. Such misconceptions create artificial impediments to investment, growth, and advancement. They might also have an impact on the highly skilled, very mobile workforce of the energy supply chain.

This tool shows the impact that demand has on an integrated supply chain, reflecting the reality of commercial life. It also helps to identify potential synergies between sectors and the potential bottlenecks.

The tool uses three scenarios for the different rates at which industry might invest over the next decade and the share which is delivered in the UK.

OEUK has commissioned further work to be published later in the year which will show what these scenarios could mean for jobs and the economy at a regional and national level.

What is the size of the prize?

The Supply Chain Spend Visibility Tool - Insights

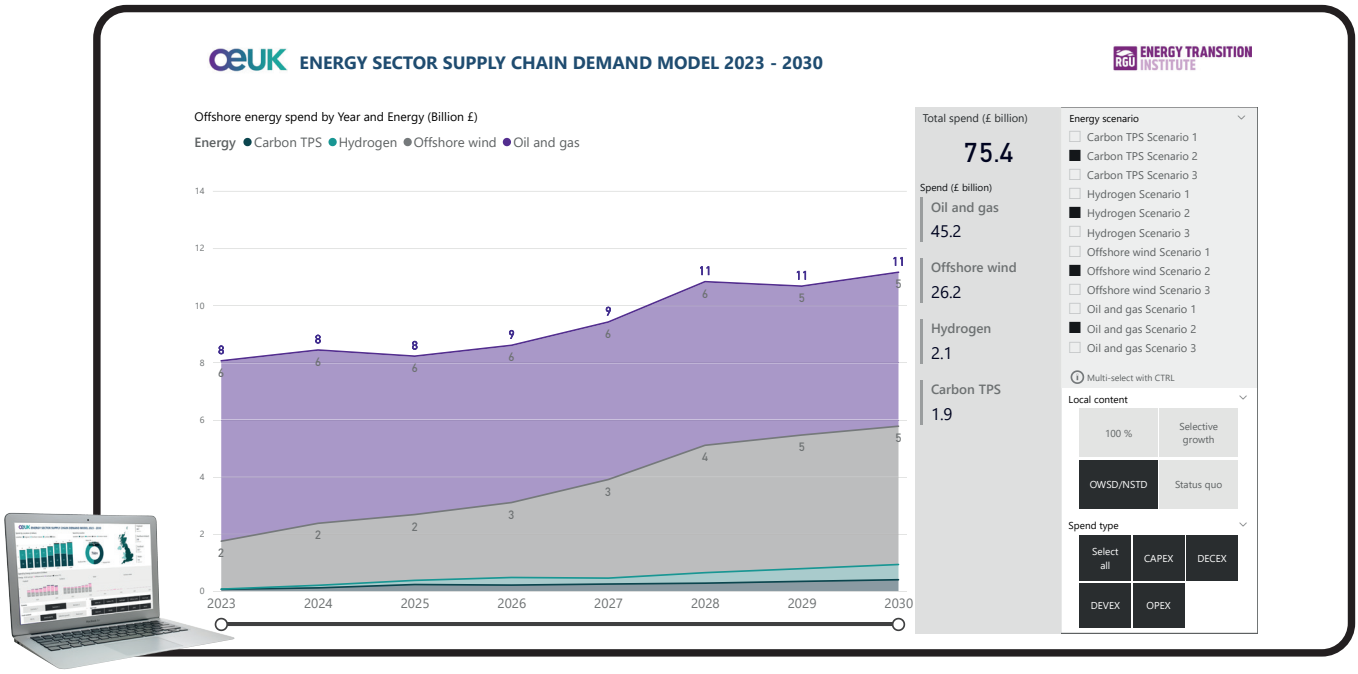
The Supply Chain Spend Visibility Tool helps companies to visualise future supply chain demand and support investment / business cases. This section provides insights from the tool and showcases its capability. All the examples contained in this section are based on Scenario 2. That means that some investment will go into new projects, and assumes industry will achieve the local content targets of both the Offshore Floating Wind Sector Deal and the North Sea Transition Deal.

Figure 1 illustrates how the tool can show total demand on the integrated supply chain across any combination of oil & gas, CCUS, offshore wind and hydrogen. In this scenario we have included spend across all of these areas, and the figure shows a potential total UK supply chain spend between now and 2030 of over £75bn, whereby oil and gas remains the biggest spend, followed closely by offshore wind. In a higher investment case this could grow to £90bn.

The emergence of offshore wind (fixed and floating) hydrogen and CCUS creates a £30bn opportunity for the existing supply chain, that is already resident within the UK and has wholly transferable goods, services, and skills to these emerging new energies. The opportunity will only increase as floating offshore wind, hydrogen and CCUS continue to grow beyond 2030.

If we get this right, we can achieve a UK-built net zero, building the strategic elements of the supply chain, creating UK jobs, and bringing the benefits back into the UK economy.

Visbility Tool Example (Figure 1):



"I'm encouraged by scenario-based flexibility and that the tool will continue to grow and build functionality. This can also shape the discussions and strategic agenda for the supply chain operator and contractor going forward."

Marnie Waldron, Equinor

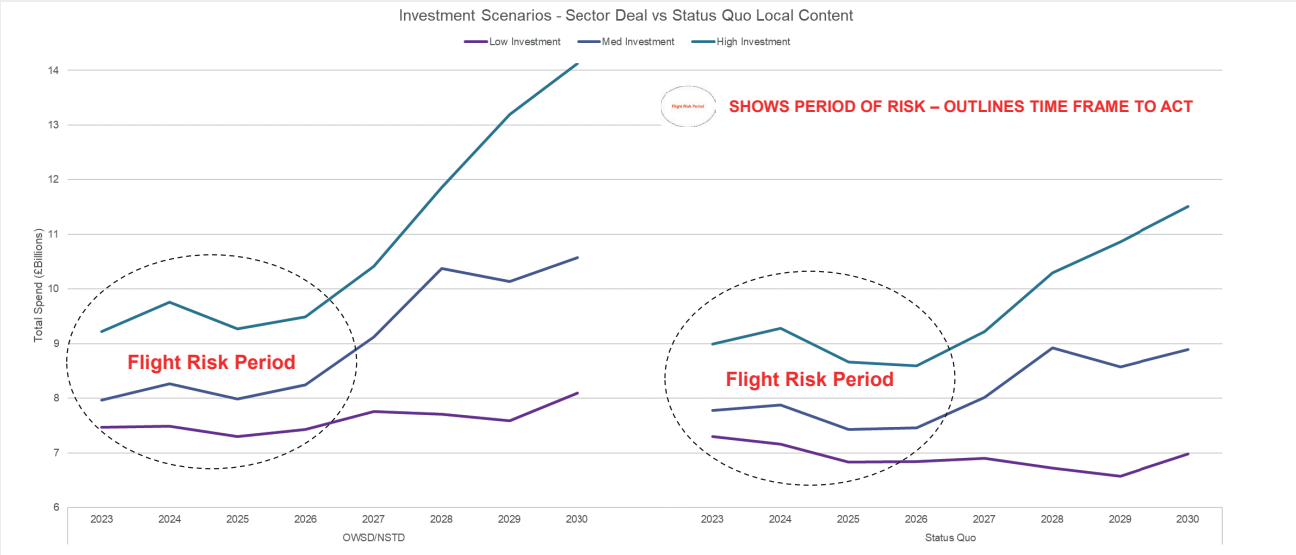
We can also significantly enhance export possibilities, positioning the UK to seize international opportunities as we aim towards 2050.

