



BUSINESS & SUPPLY CHAIN OUTLOOK 2024

A large, complex offshore oil rig is shown at night, illuminated by numerous bright lights. The rig's intricate steel structure, including platforms, walkways, and support beams, is clearly visible against the dark background. The lights create a high-contrast scene with significant lens flare and a grainy, halftone-like texture.

**The comprehensive
outlook for the
UK's offshore
energy resources
and supply chain**



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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Foreword

Dave Whitehouse,
Chief Executive Officer
Offshore Energies UK



OœUK's *Business & Supply Chain Outlook 2024* provides an incisive insight into the health and potential of companies in the UK offshore energy industry. Their ability to support the UK's energy needs, today and in the future, will shape the entire UK economy.

This report shows how, with the right conditions, the UK's offshore energy sector could invest £450bn in oil, gas, wind, hydrogen and carbon capture and storage projects by 2040. But without a stable environment that allows a fair return, no one will. This includes fiscal competitiveness and certainty, along with more regulatory process streamlining and alignment.

These complex projects require complex skillsets, playing to the strengths of UK energy supply chain companies and people - built on 50 years of oil and gas heritage. But our report shows that uncertainty over future projects in the UK is holding back the supply chain. Getting the domestic market right will in turn unlock huge export potential.

Making the most of the existing and proven capabilities in the industry makes good economic sense, with readily transferable and adaptable technologies and services to deliver the energy transition. Our research finds alongside investment in UK offshore energy, the accessible international market for supply chain companies could be more than £1.1 trillion by 2040 in hydrogen, carbon capture and storage and floating wind projects.

As UK producers, developers and supply chains grow, more profits are made and reinvested, more projects are committed, and more taxes are paid. This leads to more jobs secured to sustain the UK's energy future in a way that grows the economy and achieves national net zero emissions targets. Put simply, choosing a homegrown energy transition is to choose to support our people and communities.

2024 is an important year. It will see a general election held in the UK, as well as the US and Europe. The choices made this year matter.

It also marks just six years in which the UK has aimed to treble its offshore wind capacity, as we near target dates to fully decarbonise power. Six years to develop at least four carbon storage hubs and take hydrogen production from virtually nothing to 10 GW.

Our report shows renewables continue to make big strides in the power system, led by offshore wind. But challenges to grid connections and investment are holding new wind projects back. Government policy support is still needed.

The UK has Europe's largest CO₂ storage potential. The first carbon capture and storage (CCS) projects are moving closer and could be approved this year. Spend will ramp up quickly – to £2bn/year by 2030 and £3bn/year by 2040. CO₂ imports can also support wider European decarbonisation and help get more UK projects moving – but blockers need to be removed.

By 2050 the scale of hydrogen in the energy system will need to be similar to electricity today. Progress is being made, but production, transport and storage must all be developed in a joined-up way if targets are going to be met. Hydrogen could grow quickly into a £1.5+bn/year market.

But growing these markets depend on responsibly making the most of UK oil and gas production, which is at record lows. OEUK's report again finds the UK will probably have to import more energy. This is energy which could have been produced in the UK with the support of the UK supply chain.

The potential offered by a home-grown energy transition is as immense as it is inspiring. The pioneering attitude and expertise which first led to North Sea oil and gas production are well matched to lead the opportunities ahead of us.

Industry, policymakers and regulators must all relentlessly focus on this if the potential is to be fully achieved.

This report identifies three areas requiring such focus, with OEUK's recently published 2024 industry manifesto providing sound solutions. We believe these solutions can command the broad and enduring support needed for an industry which thinks and invests for the long term.

First, the UK policy landscape must keep up with rapidly changing economic conditions. Our report finds that consumer energy prices are falling back to levels seen before the war in Ukraine. Wholesale energy prices, including oil and gas commodities, have returned to pre-crisis levels. While inflation and the impact of the pandemic continue to place a significant burden on consumers, the UK's record low energy production will suppress rather than unlock economic growth. Greater stability and the removal of windfall taxes will enable this.

Second, the UK is in an international competition for energy investment and supply chain resources, and other countries are moving faster. Regulatory improvements are needed quickly for companies to invest here. OEUK's industry manifesto shows

how a shared set of objectives, embedded across all regulators, could deliver an integrated approach to energy alongside other steps to streamline project approvals.

Greater domestic policy stability means UK business units can plan effectively and compete on a level playing field. If the UK cannot keep pace with other countries in the short term, we miss an opportunity for the UK supply chain to continue to pioneer the future technologies and services to deliver homegrown carbon capture and storage, hydrogen and floating wind projects.

Finally, continued relentless focus by policymakers, industry and regulators on the health of the UK offshore energy supply chain is needed. Otherwise, a homegrown energy transition is impossible. We believe the UK can achieve its ambitions for net zero emissions and build a stronger and more sustainable economy at the same time, making the most of our oil and gas heritage.

The UK needs to have a sign above its door which clearly says it is open for offshore energy business. Big investment is needed in projects and in the supply chain's capacity. Policy support that spans political divides, from national and devolved governments, is needed to give companies the confidence to make decisions now.

Each of our three focus areas are fundamentally linked and we suggest action is required on all three fronts to deliver the enormous potential outlined in this report.

A homegrown energy transition, and its benefits, is a choice. To unleash the UK's potential and power its future, we ask policymakers to choose this path. OEUK's *Business & Supply Chain Outlook 2024* shows the potential is there – and we now need joint action to achieve it.



1. Summary

Key facts from this year's Business Outlook

Energy prices are falling: any windfall tax conditions have gone

- Wholesale energy prices have returned to pre-crisis levels
- Consumer energy bills are falling to the lowest in two years
- Rates of return on oil and gas investments have fallen and are well below other major economic sectors

The UK is in an international competition for energy investment and supply chain resources. Other countries are moving faster

- More stable policies make them relatively more attractive than the UK
- Political policy needs to draw investment into the UK's energy system
- Supply chain resources are being diverted

Good commercial practices will help sustain a strong supply chain

- OEUK's Supply Chain Principles promote strong business relationships
- Contractual risk and reward, payment performance and innovation are all important

The UK has a highly capable integrated offshore energy supply chain...

- It has most of the capability needed for:
 - Floating offshore wind
 - CCS
 - Hydrogen
- Our oil and gas experience covers 60-80% of these needs
 - It is vital that oil and gas capabilities are not eroded before new demand ramps up

Getting things right, at home, will help unlock a £1.1 trillion global market

...But project uncertainty is holding it back. The supply chain needs investment to scale up capacity for the future

Companies need confidence on the timing of projects, or the UK will be at the back of the international supply chain's queue when it comes to energy transition projects

There is a huge offshore energy investment opportunity for UK

- £160bn remaining this decade, growing to £450bn by 2040 - with annual spend being 30% higher than now
- This will help our energy supplies and the economy to grow, bring jobs and cut emissions

£450bn of energy spend to 2040

UK energy production is at a record low. We need to encourage investment into all our energy resources

- **The UK remains heavily reliant on energy imports. Energy production – of all kinds – is only 60% of demand**
- Oil and gas comprise three quarters of our energy use
 - We need to draw investment into our supplies
 - Fiscal stability is at the heart of this
 - Regular licensing rounds are needed
 - The sector must keep meeting its emissions commitments. Emissions are already 24% lower than they were in 2018
- **The growth of offshore wind, hydrogen and carbon capture and storage (CCS) will underpin UK's net zero emissions future**
 - They are key to decarbonising power, industry and transport
 - Oil and gas provide the bridge
- **Renewables are making big strides in the power system, led by offshore wind**
 - But challenges hold new wind projects back
 - Government support needs to match the requirements of the sector and what is needed to meet ambitious targets
 - Grid connections must happen faster
- **UK: Europe's largest CO₂ storage potential**
 - The first CCS projects are moving closer – they could be approved this year
 - Spend will ramp up quickly – to £2bn/yr by 2030 and £3bn/yr by 2040
 - CO₂ imports are important to help wider European decarbonisation
- **By 2050 the scale of hydrogen use will need to be similar to electricity today**
 - Progress is being made on the business, commercial and regulatory models needed
 - But production, transport and storage must all be developed as one, to meet the targets
 - Hydrogen could grow quickly into a £1.5+bn/yr market

2. Business environment

Key messages...

- Energy prices have fallen back to pre-crisis levels and are showing greater stability. This leads to lower costs for homes and businesses and lower overall inflation.
- Windfall conditions have passed. Rates of return on oil and gas investments have fallen sharply along with oil and gas prices. Other major UK economic sectors are seeing higher returns.
- Political policy needs to encourage investment into the UK's energy system. Windfall taxes make it very difficult to plan investments and raise finance. The offshore wind round (AR5) failed last year because government failed to recognise the scale of challenges being faced. Action is needed.
- Offshore energy project activity is accelerating much faster in other countries than the UK. Supply chain resources are leaving the UK, drawn by more certain and competitive project pipelines. This threatens the projects needed for the energy transition and for economic growth.
- An attractive commercial environment can help anchor and grow the UK's energy supply chain. OEUK's Supply Chain Principles address this, with progress needed on contractual risk and reward, payment performance and openness to innovation.



The business environment has rarely been so volatile. Low energy demand during the Covid-19 pandemic resulted in an oversupplied market with record low wholesale prices for gas and oil worldwide. As economies revived, demand rebounded while low production investment during the pandemic meant supply fell short of demand. This pushed prices up.

High inflation has pushed up the cost of projects while uncertainty over economic policies has limited investment in the UK's energy supplies. These factors are also holding back investment in supply chain capacity.

By contrast, investment in energy projects is rising in other parts of the world, backed by more predictable government support. This is attracting supply chain resources away from the UK, as more sustainable returns and work durations are on offer elsewhere. This includes the Middle East, Australia, west Africa and the US, where the Inflation Reduction Act is having an impact.

Energy prices and oil and gas returns

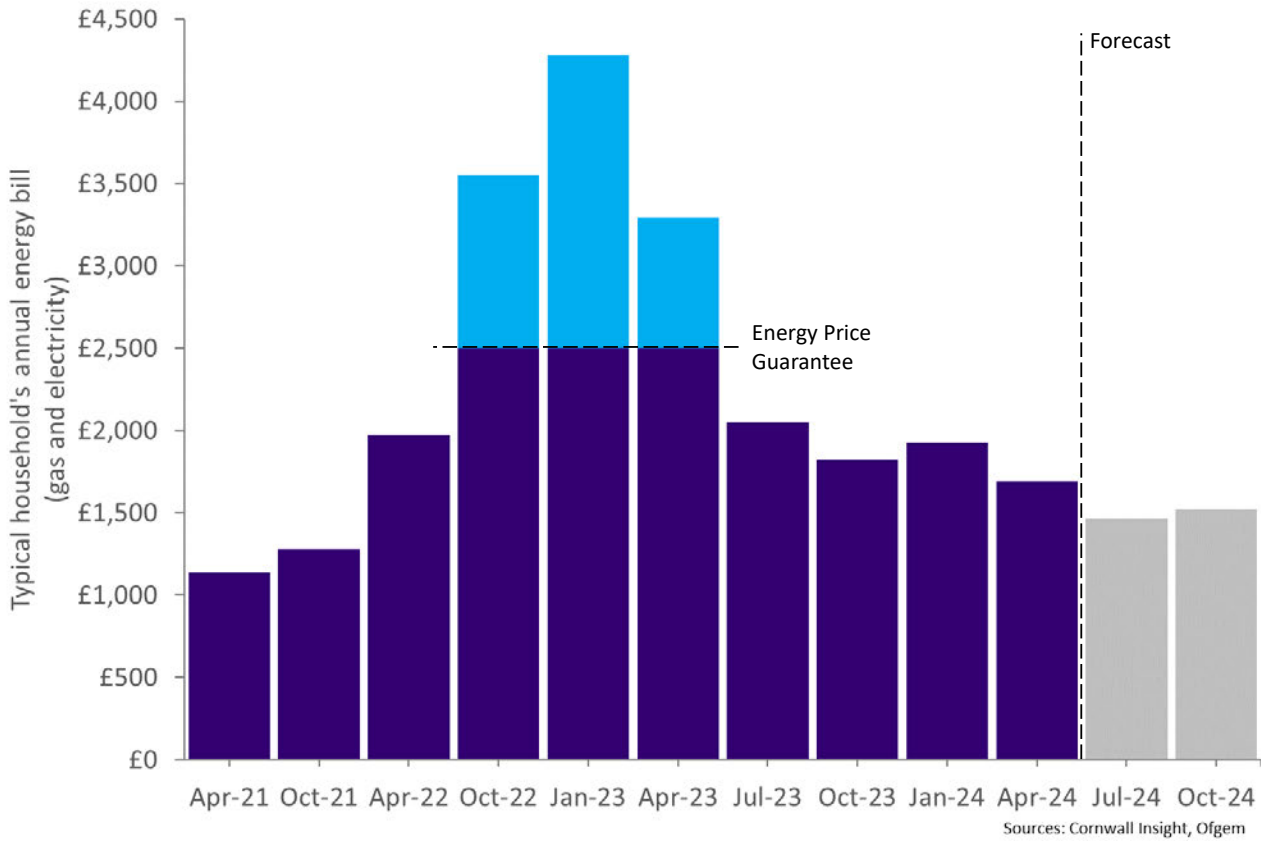
High inflation in key goods and services, particularly energy and food, coupled with low wage growth, has left households worse off while mortgage rates have gone up. Several factors have contributed to the crisis. Trade challenges following Brexit were compounded by supply chain and workforce constraints caused by Covid-19.