Figure 3 shows how the tool can be used to investigate trends in sub-sector (e.g. engineering & consultancy) supply chain spend by category. This can help to identify both growth opportunities and where supply chain security may be at risk. Maintenance grows from £1.8bn in 2023 to £2.6bn in 2030; operations from £1.6bn to £1.8bn; subsea from £0.8bn to £1.4bn; and offshore installation/ facilities from £0.5bn to £1.3bn. Spending on drilling and wells shrinks, by contrast, from £1.6bn in 2023 to £1.4 bn in 2030.

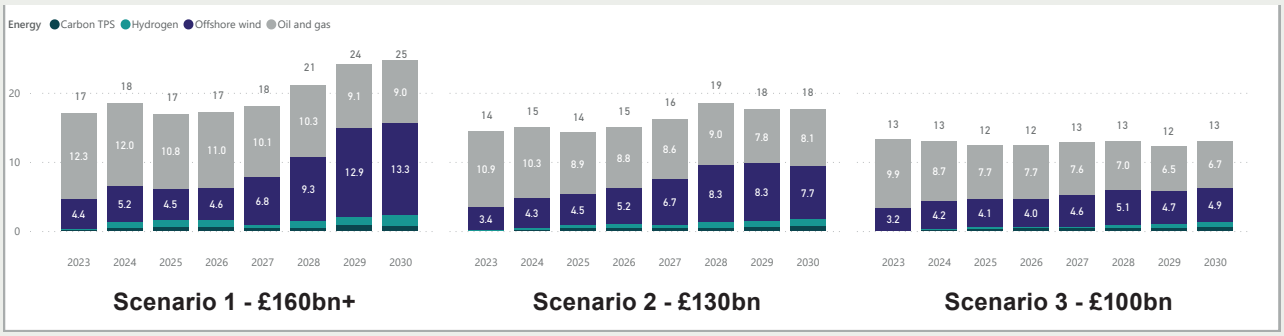
Figure 2

Investment by year (2023-2030)

Overall expenditure is likely to rise with inflation. In a 'high growth' scenario, supply chain opportunity increases by 50%. A 'low growth' could result in a flat demand outlook, with implications for capacity build-out.

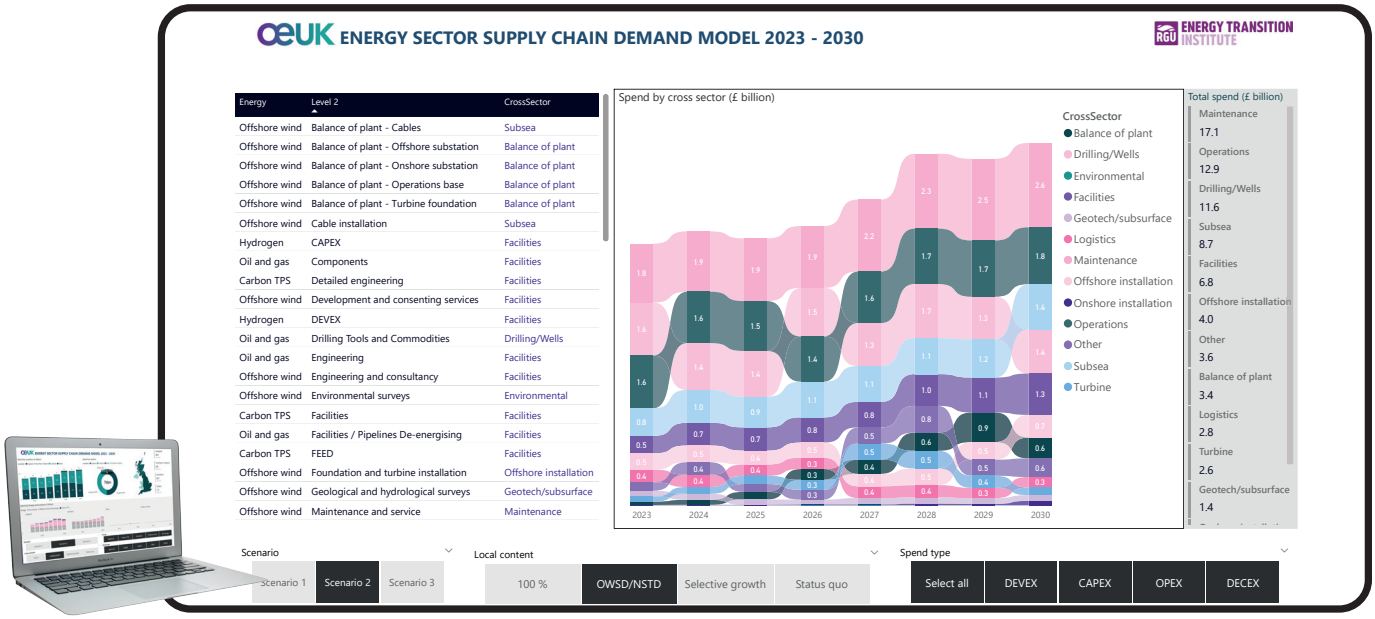


Total spend by scenario (Billion £)



Some areas of the supply chain form critical links in the energy transition chain and must be protected

Visbility Tool Example (Figure 3):



**Scenario 2 with OWSD/NSTD (oil and gas, offshore wind and CCS TPS), cross sector categorisation*

These industry sectors are integral parts of the UK supply chain and form critical links in the energy transition supply chain. For example, a low oil and gas investment case could see drilling demand fall by a further 30% by the middle of the decade, which would see a loss of rigs from the basin. Indeed, there is already evidence of mobile drilling units and vessels being moved to other basins. This creates a gap in the UK's ability to drill new oil and gas wells, in turn creating an energy gap which will only be filled with imports. Furthermore, without the ability to anchor this capability in the UK we are no longer able to drill carbon storage wells and face the risk of creating unnecessary cost escalation, when the service is needed to meet demand. This is further illustrated in Figure 2, while Figure 4 shows the extent of cross-over.

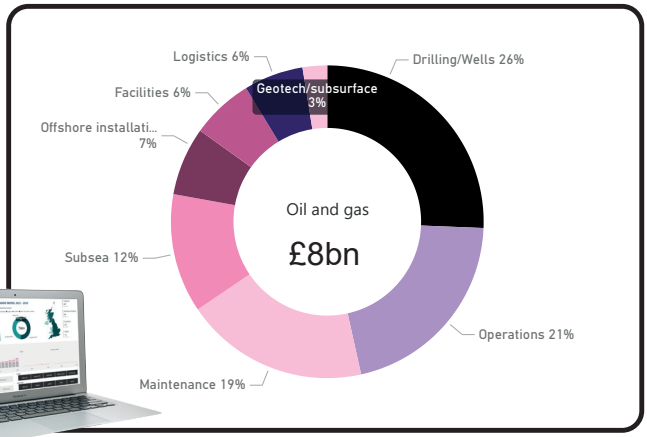
OEUK estimates that around three quarters of the current supply chain requirements for the oil and gas sector map well to those which will be needed in offshore wind, covering the full breadth of projects from development to operations and decommissioning. Overall, up to 70% of the supply chain demand from offshore wind projects in 2030 is likely to be accessible to, and reliant on, those same supply chain capabilities that exist now. That is why it is so important that those supply chain capabilities remain anchored here in the UK. For this to happen they need to have a sustainable pipeline of work, with a loss of investment in the short term from oil and gas putting this at threat before the growth in offshore wind demand later in the decade.

Figure 5 spotlights the high growth and high value opportunities for supply chain companies looking to expand their businesses in the UK. Top growth areas include onshore substation installation, post decommissioning monitoring of carbon storage wells, installation of offshore

Over three quarters of the UK's existing oil and gas supply chain has direct cross-over with CCUS, offshore wind and hydrogen

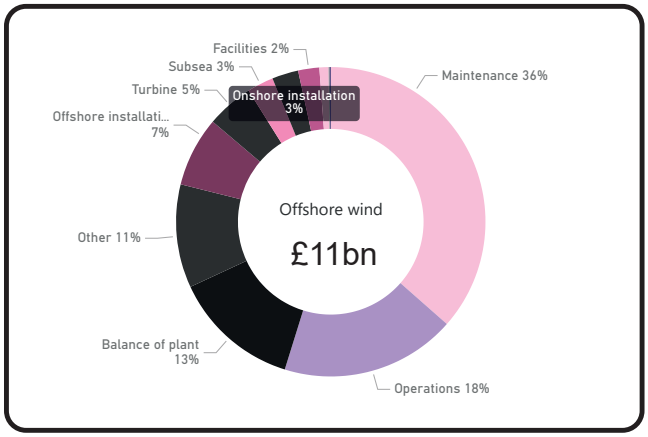
Visibility Tool Example (Figure 4):

Oil and gas supply chain cross sector in 2023



75% of current oil and gas suply chain has high transferability to offshore wind supply chain sector

Offshore wind supply chain by cross sector in 2030



70% of future offshore wind supply chain overlap with current oil and gas supply chain categorisation

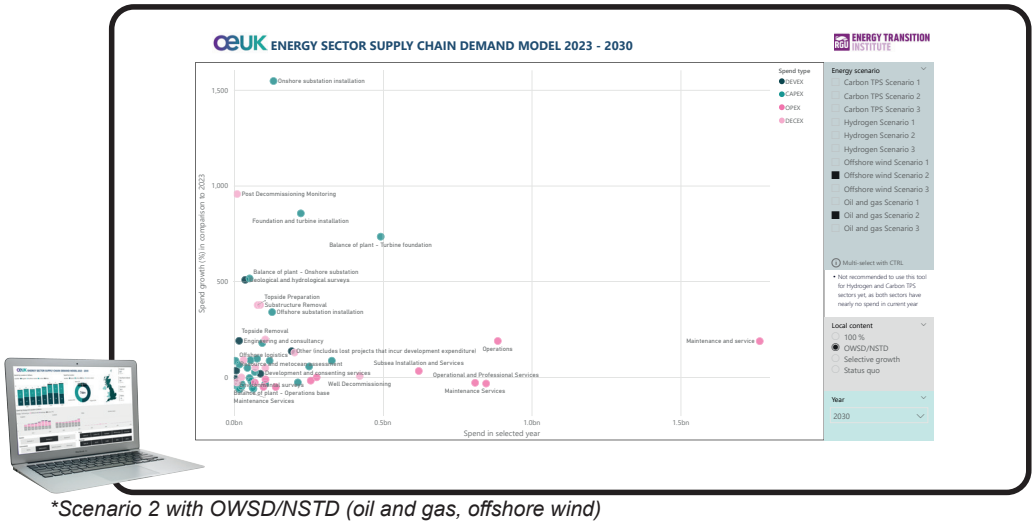
**Scenario 2 with OWSD/NSTD (oil and gas, offshore wind and CCS TPS), cross sector categorisation*

Cross sector | Specific sector

wind foundations, installation of offshore wind turbines, wind turbine foundations, geological and hydrological surveys, and wind farm onshore substations. All of these growth areas play to existing oil and gas supply chain capability. The opportunity for the UK supply chain is huge. If we get this right, together we can unlock the capital that is vital to turbo charge projects, build the strategic elements of the supply chain, create UK jobs and bring the benefits back into the economy with an appropriate level of local content.