The Russian invasion of Ukraine in February 2022 exposed already weak supply chains and import routes for not only oil and gas but also staples like corn and sunflower oil. As supply chains have adapted and demand for many commodities softened, prices have begun to stabilise in line with longer term norms.

As wholesale energy prices have fallen towards long-term averages, the unit price cap will fall in April, lowering average bills by £238. Further drops are expected in the summer. This will take prices back to before the Russian invasion of Ukraine in early 2022, although the UK market remains exposed to global LNG prices.

Figure 1

The UK household energy price cap levels are falling back to pre-crisis levels



The day-ahead NBP gas price averaged 99 pence per therm (p/th) in 2023 but was declining as the year ended. This year has averaged 69p/th to mid-March and in late February 2024 gas was trading just above 50p/th. This is almost a tenth of the mid-2022 (Over £5/th) peaks, and in line with the long-term average (real terms 71p/th since 2003 / 56p/th nominal). Prices are in the range of the Energy Security Investment Mechanism (ESIM) rate in the Energy Profits Levy (EPL) of 57p/th (adjusted to account for inflation),

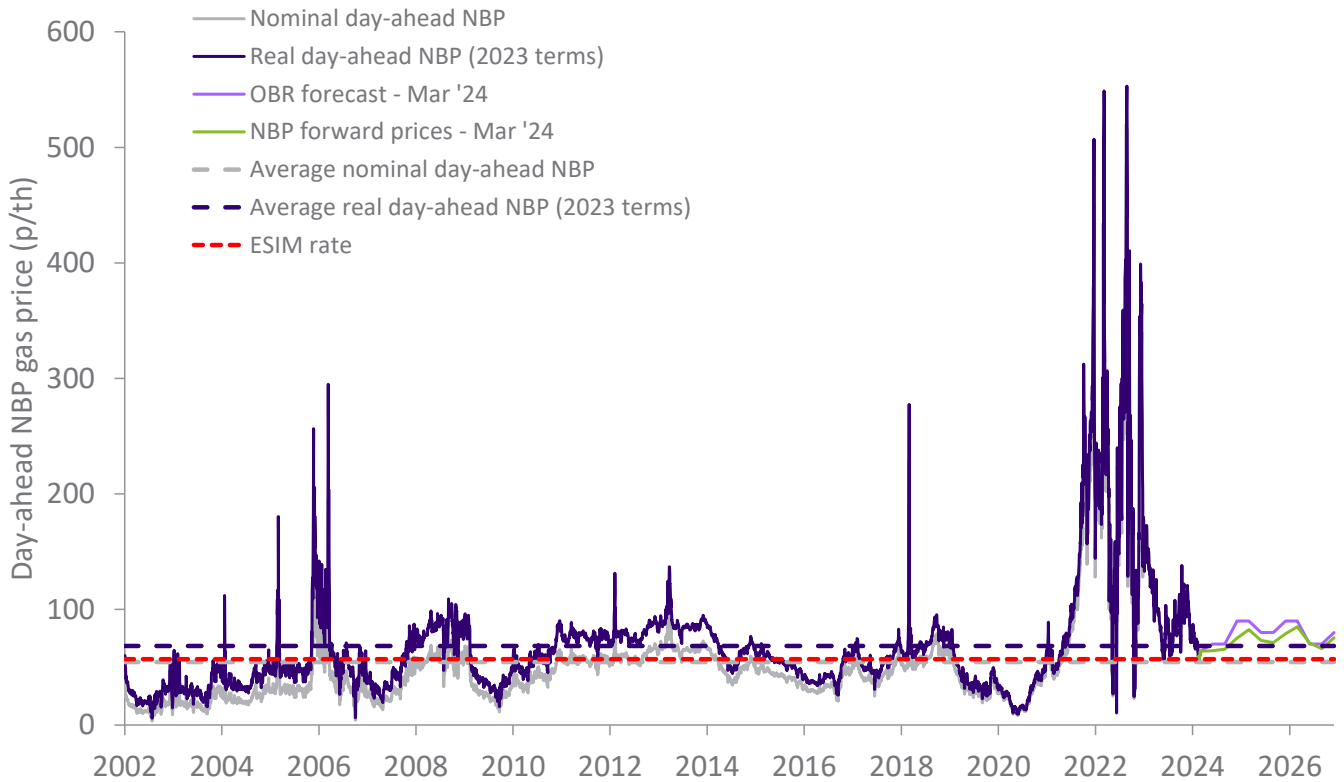
below which the EPL ceases to apply as long as they remain below that price for at least six months.

A relatively mild winter, lower industrial use and less gas-fired power have cut demand while supply has remained resilient with high LNG availability and European storage. Forward prices remain in the 60-70p/th range into 2025, whereas these same contracts were trading at twice this rate even as recently as November 2023.

The importance of gas in the power system

Figure 2

NBP gas prices have returned to pre-crisis levels, with the outlook showing increased stability



Sources: ICIS, OBR, OEUK

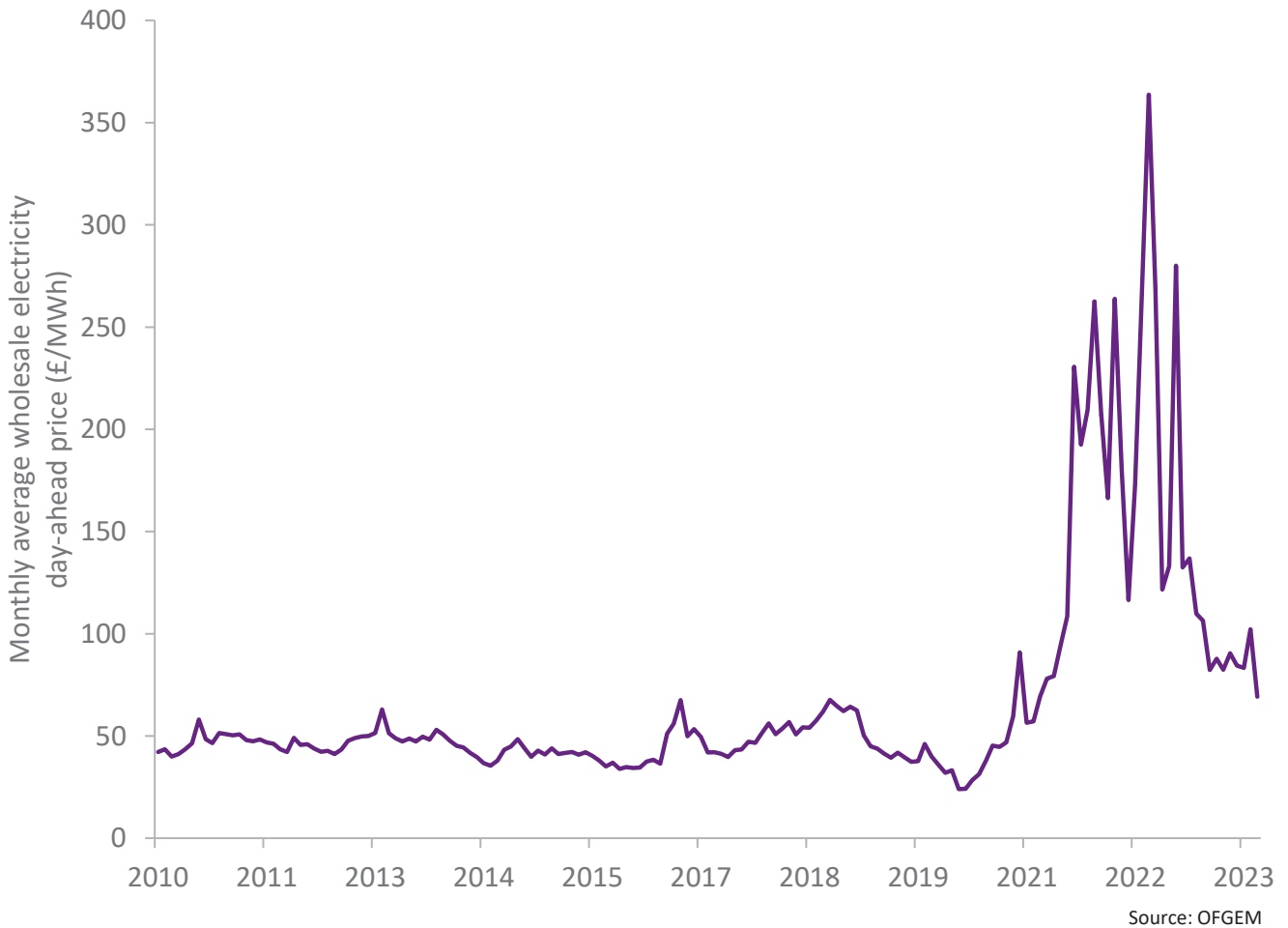
and the power market structure means electricity prices generally mirror gas price trends. Figure 3 shows these also returned to pre-crisis levels by the end of 2023, at less than a fifth of the mid-2022 highs. This is having a big impact on household energy

prices and inflation. But it is important that the system is reformed to account for more renewable energy in the power system and falling dependence on gas if the two prices are to be decoupled. The benchmark Dated Brent price is more stable than it has been



Figure 3

The wholesale electricity price is at the lowest rate for two-years



in recent years. Brent has averaged \$93/b in real terms since 2003 and \$71/b nominally. The price averaged \$82/b in 2023 and has been trading in that range in early 2024. This compares with the ESIM floor of \$74.21/b.¹

Lower and more stable prices are despite the major ongoing conflicts in Ukraine and Israel,

and disruption to core trading routes such as the Red Sea. The fact that these have not resulted in significantly higher prices reflects ongoing concerns around global economic performance and more non-OPEC+ supply.