We must grow the supply chain to capture as much value as possible in UK

Visbility Tool Example (Figure 5):



**Scenario 2 with OWSD/NSTD (oil and gas, offshore wind)*

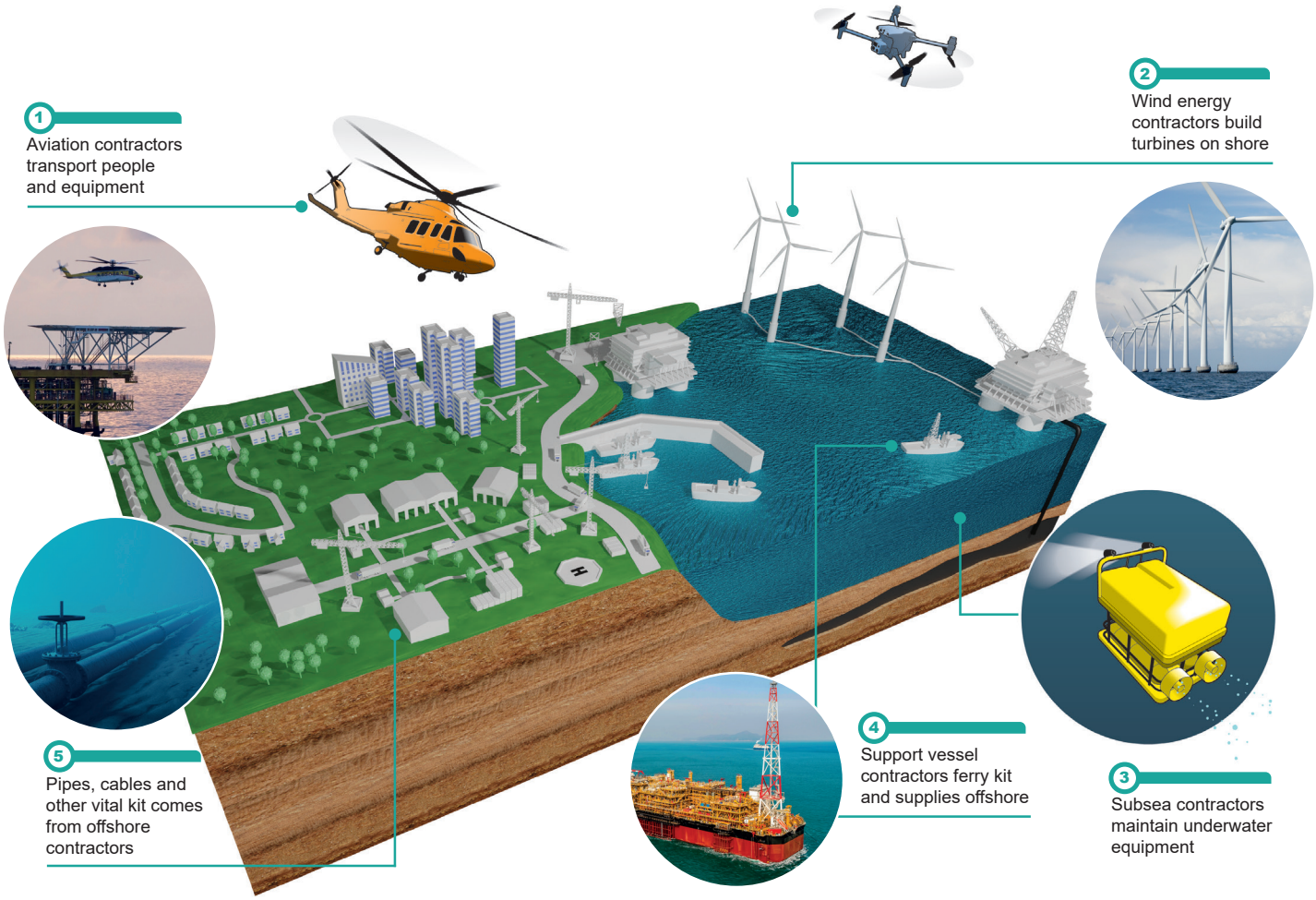
There is one integrated energy supply chain.

For decades, supply chain companies have moved seamlessly between projects related to oil and gas exploration and production, nuclear plant construction, wind turbine manufacturing and installation and more.

It is unhelpful to take a siloed approach to building UK supply chain capability. Action is needed to maintain flexibility and mobility within the UK supply chain. Governments must take a holistic approach to building supply chain capability and increase focus on collaboration over diversification.

Offshore supply chain

UK energy operators rely on hundreds of other firms for equipment and services



What the users had to say about our Visibility Tool

"*We had recent experience of the OEUK spend visibility tool and this was an invaluable resource for business case preparation and size of the prize independent date. This presentation would otherwise have taken us several days to prepare, if not weeks and was available at the touch of a button in granular form with this great tool. Additionally, the staff at OEUK met with us to talk us through the data. We would not hesitate to recommend engaging with OEUK for a tailored report to your specialist needs for your business.*"
Paul Crichton, Business Development Manager, Delmar Systems

"We have been looking for more long-term visibility and analytics across various sectors, especially regarding emissions reduction and decarbonisation, for a while, this is excellent."
Donald Mackay, Business Development Manager, SLB

"Great work OEUK / RGU. All looks very helpful. I suspect you will have a queue at your door to explore the various disciplines so let me get in quick and notify my interest in exploring and contributing to the tool / output."
Steve Mitchell, Group Operations & HSSEQ Director, ASCO UK

"Great work and keen to continue to support as required. As we can see from the questions there is a real demand for a tool like this. This is a great tool for in-company, in-sector and external use."
Steve Wisely, Senior Vice President of UK & Global IRM, Subsea7

"The tool looks like a tangible, positive step forward and look forward to exploring in more detail. Thanks."
Andrew Ellis, Commercial Director, OnePeterson

"I'm encouraged by scenario-based flexibility and that the tool will continue to grow and build functionality. This can also shape the discussions and strategic agenda for the supply chain operator and contractor going forward"
Marnie Waldron, Manager, Supply Chain Management, Equinor

5. The importance of local content

A key part of the North Sea Transition Deal is the voluntary industry commitment to boost the the number of UK-built and delivered projects, helping us to create a globally competitive energy supply chain of international repute.

Industry has voluntarily committed to achieve 50% local UK content across the lifecycle for all related new energy transition projects by 2030, as well as in oil and gas project decommissioning work. We have also set a voluntary target of 30% for locally sourced technology.