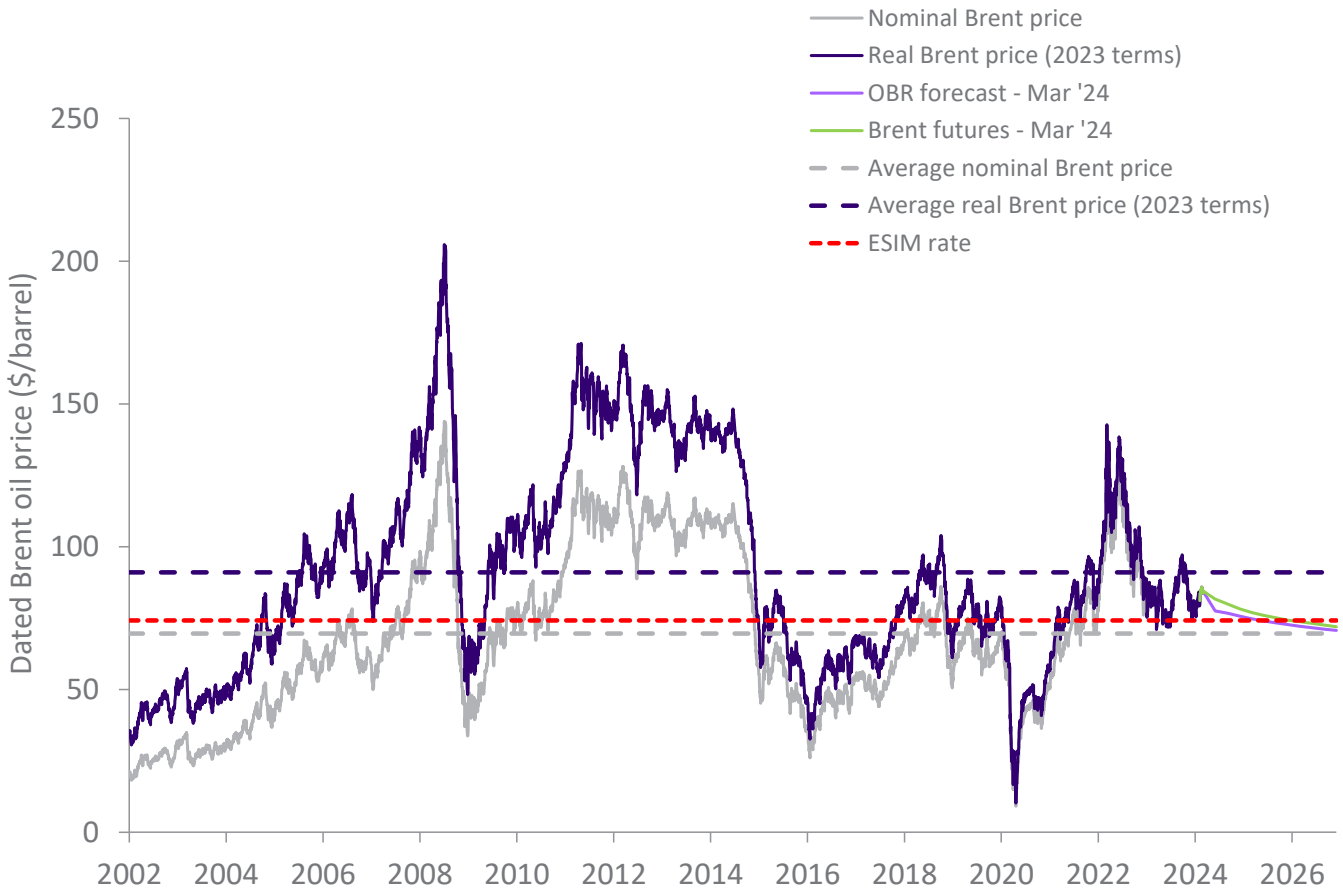
Coupled with high inflation and borrowing costs, lower oil and gas prices are having



¹ The ESIM rate is based on a 20-year nominal average to the end of 2022 and thereafter indexed against consumer prices.

Figure 4

Brent prices are more stable and trading in line with real terms averages



Sources: EIA, ICE, OBR, OEUK

big impacts on the profitability of UK offshore energy investments.

The expected rates of return on offshore wind investments can be lower than 5%, with many being sub-economic in the current cost climate.

This is one factor that has led to government support being significantly increased for the 6th Contract for Difference (CfD) allocation round in 2024, following the failure of the 5th last year (see Section 7).

Oil and gas investments have become a lot less profitable and competitive as commodity prices have fallen but not project costs and tax rates. Official data shows rates of return have fallen to 3%, less than half the average of 8% since 2010. This is also considerably lower than other major parts of the UK economy, such as manufacturing and services (see Figure 5).

Lower prices and reduced returns on investment mean that energy producers are not seeing profits that merit windfall taxes on their UK operations.

Figure 5

Oil and gas rates of return have fallen significantly and are below other major economic sectors



Making the environment attractive

An uncertain policy landscape deters capital investment, damaging the whole value chain. A strong and well-resourced supply chain that can meet project demand is key to meeting the country’s energy and emissions objectives. A steady conveyor belt of new projects gives the supply chain the opportunity to tender and to invest in new and existing capacity.

In the face of strong international competition for investment and supply chain resources, it is crucial that industry acts to boost supply chain companies’ confidence to anchor and

grow their businesses here. If companies foster an effective commercial environment, then it helps create a more efficient, resilient, and sustainable supply chain.

OEUK’s Supply Chain Principles promote the development and maintenance of strong business relationships across the energy supply chain, with a focus on contractual risk and reward, payment performance and openness to innovation (see Figure 6). OEUK continues to drive forward support for the principles across the whole energy sector.

Figure 6

OEUK's Supply Chain Principles help promote commercial sustainability



Contracts: risk and reward

Striking the right balance between risk and reward ensures both parties are motivated to invest, collaborate effectively and reap the benefits of a successful partnership.

When the balance is not right, it tends to be the small and medium enterprises that come off worse.

Purchasing organisations should discuss the balance of risk and reward with the supply chain before and during the contract lifecycle.

This year, OEUK will publish tendering good practice guidelines that will outline the importance of early engagement with the supply chain to agree the allocation of risk.

Payment performance

Late payments stifle cash flow, particularly for more vulnerable SMEs. Prioritising timely transactions strengthens relationships and ensures financial stability across the supply chain, ensuring they can support and invest in their people and resources.

Broad industry support for the government's prompt payment code and 30-day payment terms is crucial for ensuring an attractive commercial environment for the supply chain.

To ensure consistency in managing payment performance across the energy sector, OEUK has published a procure-to-pay good practice guide.

Openness to Innovation

Supply chain-led innovation will be key to delivering the ambitions of the North Sea Transition Deal (NSTD). The UK supply chain has a plethora of innovative solutions that can transfer across buyer multiple segments of the energy sector, but to maximise this value it is essential that purchasers encourage new approaches and demonstrate an openness to alternative ideas.

The industry has much to do. While purchasing organisations are generally open to new innovative ideas, supplier sentiment overall is negative towards rigid tender processes that are too restrictive.

OEUK will publish a contracting model guide this year that outlines the purchaser's and supplier's considerations when adopting different commercial mechanisms and how these models influence the opportunities for innovation throughout the contract lifecycle.

Improving the commercial landscape - Working as One



Investor confidence

Almost a third of suppliers do not receive clear forward workplans from their customers.

7% have recently experienced contract terminations or cancellations.

An attractive commercial environment

Fair sharing of risk and reward; timely payment of invoices and the openness to innovation are crucial areas for industry - attention is required across the sector to drive improvement.



Contractual risk & reward

Risks and rewards are being discussed and are shared fairly before contract commencement most of the time – 83%. Over three-quarters say that it is also formally reviewed during the contract lifecycle all or most of the time.

Organisations are generally able to amend commercial contracts to rebalance risk and reward. But there is still a significant number
¹⁶ where this does not happen.

Payment performance

Nearly a third of suppliers have had to renegotiate contracts due to unsustainable pricing.

Sustained high-cost inflation leaves little option but to revisit their commercial agreements with customers and use it as an opportunity to amend the risk and reward balance.

Payment terms are typically 30 days or less for two-thirds of contracts including operators.

Tier 1 contractors are more likely to offer extended payment terms.

Industry support for the government's prompt payment code and 30-day payment terms is crucial for ensuring an attractive commercial environment.

Invoices are generally being paid on time, but a third are not.

Tier 1 contractors generally had a significantly higher number of late payments, despite having longer payment terms.

Openness to innovation

Adding value through innovation was possible in most contracts but a sixth of them remain focused on costs.

The majority of suppliers – 86% of contracts – are invited to provide innovative ideas.

But less than half of suppliers were successful with alternative bids last year. 78% say processes allow alternative proposals, but tender processes are often still too restrictive.

3. The UK's energy system

Key messages...

- UK energy demand is falling, and becoming more diverse, but this needs to happen much faster to achieve a net zero emissions outcome.
Oil and gas account for about three-quarters of energy use. Renewables are making big strides in the power system, led by wind, but electricity use has been falling – this needs to reverse with home heating, transport, and industry key demand areas. They are for now still dominated by oil and gas. Hydrogen demand will also create a more diverse and sustainable system, backed by CCS.
- The UK continues to rely heavily on energy imports.
Energy production is at record lows, as oil and gas output falls much faster than alternatives are growing. The UK is operating in a global energy market, particularly with respect to LNG. It is crucial to encourage investment across the diversity of UK energy resources to boost energy security and help manage prices.
- The UK energy investment opportunity is huge.
OEUK have previously identified around £200bn that could be invested this decade and £160bn still remain. But it could grow much more in the 2030s and approach £450bn by 2040. But the challenges holding this back are growing – the UK needs to be more competitive. Fiscal stability is at the heart of this.
- The UK has a highly capable and fully integrated offshore energy supply chain.
It has most of the capability needed for floating offshore wind, CCS and hydrogen, but it is struggling to retain resources here because of project uncertainty.
- Policy support and certainty is needed to give supply chain **companies the confidence to invest in capacity.**
Companies need confidence on the timing of projects: otherwise, the UK will need to rely on international supply chains for projects. This will put the UK at the back of the queue for building energy transition projects, risking economic growth, jobs, and emissions reductions.

Energy consumption

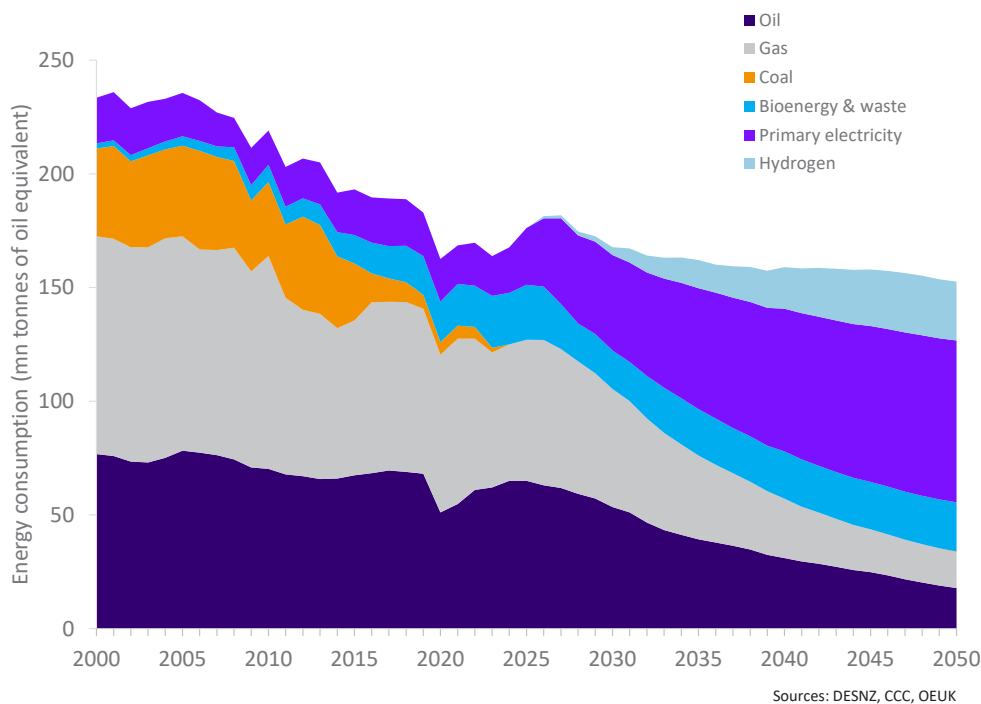
Last year the UK consumed 163mn tonnes of oil equivalent (toe) which was 4% lower than 2022 and almost 30% lower than 20 years ago. This has mainly been driven by lower domestic and industrial use – both down by about one fifth – but the UK has become more energy efficient in general and much of the UK's heavy industry has closed, its output replaced with imports.