A competitive UK supply chain that is ready to deliver our UK energy transition targets implies investment in competence and capacity at least three years ahead of any final investment decision. There is a substantial incentive for expanding the number of home-grown projects, but industry cannot do this alone. For example, current contract for differences (offshore wind) focuses solely on price as an evaluation criterion and does not put a value on UK content. Therefore, there is no reason for the developer to seek collaboration and drive supply chain investment.

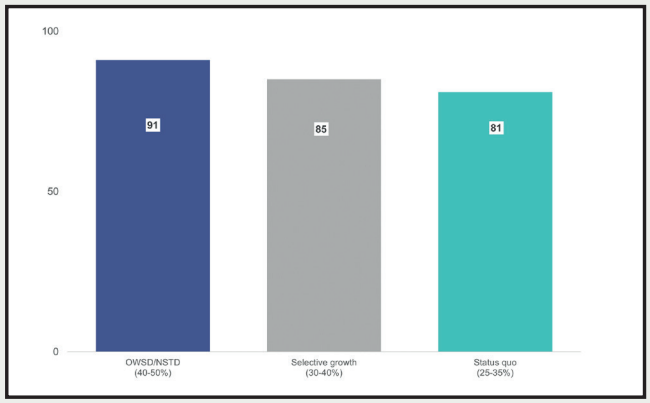
Every 1% of additional local spend can add up to £210mn of spending and 1,600 direct/indirect jobs in 2030. This adds up to a cumulative value gain of over £10bn by 2030 (*see diagram below*).

The oil and gas supply chain has over 50 years of expertise in delivering large scale oil and gas capital projects. It is supporting the production of the energy needed to meet the needs of a nation that relies on oil and gas for 75% of its energy. At the same time, the companies within it are also partners on most offshore wind, hydrogen and CCS projects being built in the UK. If we deliver

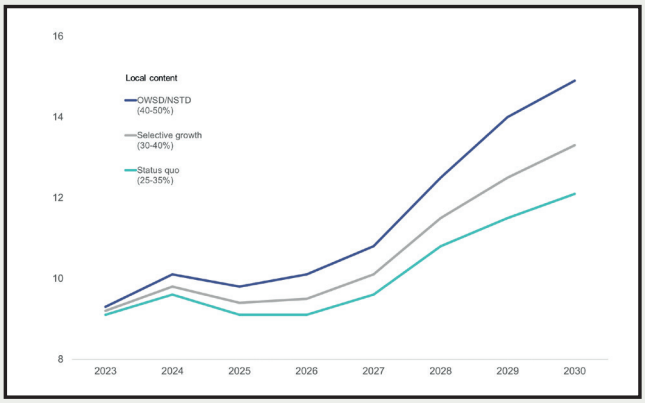
Big prize for increasing UK local content – *indicative only*

Scenario 1:

Total spend 2023/30 by local content (£bn)



Total spend by year and by local content (£bn)



Each 1% of additional local content can add:

- Up to £210mn spend and 1,600 direct/indirect jobs in 2030.
- Up to £1.4bn spend, 2023-30*.

Net present spend at 10% discount rate for 1% local content is about £1bn (2023-30):

- Local content prize justifies targeted and funded activities to increase efficiency, productivity and UK competitiveness.
- Opportunity for catapults/Net Zero Technology Centre/universities and others to support industry.

OEUK is leading a supply chain investment task force to:

- Identify strategic and high-value areas for UK capability;
- Set focused, credible local content targets; and
- Identify the levers to achieve them.

the *Roadmap*, the UKCS has the potential to support around 60% of its decarbonisation requirements through UK-built projects.

Setting credible local content targets

OEUK has reviewed the UK supply chain's capability to deliver technology and services across energy transition projects. These comprise offshore floating wind, the electrification of platforms, the construction of CCS clusters and hydrogen production.

The tables below and overleaf summarise the key findings from this work. This understanding of UK capability, coupled with knowledge of domestic demand and insights from the supply chain spend visibility tool, allows the sector to focus on areas either where the UK either already has a strong capability to deliver, or where there are strategic opportunities to build that capability.

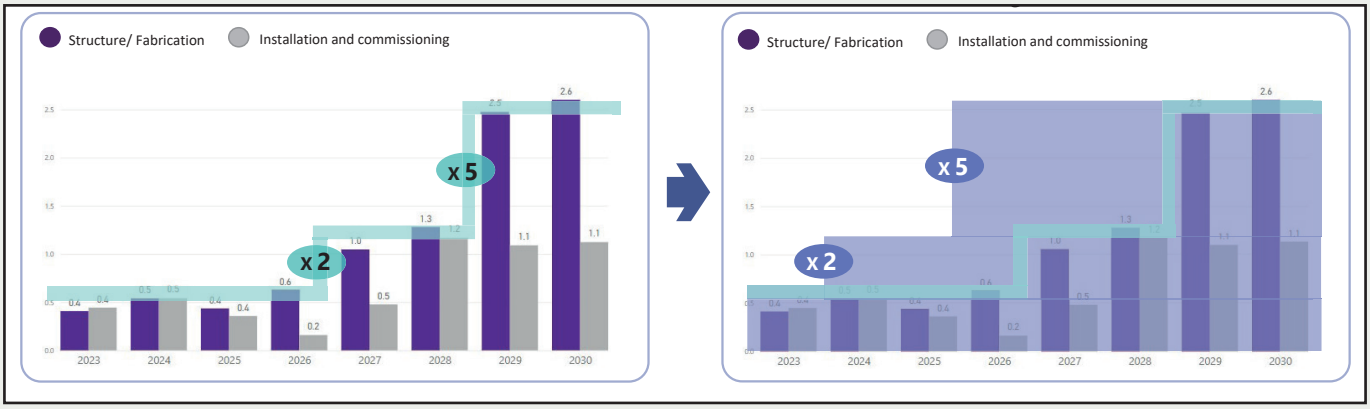
A more competitive business environment, with an attractive fiscal and regulatory regime that will incentivise private investment, could increase the cumulative opportunity for UK supply chain companies by over £30bn over the next seven years.

This analysis finds that reaching the local content targets in the North Sea Transition Deal and the Offshore Wind Sector Deal by 2030 could create an additional £10bn of cumulative value this decade.

Installing capacity ahead of final investment decisions will embed local content

The example below illustrates when investment must happen to achieve OWSD ambitions by 2030

Offshore wind structure/fabrication capacity demand | **Offshore wind manufacturing infrastructure FID**



- Offshore wind structure/fabrication spend to double by 2026 and quintuple after 2028.
- Offshore wind installation and commissioning spend also doubles after 2027.
- Offshore wind structure / fabrication spend increases rapidly over the decade.
- To meet the North Sea Transition Deal and Offshore Wind Sector Deal targets, investment decisions will need to be made pre-2026.

Supply chain companies won't invest without a certain, sustainable pipeline of activity. Early investment is key to building a competitive supply chain that can deliver the energy transition.

Steps to delivery:

- Engagement between government, regulator, industry and financiers to support early stage, anticipatory, investment in the supply chain.
- Embed enduring coherent fiscal, energy, industrial and carbon policies that encourage companies to invest for decades.

6. Opportunities for the supply chain if we deliver the roadmap

OEUK has undertaken capability and capacity mapping of the supply chain in carbon capture and storage, floating offshore wind manufacturing and installation and hydrogen generation, transport and storage.

A summary of this work is shown on the pages following. While all areas need a significant level of investment, the analysis shows that UK capability is not the same in each area and hence industry and policy makers have different actions to consider.

Early investment now will help to avoid bottlenecks in the future. OEUK members have provided examples of real-life investment that would proceed if they had more certainty about the work, or support in the form of anticipatory investment (*see pp 27-29*).

Supply chain companies won't invest without a certain, sustainable pipeline of activity. Early investment is key to building a competitive supply chain that can deliver the energy transition.

Steps to delivery:

Engagement between government, regulator, industry, and financiers to support early stage, anticipatory, investment in the supply chain

Embed enduring coherent fiscal, energy, industrial and carbon policy that allows companies to invest for decades.

Capability & capacity mapping - scale definition

Scale definition		
	UK capability	**Value and accessibility of opportunity**
●	The UK has full coverage of the required capability	There is a significant opportunity, readily accessible to the existing supply chain
◕	The UK has majority coverage of the required capability	There is a significant opportunity but some constraints or barriers to access
◑	The UK has moderate coverage of the required capability	There is a moderate opportunity with constraints or barriers to access
◔	The UK has limited coverage of the required capability	There is a limited opportunity with challenging constraints or barriers to access
○	The UK has minimal coverage required capability	There are prohibitive constraints of sccess limiting the value of the opportunity

Floating offshore wind: supply chain capability at a glance

	Manufacturing and Fabrication						
	Floating Wind Turbine Gen	**Floating Foundations**	**Dynamic Infield Array Cables**	**Offshore Substation Package**	**Offshore Electrical Connect**	**Onshore Electrical Connect**	**Onshore Substation**
UK Capability	◔	◔	◑	◕	◑	◑	◑
Extent of Opportunity	◑	◕	◕	◔	◕	◑	◑
Observations	Limited growth opportunity – UK capability to manufacture is uncompetitive	UK port space is limited. The UK is better positioned in anchors and moorings	Critical subsector for the UK. Ambitions to procure increased level of cables from expanding and establishing UK OEM facilities	These larges structures are likely to be produced overseas and transported to location for offshore hook up	Further clarification of electrical connections required. Export cables are a UK strength	There is confidence in electrical connections but further clarity on defining this is required	Stronger UK position. Existing capability in terms of civil works contractors for onshore substations
Key Opportunities	Assess floating turbine components that support manufacturing capability	Tangible examples of capability - already serviced some floating foundation projects	Build upon existing capability. Identified as a key focus area for the build out of local content	Existing UK track record but manufacturing capability has been outsourced	Dynamic cables will drive new demand for connectors and buoyancy assets – UK is well served in terms of capacity	May be opportunity in niche areas	May be opportunity in niche areas

	Installation					
	Floating Wind Turbine Gen	**Dynamic Infield Array Cables**	**Offshore Substation Package**	**Offshore Elect Connect**	**Onshore Elect Connect**	**Onshore Substation**
Capability	◑	◕	◔	◑	◕	◕
Value and Accessibility of Opportunity	◕	◕	◑	◑	◑	◑
Observations	Limited UK position in comparison to European counterparts.	Strong UK capability – proven UK track record	These larges structures are likely to be produced overseas and transported to location for offshore hook up	Existing expertise and transferability for UK capacity build out.	Existing expertise and transferability for UK capacity build out.	Stronger UK position. Existing capability in terms of civil works contractors for onshore substations
Key Opportunities	Focus on creating attractive market conditions to attract companies and assets.	Limited capacity of UK vessels, UK opportunity likely to remain limited.	Leverage expertise and identify niche supportive opportunities.	Opportunity forecast to be limited.	Opportunity forecast to be limited.	Leverage expertise and identify niche supportive opportunities.

The capability of today's expanding oil and gas supply chain

Carbon capture & storage supply chain capability at a glance*

	Capture					Transport			Storage
	Plant Design & Engineering	Major Plant Fabrication	Equipment Design & Manufacture	Construction & Commissioning	Operations and Maintenance	Line-pipe Onshore & Offshore Supply and Installation	Ship Transport of CO2	Marine Loading & Offloading	Wells, Subsurface & Reservoir Marine & Subsea Contractors
UK Capability	●	◑	◔	◕	●	◑	○	◑	●
Extent of Opportunity	●	◕	◑	◕	●	◑	◔	◕	●
Observations	UK supply chain strength	Capability has declined; barriers to competitiveness	Relatively commoditised; limited growth opportunity	Potential for large-scale resource and efficiency gap	Proven experience	Lack capability in line-pipe supply & fab at required spec.	New industry; no UK activity	New industry	Some reliance on globally optimised equip't & sevices
Key Opportunities	Opportunity to develop specialist capability in capture tech	Opportunities in specific areas of major plant fab	May be opportunity in niche areas	Major opportunity	Exportable capability	Capability for onshore and offshore installation	Major driver could be CO2 importation	Significant overlap with LNG projects	Strong capability Already servicing early clusters
Key Recommendations	Clear visibility & commitment needed from industry	Clear visibility of opportunities needed Evaluate the case for targeted support Assess mechanisms to support UK competitiveness	Consider measures to attract investment Pursue niche R&D opportunities	Continued action under the labour and skills pillar of the NSTD	Part of broader business offering	Assess mechanisms to support UK competitiveness	Business case is lacking	Assess capacity of existing UK port infrastructure	Clear visibility of opportunities needed Avoid unnecessary bottlenecks on suitable rig equipment Industry guidance on rig operation in CO2 environment