Oil and gas remain by far the largest sources of energy use (74%). This is despite an 11%

fall in gas use last year, while oil rose by 2%. Renewable capacity cut the use of gas in power generation by a fifth last year and the recent relatively high prices have led to reduced household and industrial use. A relatively mild winter has also helped reduce space heating. Oil by contrast has continued to go up steadily after the big declines in 2020-21, mainly owing to more flights. Electricity use has continued to fall, lately driven by high prices, but industrial demand is declining in the long term.

Figure 7

The UK's energy mix will be very different in the future, but the pace of change needs to be significantly faster to follow a net zero pathway



The energy mix is becoming more diverse, but it needs to change faster in order to reduce emissions. Oil and gas will meet just over a fifth of energy demand in 2050 as demand is increasingly electrified, according to the Climate Change Committee (CCC's) Balanced Pathway scenario. But they will provide the largest share of energy over the coming decades (around half of cumulative demand to 2050) and will still be around a half of energy in the mid-2030s.

The actual levels may be greater than this given the CCC's assessment, alongside that of commentators such as DNV, that the UK is not on track to meet its commitments.

The trend of less electricity use must reverse if

oil and gas use is to fall – especially in transport, home heating and power generation. Offshore wind will have an increasingly important role in the power system, with CCS also helping to decarbonise ongoing gas generation.

CCS will also be needed at scale to support blue hydrogen production. By 2050 the proportion of hydrogen in the mix could be of the scale of electricity now – demonstrating the size of challenge in developing the infrastructure required for increased energy diversity.

As energy patterns change, it is crucial to invest across the UK's mix of resources to meet today's energy needs and that of the future, cut emissions and drive economic growth and new job opportunities.

4. Developing sustainable offshore energy supplies and new supply chain opportunities

Energy production & investment

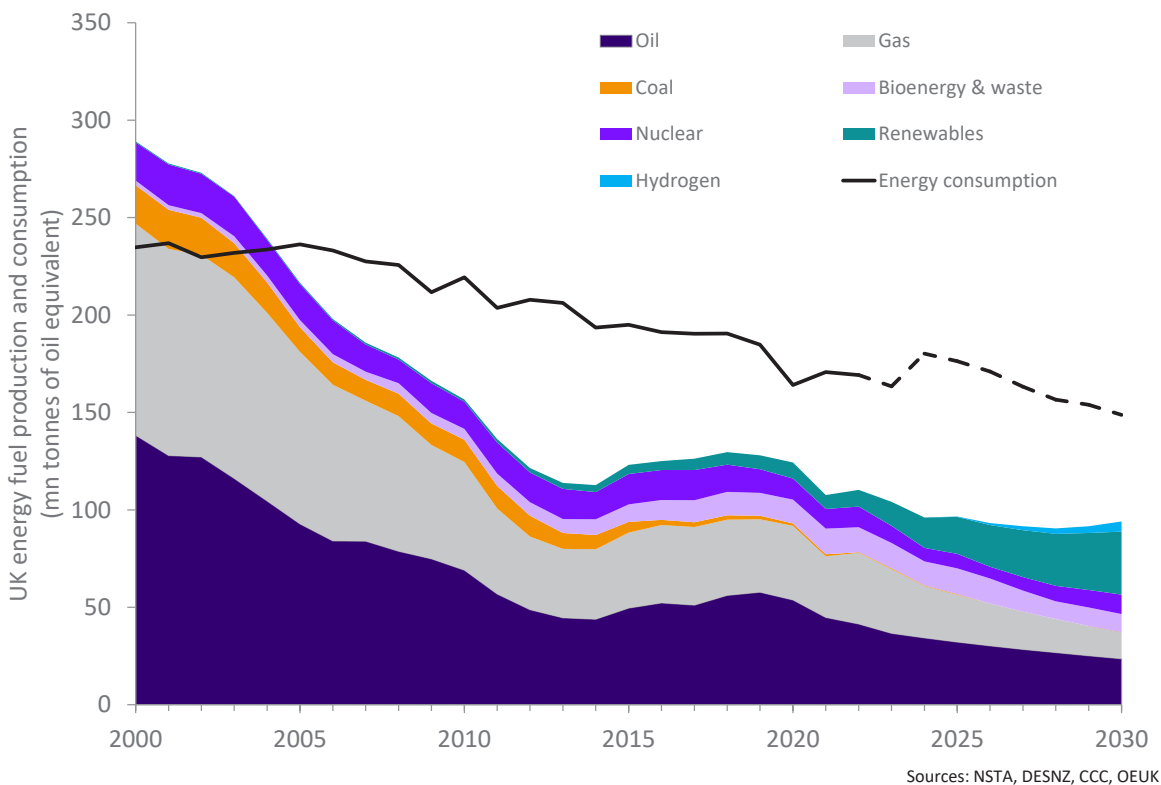
The UK's energy production continues to evolve and will look very different by the end of the decade.

The UK is producing record low amounts of energy (100mn toe/yr), equivalent to about 60% of demand. Production has fallen by

two-thirds since 2000, while energy demand has fallen by one-third – moving the UK from a net exporter of energy to a significant net importer. The UK will continue to be a net importer throughout the decade, as the country will produce less than it uses even in optimistic outlooks.

Figure 8

The UK is a significant energy importer, as production has fallen to record lows – this trend will continue throughout the decade



Over the last decade, oil and gas have consistently been around 70% of the UK's energy production. Their output is more than five times greater than any other single UK energy source, despite their own long-term decline and the growth of other fuels.

Output from renewable sources is eight times what it was in 2010, and now accounts for a tenth of all UK energy production. This increase has mainly come from offshore wind. The trend will continue: by 2030 it is likely that renewables will have overtaken oil and gas production, with offshore wind continuing to drive this while oil and gas decline at least 8%/yr.

Hydrogen will begin to feature in the UK's energy production later this decade could account for around 5% of output in 2030, if the 10-GW target is met.

Supply chain: opportunity and investment

Growing new energy supplies alongside managing oil and gas production takes huge investment. OEUK has previously outlined how £200bn could be invested this decade. This is now likely to be around £160bn but it could be over £310bn by 2035 and as high as £450bn by 2040. This would mark a 30%

annual spend increase on today's amount but only if the right investment conditions are in place.

Oil and gas are the largest market for the energy supply chain and will be for at least the next two or three years, despite the decline. Last year £15bn went on developing, operating, and decommissioning assets and it is likely to remain above £10bn/yr for most of the decade. It is two-thirds of offshore energy spend now but likely to fall to one-third by 2030 and be around one-tenth by 2040.

Offshore wind will drive most of the growth in investment, potentially doubling to £15bn/yr by 2030. Fixed wind projects will dominate this decade, but floating units will rise sharply from 2030. Although hydrogen and CCS will see less money invested, they will grow rapidly over the next decade as they become established. Each could become at least a £2bn/yr market from effectively nothing now. Floating wind, hydrogen and CCS have much in common with the oil and gas sector so they can benefit from the same supply chain. It can cover over 80% of CCS project demand with current capabilities (over 90% for CO₂ transport and storage specifically), The corresponding figures are around 60% for floating wind and 80% for hydrogen. More capacity will be needed though to service

Figure 9

Spend on developing and running offshore energy production could grow, but it faces considerable challenges

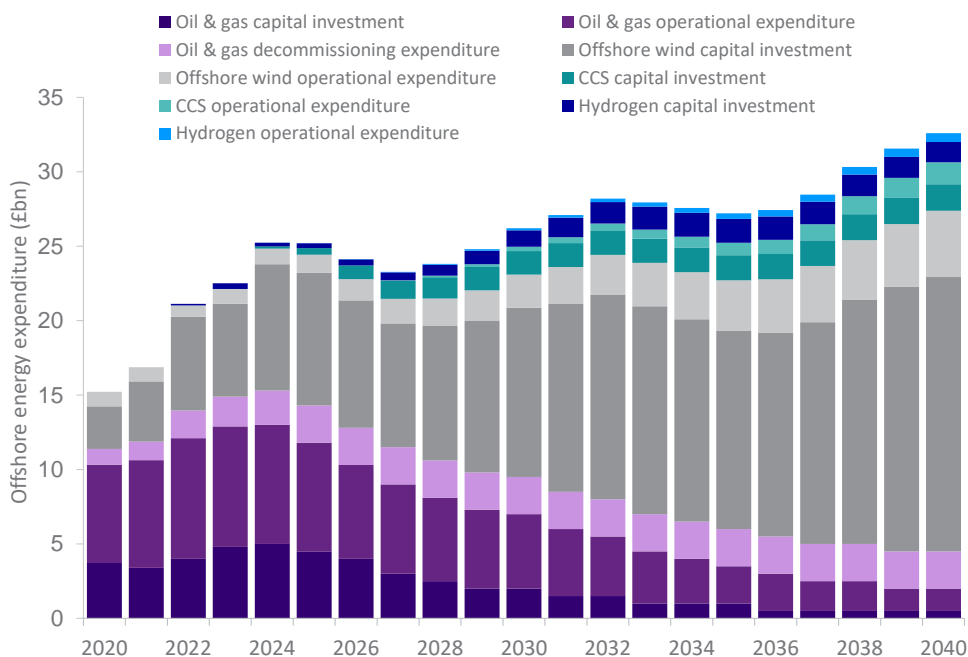
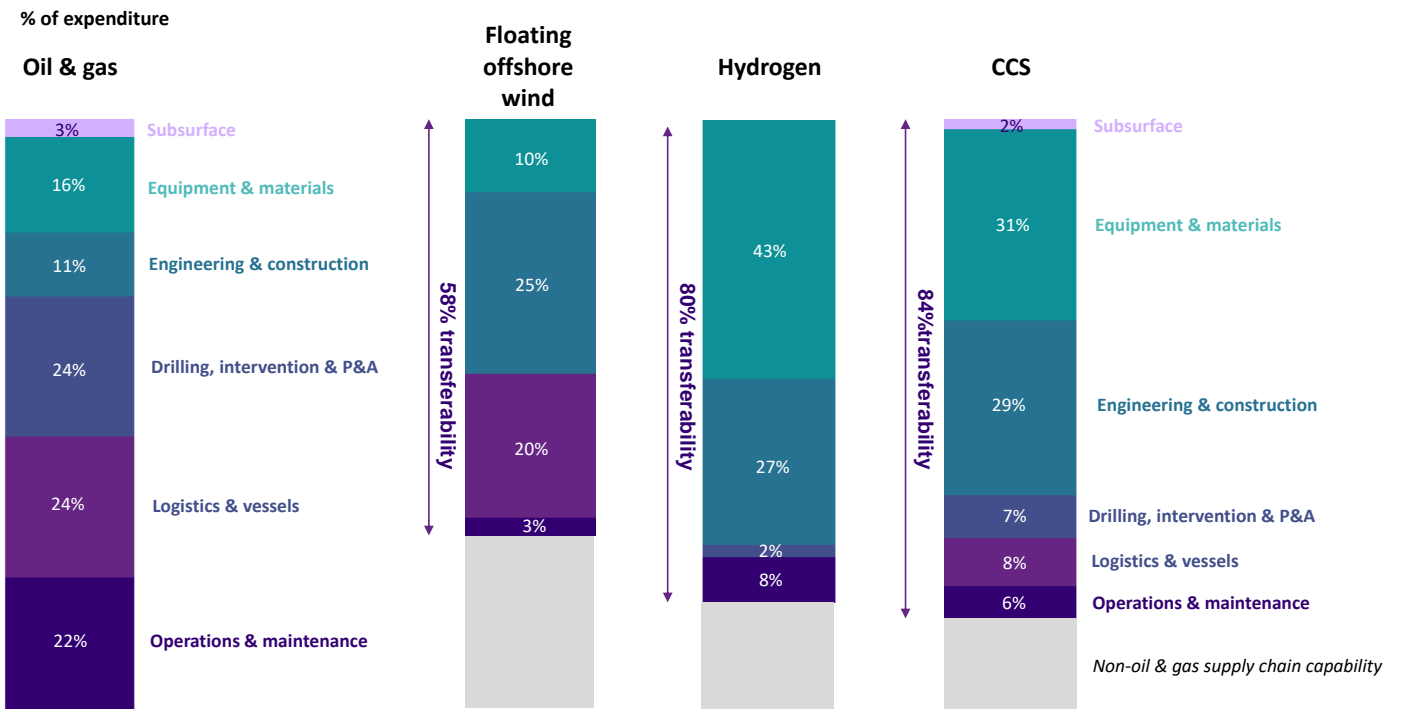


Figure 10

The supply chain's oil and gas experience is highly transferable to floating wind, hydrogen and CCS



Source: Rystad, OEUK

anticipated demand.

It will be very expensive, especially at the outset, to kickstart these new sectors. The shift from opex-driven services in the oil and gas industry means that the supply chain needs to make decisions about investment now if capacity is to be in place when needed.

But the level of investment risk associated with projects, in both existing and new

markets, adds uncertainty. This delays supply-chain decisions. Without the confidence in future opportunities, companies are hesitant to invest in new equipment and skills, limiting the supply chain's ability to deliver on large-scale projects. It is important to remember that other countries are also scaling up project plans and looking to develop a stronger supply chain. The UK is in competition with them.



Figure 11
Supply chain companies face significant challenges that hold back their ability to invest



The North Sea Transition Deal includes commitments to 50% local content in oil and gas decommissioning and decarbonisation operations and also in carbon transport and storage and low-carbon hydrogen projects. Similarly, the Offshore Wind Sector Deal aims to achieve 60% local content in offshore wind. If these targets are not met the UK will lose out to its neighbours. OEUK’s offshore supply chain report *Harnessing the Potential* estimated that every additional 1% gain in

local content could capture an additional £210mn in project spend and add 1,600 direct and indirect jobs in 2030.

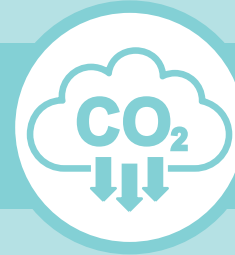
Getting the domestic market right will also help to unlock huge export potential. The accessible market for UK supply chain companies abroad could be almost £1.1 trillion by 2040. Of that, hydrogen could be almost £600bn by 2040; CCS around £470bn; and floating wind offering a £100bn opportunity.

International supply chain opportunity, by energy

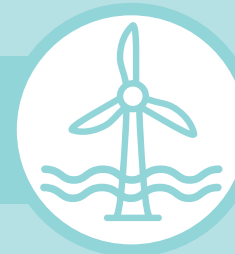
£590bn - Hydrogen



£470bn - CCS



£100bn - Floating wind



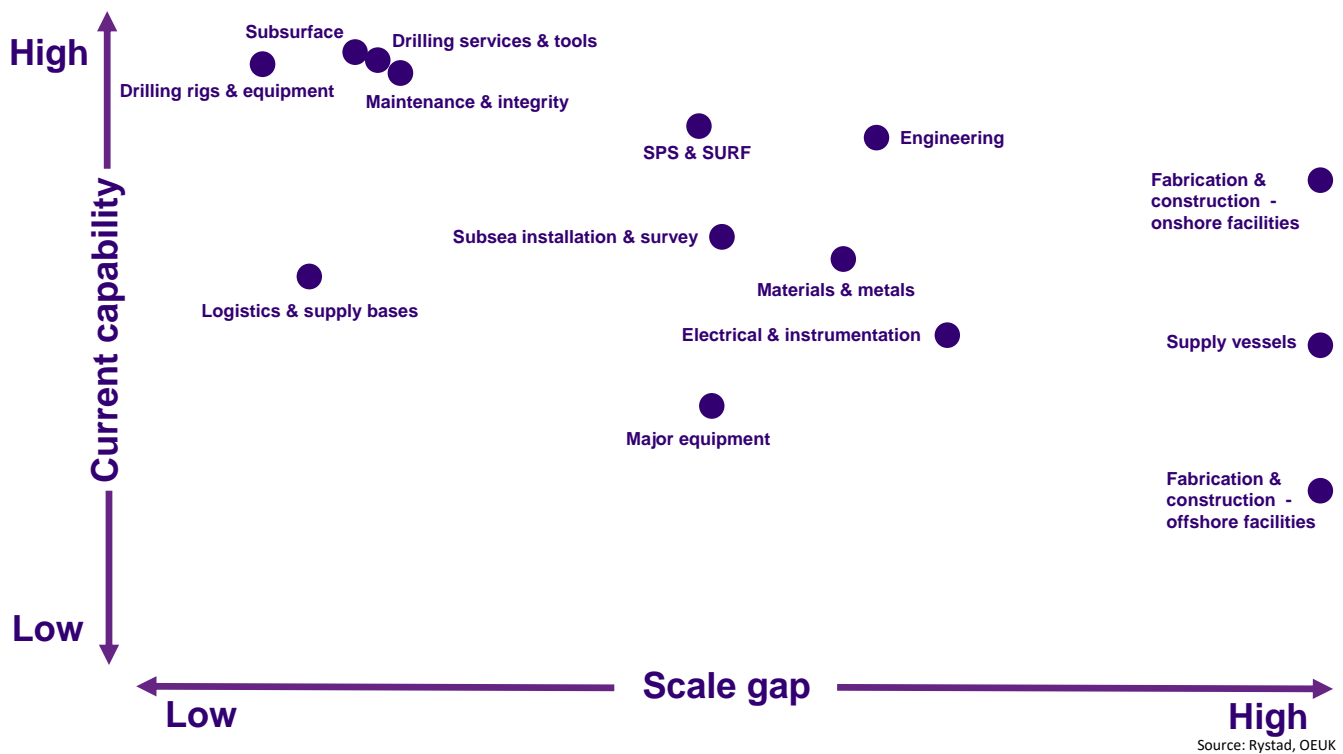
5. UK supply chain strengths



OEUK has commissioned Rystad Energy to undertake an independent review of the breadth and depth of the oil and gas supply chain's capability, its transferability to other

means of energy production and its role in delivering offshore floating wind, CCS and hydrogen. This full study will be published by OEUK in April.

Figure 12
Capacity across the supply chain needs to be retained and scaled up strategically



Retaining key oil and gas capabilities

Some segments of the oil & gas supply chain are critical to industry and government targets – these include seismic and subsurface, drilling rigs and equipment, as well as drilling services. However these segments are declining and growth in new energy areas will not offset this.

Key oil and gas capabilities to secure scale early on

Engineering

Specific offshore capabilities are highly relevant for CCS, hydrogen, and floating offshore wind. Engineering capability is highly exportable and puts UK companies in a good position to win work abroad.



Materials and metals

Spanning a diverse set of goods and products, including casing, tubing, pipes, valves, actuators, chains and fibre.



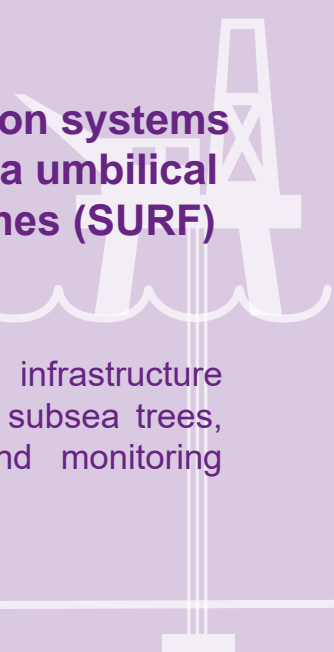
Fabrication and construction of onshore facilities

These are required for hydrogen and CCS plants. This includes skilled labour, where there is up to 90% skill transferability between oil and gas and these sectors.



Subsea production systems (SPS) and subsea umbilical risers and flowlines (SURF)

CCS needs injection infrastructure systems with related subsea trees, manifolds, SURF and monitoring systems.



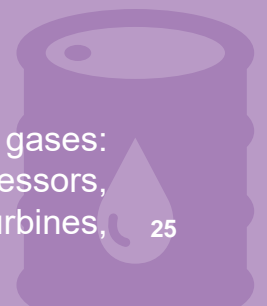
Subsea installation and survey

Design and installation of subsea structures and equipment, geotechnical survey, subsea inspection maintenance and repair.



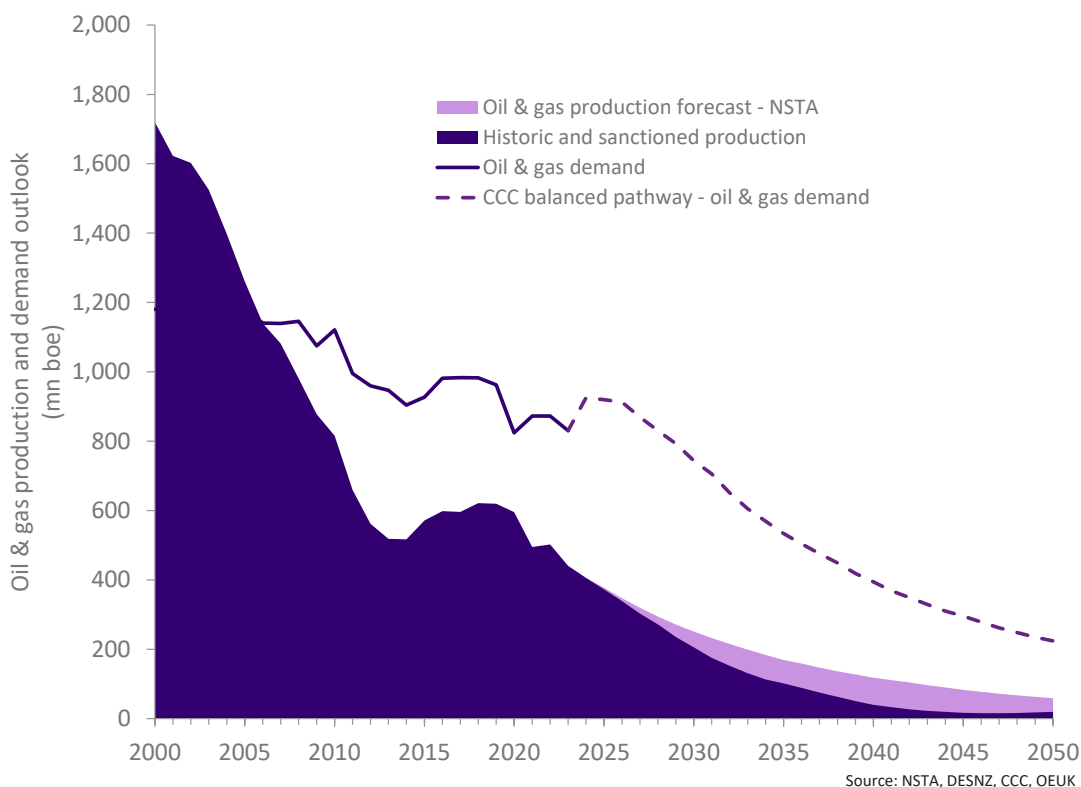
Major equipment

Experience of handling gases: examples include compressors, thermal exchangers, turbines, pumps, mooring lines.