Hydrogen supply chain capability at a glance*

	Hydrogen Generation					Transport	Storage
	Plant Design & Engineering	Major Plant Fabrication	Equipment Design & Manufacture	Construction & Commissioning	Operations and Maintenance	Line-pipe Onshore & Offshore Supply and Installation	Wells, Subsurface Storage Marine & Subsea Contractors
UK Capability	●	◔	◔	◕	●	◑	●
Extent of Opportunity	●	●	◑	◕	●	◑	●
Observations	UK supply chain strength	Capability has declined; barriers to competitiveness	Electrolysers, Compressors & reformer package manufacture UK SC Gap	Potential for large-scale resource and efficiency gap – depleted and ageing workforce	Proven experience	Lack capability in line-pipe supply & fab at required spec.	Some reliance on globally optimised equip't & svcs
Key Opportunities	Opportunity to develop specialist capability	Opportunities in specific areas of major plant fab	Opportunity to develop SC capabilities – High Integrity valves as an example	Major opportunity	Exportable capability	Capability for onshore and offshore installation	Strong existing capability Within SC
Key Recommendations	Clear visibility required & commitment needed from industry to local content – use UK based design capability	Evaluate the business case for re-energisation of UK larger scale fabrication Assess mechanisms and routes to investment to support UK competitiveness	Consider measures to attract investment Pursue niche R&D opportunities	Continued action under the labour and skills pillar of the NSTD Right skills – right time – right place	Part of broader business offering Continued action under the labour and skills pillar of the NSTD Right skills – right time – right place	Assess mechanisms and routes to investment to support UK competitiveness	Clear visibility of opportunities needed Avoid unnecessary bottlenecks on suitable equipment Action req to retain capability in UK

*Refer to full detail in OEUK Report 'Supply chains to support a UK hydrogen economy' - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1092371/supply-chains-to-support-uk-hydrogen-economy-wood-template.pdf

Examples from OEUK members: opportunities for early stage and longer-term investment, by industry and/or government support.

The following examples are for floating offshore wind

Example 1:
Inter-array cable
Opportunity for R&D investment.

Offshore inter-array and export cables are used to bring electricity to the shore from offshore wind farms. As turbines get larger, higher-voltage cables are needed to meet the greater power generation capabilities. Higher-voltage inter-array cables are in development and qualification, using established expertise from the power and control umbilicals built and installed for subsea oil and gas production systems.

Offshore inter-array and export cables utilise either ropes or extruded shaped fillers to provide a round product. Currently both material types mainly come from continental Europe owing to a lack of investment in the UK to deliver the sizes and/or quantities required for use at a competitive price. These products that are transported from Europe also extend the carbon footprints of the buyers.

As both types of products are generally not load-bearing or required to be electrically performing, they both lend themselves to research and development into production in whole or in part using recycled polymers generated in the UK.

Example 2:
Manufacture of concrete floating foundations
Opportunity for investment.

It is well documented that port investment and local assembly and manufacturing of floating foundations are challenges for floating wind build out in Scotland.

Company A has led a study (as the systems integrator) with partners investigating the opportunities for concrete floating wind foundations in Scotland. This work has validated the perceived local content benefits of concrete (compared with imported steel) but also shown the solutions to have compelling commercial benefits and a material impact on levelised cost of energy.

The key commercial benefit identified is a comparatively low unit cost at the expense of a higher initial investment. The lead time for set up of the facility and the initial investment are potential blockers to commercialising this facility. Early development of a concrete foundation manufacturing facility would have a positive impact on project economics accelerating the development of grid scale floating wind projects.

Example 3:
Mooring systems and cables
(standardisation of design, and UK fabrication capacity)
Opportunity for early-stage investment.

It is important to simplify design so that economies of scale can be brought into play. There is now a risk that almost every platform will have its own bespoke mooring system, meaning there will be no real progress in terms of cost reduction or improving the UK's capacity to manufacture.

Moorings and cables used to hook up a floating production, storage and offtake vessel are normally complicated from a disconnection and connection perspective but are very similar to that of a floating wind structure. One difference is that wind will need many moorings, close together, so adapting the model already used would be one way forward.

The UK can become a global leader and a recognised test centre for de-risking floating wind substructures and moorings by rapidly launching demonstration projects to identify the best range of floating foundation design, with a focus on developing those that could be manufactured and installed within the UK. Standardisation in anchoring and mooring