6. Responsible oil & gas production

Figure 13
The UK will continue to be heavily reliant on oil and gas imports. Sustained investment can limit the extent



The UK produced about 440mn boe last year (just over 1.2mn boe/d), which was 12% less than in 2022 and the least since 1977. The UK’s production is almost 500,000 boe/d lower than it was in just 2019 (down 28%). Despite this it continues to supply reliable energy with ever lower emissions and contributes significant economic value. This is an important resource that the UK must make the most of.

UK production is equivalent to 47% of its gas demand and 57% of its oil demand. Although not all the oil is used in the UK, it provides reliable supplies to European and wider global markets, supporting the production of fuels and materials that the UK imports. UK

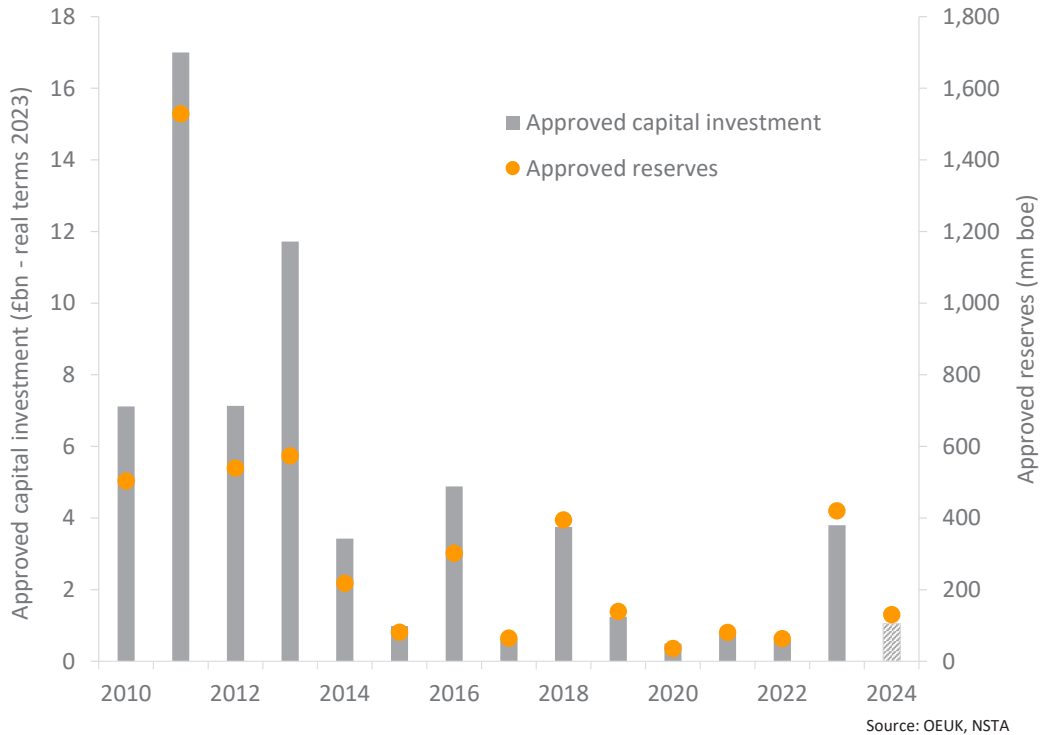
deindustrialisation has had an important part to play in this dynamic.

Most of the new production in recent years has come from gas fields, rather than oil. Linked to this, oil output has declined faster than gas: the 0.71mn b/d in 2023 was down by 12% on 2022 (0.8mn b/d) and more than one-third less than 2019 (1.12mn b/d). The longer-term trend for gas output has been more stable, bringing 30bn m³ to market last year, 11% less than 2022 (34bn m³) or 14% less than 2019 (35bn m³).

Production will continue to fall at around 10%/yr in the short term, with gas decline likely to be faster than oil owing to the nature of upcoming projects, but even a decline of

Figure 14

New approvals rose last year but despite projects being considered, a decline to recent trends can be expected this year



that rate requires investment to maintain. The decline could slow slightly towards the end of the decade if there is action to encourage investment, but equally it could accelerate towards 15% if investment challenges continue.

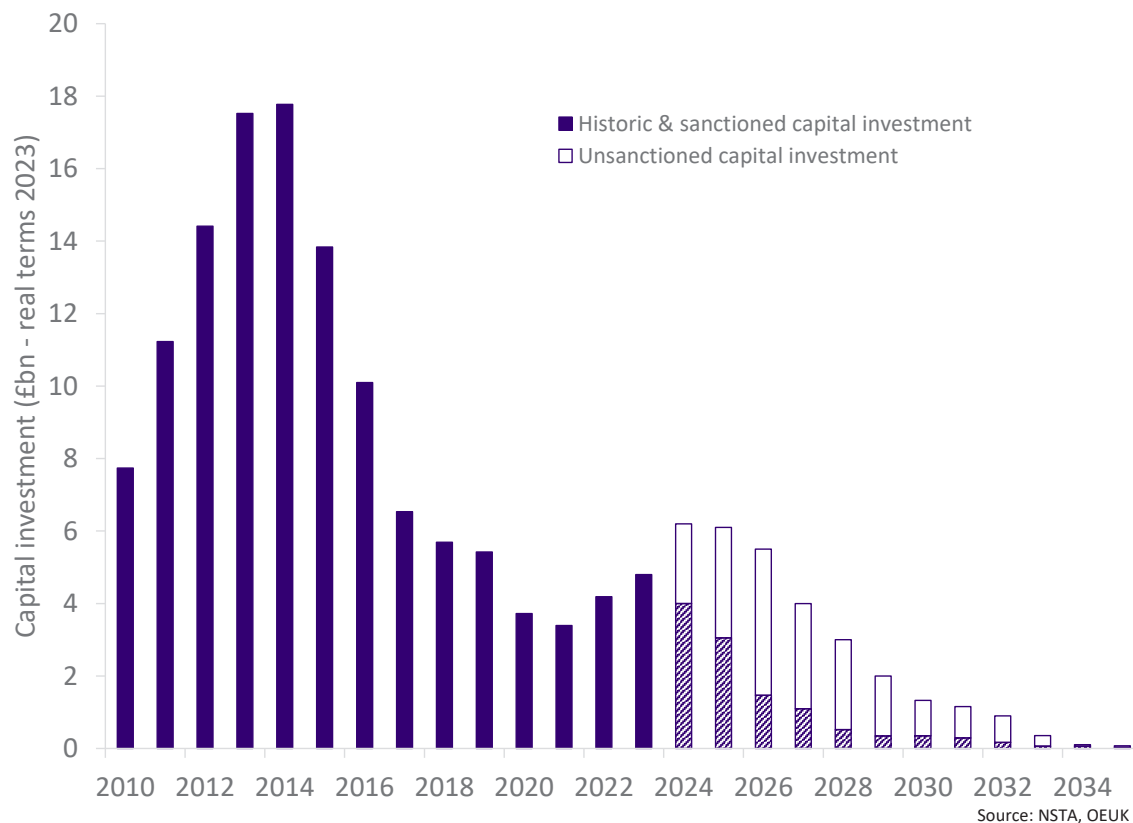
Even in a best-case scenario there will be a much faster decline than outlined by International Energy Agency in its ‘Net Zero Scenario’, which assumes a 5%/yr global fall. A high decline rate is damaging from an economic, energy security and environmental standpoint.

Since 2019 the UK has approved the development of new reserves totalling around 730mn boe. This compares to 2.6bn boe of production over that period, meaning a 28% reserves replacement ratio. This includes a pickup in approvals last year, mainly owing to Rosebank - the largest UK approval since 2016. Last year the UK sanctioned 420mn boe of new reserves, which was 95% of production. Committed reserves are continuing to decline.

Capital investment could return to pre-pandemic levels in the short term, but two thirds of future capital investment (almost £20bn) is yet to be approved and the level of risk associated with these investments is higher than ever. Over 80% of the capex plans are for this decade, with very little unsanctioned spend post-2030. Ongoing exploration and appraisal work is important for providing new resource and investment opportunities – supportive licensing policy is therefore needed. Most licensing and exploration activity is related to using existing infrastructure, which promotes faster project development cycles and reduced carbon intensity.

A number of fields could reach approval this year, most of which have benefited from recent M&A activity. The Victory field was approved in January, and the Buchan Redevelopment and Anning & Sommerville fields have both started the regulatory approval process. However, the current challenges and recent

Figure 15
There is £30bn of capital opportunity of which £20bn has not been approved



regulatory timelines mean that it is possible that Victory – whose productive life is expected to be mostly over this decade – will be the only field that does get signed off in 2024.

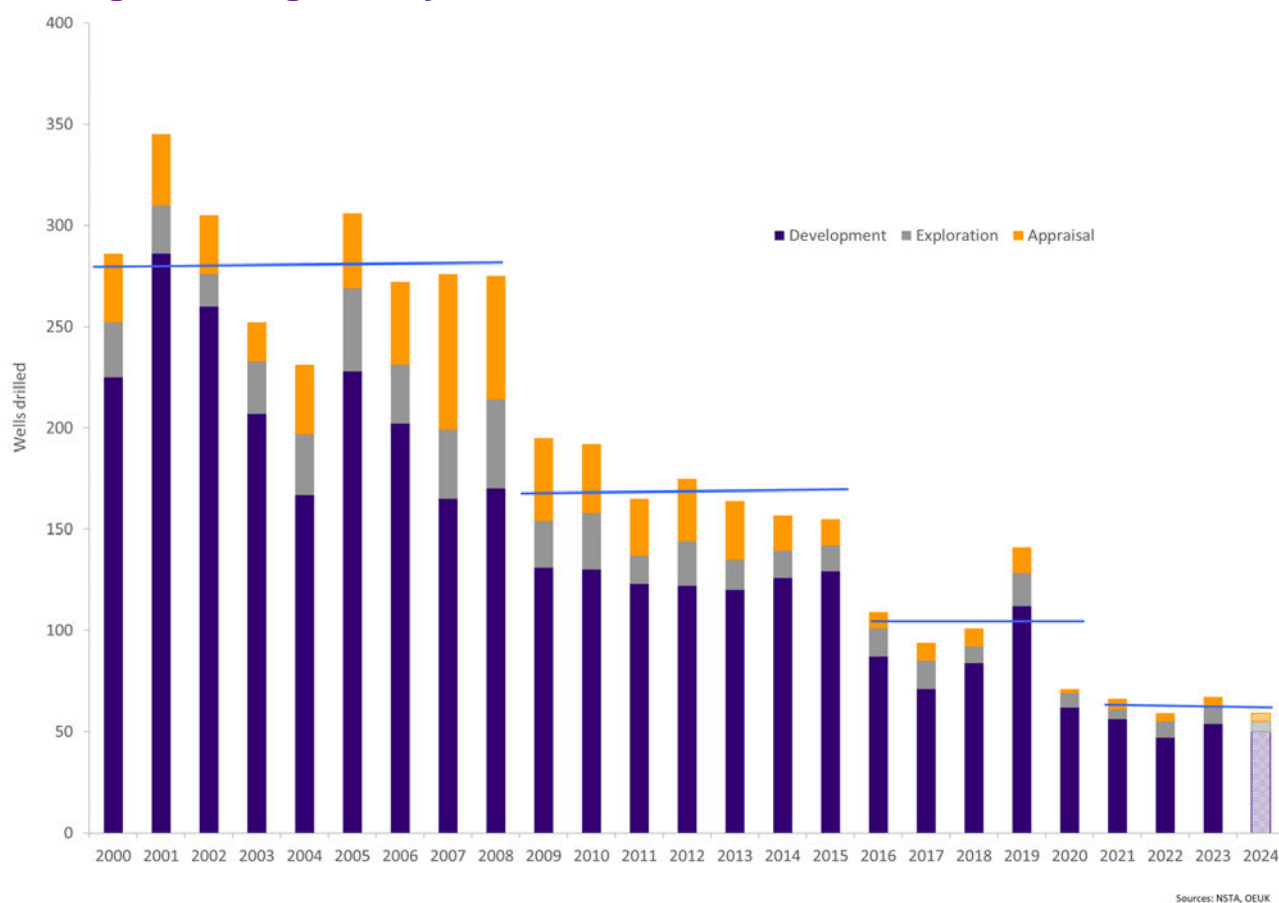
Brownfield projects are also significantly challenged. They make up around half of the investment profile, but rather than committing new investment, many companies are advancing the closure of fields because they are becoming uneconomical to run – leaving previously viable resources undeveloped. Operating costs (up over 50% per barrel since 2020), pressure on emissions reductions and tax changes are all key factors. Decommissioning activity continues to outstrip new fields at a rate of around ten to one. This is also the same for wells: 210 were to be decommissioned last year, over three times more than the 67 that were drilled.