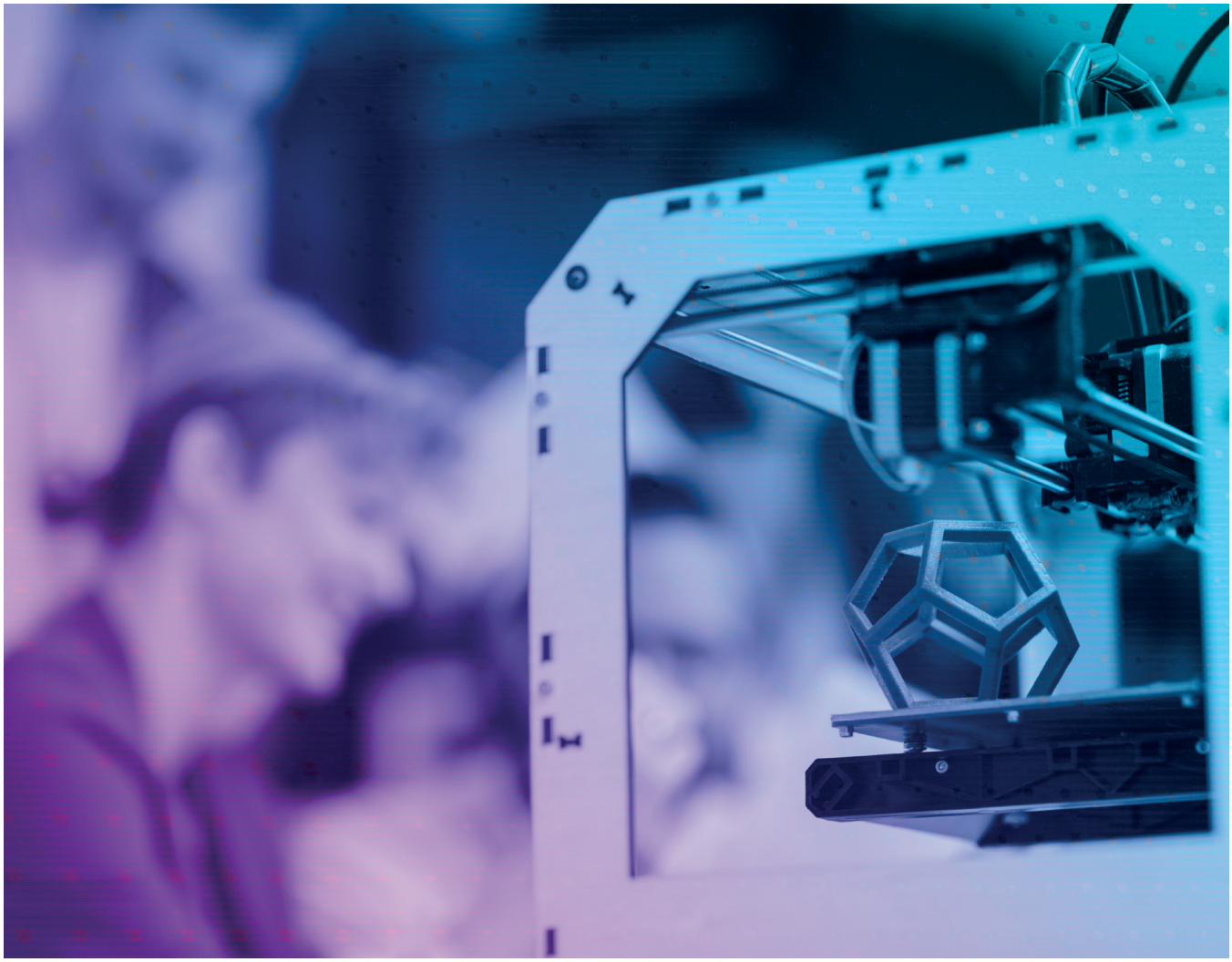
designs will also simplify operation, assure cost effectiveness, and unlock UK export opportunity. Similar approaches could be applied also to carbon storage and to hydrogen generation.

Example 4:
Offshore substations design/fabrication
Opportunity for early-stage investment.
There is little UK capability and capacity for fabricating and assembling fixed or floating offshore sub-stations.

The use of existing automated welding capabilities will reduce cost, increase productivity and support the people skills required. Further research and development into this automated welding and fabrication technology is required.

Example 5:
Remote monitoring and operations – Opportunity for early-stage investment.
The increased distance from shore of floating wind projects creates a market for remote sensing and maintenance equipment. Further investment into autonomous remote operations is required.

Success will facilitate cost-effective operations and maintenance campaigns. The use of digital monitoring tools such as drones and long-range autonomous underwater vehicles in CO_2 transportation and storage operations will reduce the long-term cost of geological storage monitoring and create visibility over fluid containment.



The following examples are for carbon capture and storage

Example 1:

Subsea well equipment manufacturing in Scotland

Eliminate uncertainty and unlock investment.

"We design, engineer, manufacture and test subsea production systems at our plant in Scotland, where we make injection and production subsea 'trees'. We are developing our injection systems for use in CCS and we intend to manufacture those in Scotland.

"However, the uncertainty around CCS awards and their timing in the UK is causing scheduling issues in the plant and we face a capacity constraint if the oil and gas market continues apace.

"Operators need more certainty from the government about the sanctioning of CCS projects so that we can begin capacity planning or increase capacity at our plant. We would also invest in updated machining capability. For us and our supply chain, certainty means more local people working on local UK projects, with job security if demand for oil and gas declines suddenly."

Example 2:

Deploy affordable carbon capture plants: Opportunity to streamline the process.

This needs to be accelerated over the next few years, and both storage facilities and safe, cost-effective transportation have to be established. Several challenges are limiting its deployment such as high costs – dominated by capture and pre-final investment decision costs – and significant technology gaps, exacerbated by slow investment in the required research and development.

Carbon storage sites and wind farms do not have much in common with respect to infrastructure or to requirements for routine and emergency operational access. Approaches to measuring, monitoring and verifying emissions from CCS projects are likely to be over-engineered as the industry tests different methods. It is worth investing in trials to find the best one.

The balance between capital and operational expenditure is likely to shift throughout the decade, with the proportion of capital increasing from around 40% now to 50% in the coming years, mostly driven by growth in offshore wind.

However, a lower development scenario would result in a relatively flat supply chain demand outlook, (see fig 2) which will dampen UK jobs creation, yield a lower gross value-added (GVA) contribution, and reduce its ability to develop world leading capabilities further. Some companies are already actively prioritising international business, with crucial resources like drilling rigs and vessels being moved to more financially incentivised regions where activity is increasing.

7. Next steps

OEUK will continue to drive forwards activities under the four key pillars supporting companies to invest in the UK and promoting the capabilities of the expanding oil and gas supply chain.

Pillar	Next steps
Attractive commercial environment	**Code of conduct** • OEUK Supply Chain Principles – publish good practice guidance. • Launch 2023 'Working as One' survey to measure adherence to Supply Chain Principles and allow data driven work. • Standardise an alternative, sustainable contracting model to reduce project risk (LOGIC) in offshore wind.
Confidence to invest; long-term visibility	**Supply Chain Roadmap & Spend Visibility Tool** • Continue development of supply chain spend visibility tool to include regional perspective on supply chain spend and opportunities, further develop focussed local content targets • Deepen insights from the tool to support investment/business cases • Aligned & effective regulation, consents and planning for new energies **Mechanism to support early supply chain investment** • Identify mechanism(s) to support early supply chain investment, e.g. Insurance product, drive collaboration between Developers
Supply Chain strengths and opportunities	**Industry funded report** • Conduct independent consultancy-led assessment of focus areas for investment/support to build supply chain capability
Policy maker and third-party engagement	**Cross-sector industrial strategy** • OEUK will continue to engage across sectors to strengthen the overall value of existing efforts; avoid duplication; and achieve a more unified approach • Continue to drive an integrated, unified approach on common asks of government

If you would like to find out more about our Supply Chain Spend Visibility Tool and our supporting services, please contact:

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