There have been several ‘step changes’ in

drilling activity over the last two decades, with rates dropping off during price declines and not recovering. Including sidetracks, there were 54 development wells, nine exploration wells and four appraisal wells. There are opportunities but they are facing pressures and are increasingly fragmented in terms of ownership. This can make it harder to progress them, so there is unlikely to be any uptick in activity.

These trends are very important for the supply chain outlook, at least in the short-medium term, as around 70% of supply chain revenue continues to be from oil and gas. No sizeable revenue switchover to new business can be expected much before 2030. Companies cannot afford to invest in new areas without stable revenues from oil and gas projects. An accelerated decline threatens this investment.

Figure 16
Oil and gas drilling activity has continued to decline



Political uncertainty is high ahead of this year’s general election, with the main parties having different policies regarding the future of development of the energy sector. These are already influencing company plans.

The tax regime can act as an enabler for projects, helping the UK to compete internationally for investment, even when project economics are marginal. But accessing finance is difficult.

The industry needs fiscal stability, but there have now been four tax changes in two years – and further changes are proposed. These would make the UK highly uncompetitive compared with other countries.

Higher tax rates reduce cash flow, meaning there is less reinvestment opportunity. Cutting capital relief and allowances significantly below the headline tax rate would also mean project returns would be far less likely to pass investment hurdles.

Some £20bn of unsanctioned investment can only go ahead with the right conditions. It is also likely that fields will stop producing earlier than planned, meaning even less reserves produced and decommissioning costs brought forward. This risks a ‘domino effect’ which would strand resources that are upstream of the infrastructure being decommissioned earlier. The sector would be spending more on decommissioning than new developments by 2026.

An accelerated loss of project demand threatens supply chain companies’ ability to retain capacity and then grow it for offshore wind, CCS and hydrogen projects – meaning a knock on to the energy transition.

In the face of significant external challenges, it is important that the sector continues to retain a focus on its own performance and efficiency where it can.

Positive relationships across the supply chain are important for getting projects moving and keeping investment in the UK (see Section 3).

The focus on the NSTD commitment to reduce emissions from production in stages remains steadfast. Emissions are already down around one-quarter compared with the 2018 baseline and addressing emissions from fuel gas and diesel power generation is key to the next wave of reduction. From 2025 the NSTA expects new fields to be electrification-ready, but the list of options for substantial emissions reductions is wider. For example, the use of biofuels, replacing diesel

with gas, flare gas recovery and progressive operational efficiency improvements are all means of cutting emissions.

OEUK is working with members to articulate clearly how it will meet its commitments and satisfy the regulatory expectations.

Continually demonstrating industry action is key to meeting societal, investor and regulatory expectations, and in turn, help to unlock upstream resources. Likewise, it is crucial that a relentless focus on health, safety and the environment is maintained. Linked to this it is positive to see progress being made on the industry maintenance backlog.



7. Scaling up offshore wind capacity

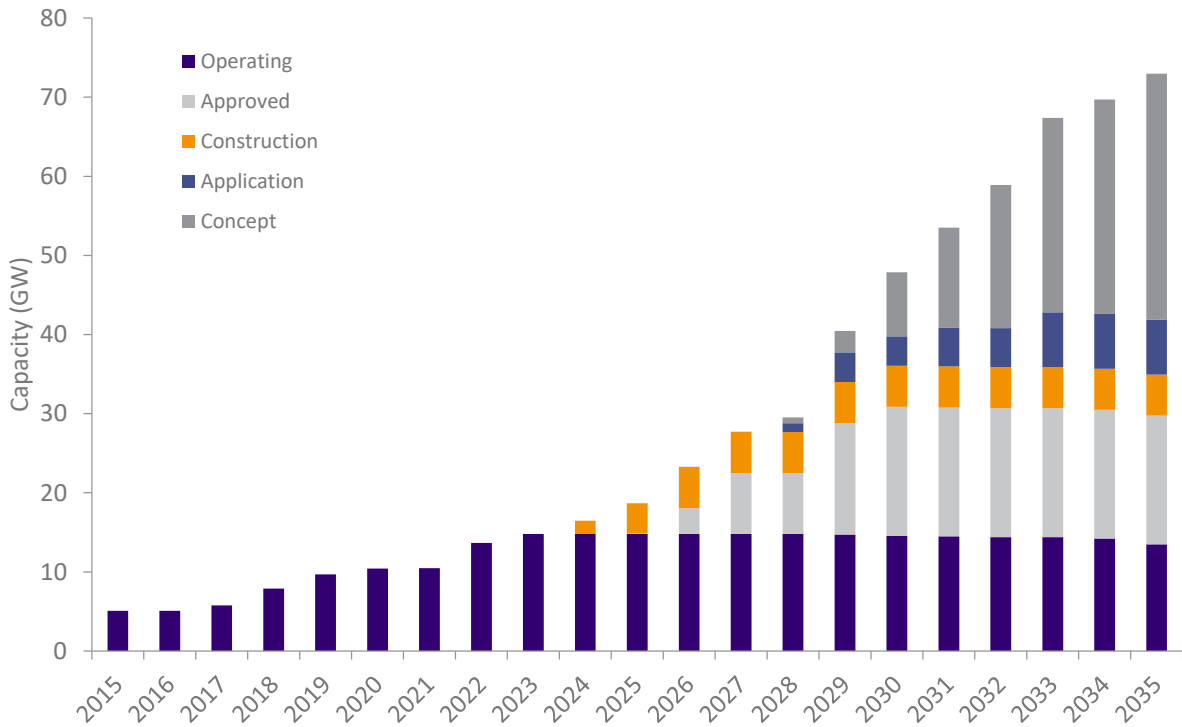
The UK government has committed to decarbonising the power sector by 2035, with Labour proposing to bring this forward five years. UK offshore wind will be core if this is to be realised. Gas still meets around

one-third of UK electricity, but wind power has been growing, mainly driven by offshore projects, the most recent new entry being the first tranche of Equinor's Dogger Bank project last October.



Figure 17

Offshore wind capacity could scale up significantly, but most of the projects are in the early stages of development



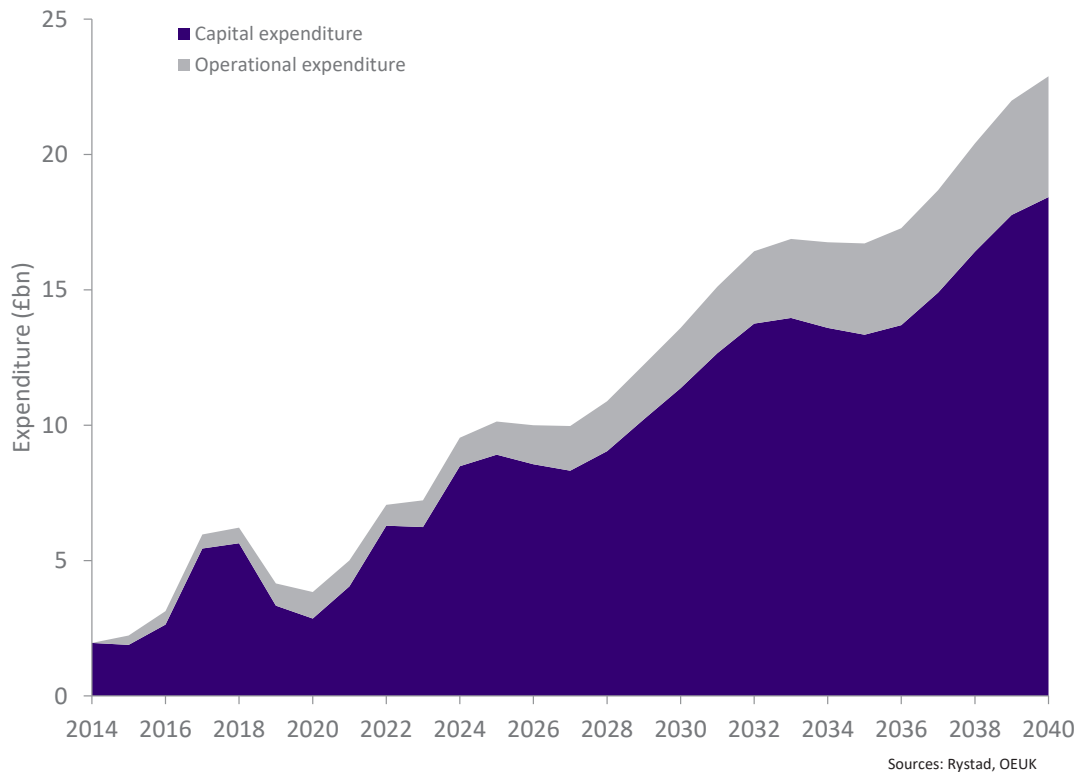
Source: Rystad, OEUK

The UK has the world’s largest operating capacity outside China (just under 15 GW) and has set ambitious targets to grow this to 50 GW by 2030 – including 5 GW from floating projects.

There is 32 GW of capacity operating or likely to be online by 2030, with a further 16 GW in application or pre-application (concept). It is unlikely that all will progress as planned, given the significant challenges companies have been facing. High inflation, long consenting timelines and supply chain pressures all make delays likely. And OEUK’s analysis shows that decarbonising the power system cannot be achieved unless the 2030 target is met.

The scale of increase in projects means huge investment. Most of the activity this decade will be on fixed wind, with a large scale-up in floating wind early next decade. Last year companies spent around £7.2bn, with about £1bn of this coming from traditional oil and gas companies. £160bn could be spent by 2035, rising to £260bn by 2040. Although most of the investment outlook remains relatively uncertain, there are several near-term opportunities and milestones that will help to derisk projects and give supply chain companies more confidence. Retaining and scaling up supply chain capability is key - ongoing oil and gas activity will act as a bridge throughout the decade.

Figure 18
Offshore wind investment will ramp up across the next decade



Developing future capacity

The upcoming Celtic Sea licence round will help to define the floating wind pipeline. There will be up to 4.5 GW of capacity on offer for three proposed project areas. This follows on from the Scotwind round in 2022 which earmarked 28 GW for development across 20 projects, 13 of which are floating.

The Innovation and Targeting Oil & Gas (INTOG) projects will help to develop and prove new technologies, paving the way for bigger floating wind projects and lower oil and gas production emissions. INTOG also provides an entry-point for new entrants to the floating wind market – experience of this will be a key part of a bid for Celtic Sea licences. Early success in INTOG will also stimulate new supply chain capacity that can then be developed further for larger scale opportunities.

Market development

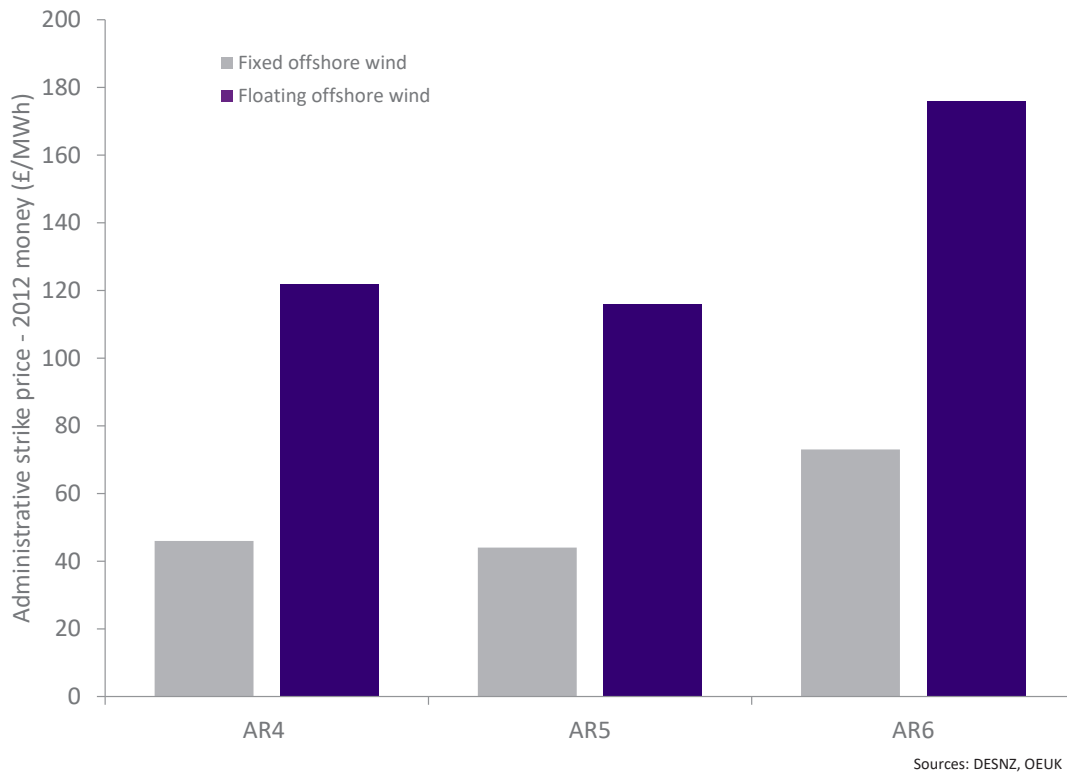
Contracts for difference (CfD) have been the main support scheme enabling the UK to scale up offshore wind. These are mechanisms which provide developers with an element of certainty on future prices, and therefore revenues, lowering the risk for a new project. CfD prices had been reducing over time, but recent project cost increases meant that support prices in last year’s Allocation Round 5 (AR5) were too low to attract new projects.

Ahead of this year’s AR6, the government raised the maximum strike prices for various technologies, with fixed offshore wind projects going up 66% and 52% for floating. RenewableUK estimates that 14 projects are eligible for support, with a combined capacity exceeding 10 GW². There will be £800mn of support for offshore wind projects in AR6, which is a record, but this will not be sufficient to cover the full 10 GW of potentially eligible projects. Some projects will have to be paused if they need support.

² UK can secure record number of offshore wind farms in this year’s auction for new projects - RenewableUK

Figure 19

Price support for offshore wind projects has risen significantly because of market pressures



The financial sustainability of supply chain companies has been a big problem for offshore wind, owing to significant cost inflation.

The inclusion of Sustainable Industry Rewards starting in AR7 is a positive step in giving supply chain companies more confidence to invest. These are intended to support investment in new manufacturing capacity and infrastructure, whilst promoting increased supply chain environment performance.

Transmission infrastructure

Limited grid capacity is a key constraint for projects: some have to wait 10 years or more for connections. Only 50 km/yr of new connection lines have been built on average over the last 30 years – a fraction of what is needed for the new projects under development.

Over 140 electricity projects are waiting to secure a connection to the grid, which could represent 300 GW of capacity. Historically, new projects have been allocated grid capacity on a ‘first come, first served’ basis.

As the backlog grew, however, Ofgem approved the introduction of ‘progression milestones’ late last year. This ensures that projects that are further advanced are prioritised.

A holistic network design is also proposed, with a recommended investment in the grid of £54bn this decade, and another £58bn next. These are crucial steps in halving the amount of time projects are waiting for access to the grid, as recommended in the Electricity Networks Commissioner’s report of August 2023.

8. Kick-starting CCS and hydrogen

The UK has the largest CO₂ offshore storage potential in Europe (78 gigatonnes). The successful deployment of CCS technologies in the UK is essential for the country to reach net zero. It is needed to decarbonise hard-to-abate industrial sectors, like cement and steel production, and will also play a significant role in the UK's energy security as an enabler of low-carbon hydrogen production and dispatchable low-carbon power generation. This is important in an increasingly intermittent renewables-based system.

The government is supporting the development of four CCS clusters this decade. Hynet and the East Coast Cluster were selected as Track 1 projects, with Acorn and Viking in Track 2. These will provide the infrastructure to transport and store 20-30mn tonnes/yr of CO₂ by 2030. The government is in negotiations on support for eight emitter projects within the Track 1 clusters.

The first UK carbon storage licensing round offered 21 licences that can store up to 30mn tonnes/yr of CO₂ by 2030. Many of these are aiming to progress on a similar timeline to the earlier track 1 and 2 projects.

The publication of the UK's CCS Vision paper in December 2023 outlined how government expects the CCS sector to evolve from the current subsidy-based model to a self-sustaining market from 2035. Although progress has been significant, policy needs development to ensure the sector achieves its potential.

Phase 1: Market creation (present-2030)

Government support is essential to kickstart the first CCS clusters and deploy the early infrastructure required to connect emitters and storage sites. Final investment decision (FID) for the Track 1 clusters is expected by the end of 2024 followed by Track 2 in 2025. First injections are set to follow in 2026 and 2027, before ramping up to 20-30mn tonnes/yr by the end of the decade.

Phase 2: Market transition (2030-2035)

This phase sees continued development of the UK's CCS sector, boosting capture and storage capacity to around 50mn tonnes/yr by 2035. Non-pipeline transportation (NPT) will be introduced, along with international imports.

Phase 3: Self-sustaining market (2035-onwards)

The CCS market is set to become less reliant on government support, supported by a mature regulatory framework and strong demand-side policies. UK storage will provide competitive solutions to emitters and full domestic and international transportation modes will be operational, supporting continued deployment across all sectors.

Cross-border transportation of CO₂ offers storage opportunity to European countries and helps derisk UK projects. But several blockers need to be addressed (see Figure 20).

Figure 20
Cross-border CO₂ storage faces serious blockers

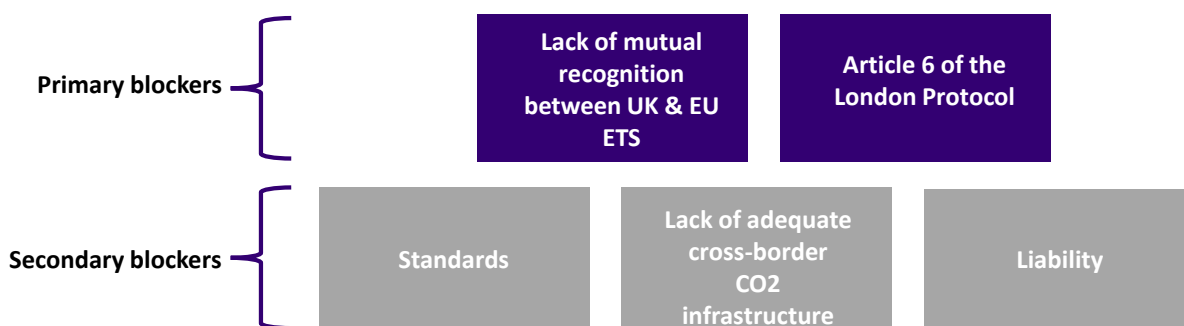
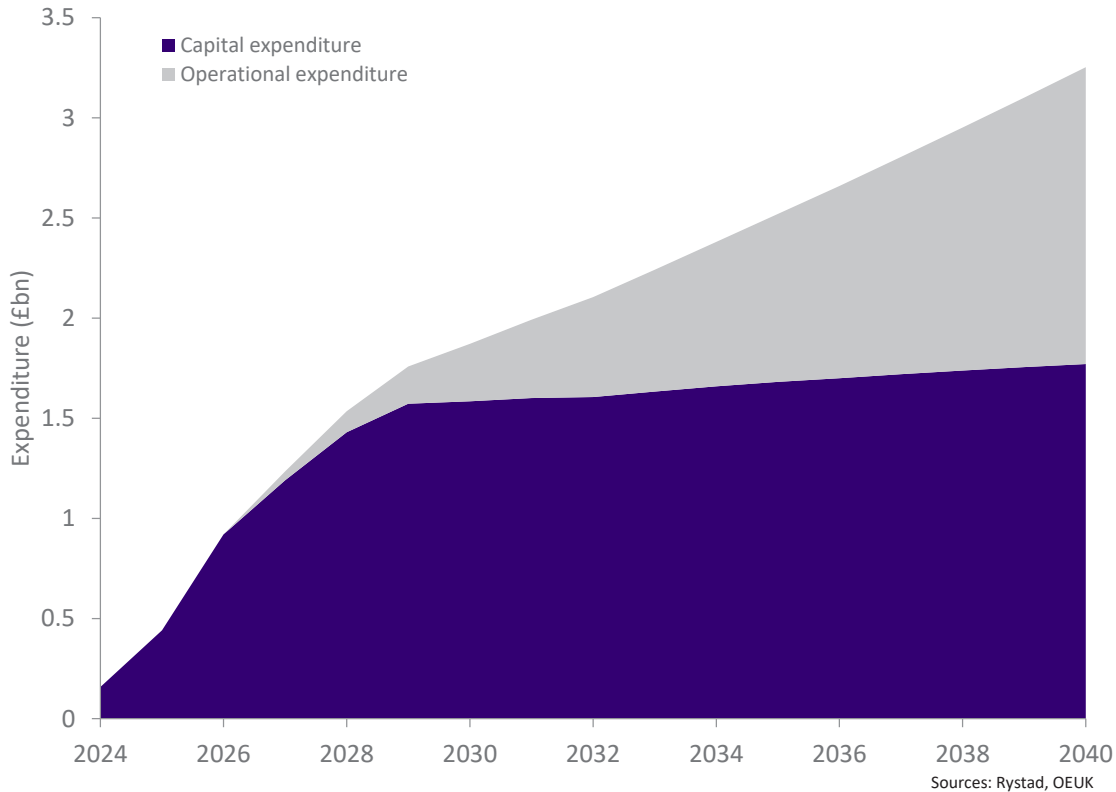


Figure 21

CCS: capex rises fast, followed by opex growth as projects start up



These include the lack of mutual recognition between UK & EU emissions trading schemes, the inability to trade CO₂ in the absence of a bilateral agreement under the current London Protocol, lack of mutual CCS standards, limited infrastructure and uncertainty about long-term liabilities of transport and storage.

The capex intensity and front-loaded nature of CCS investments mean that spending is likely to increase sharply over the next decade (see Figure 21).

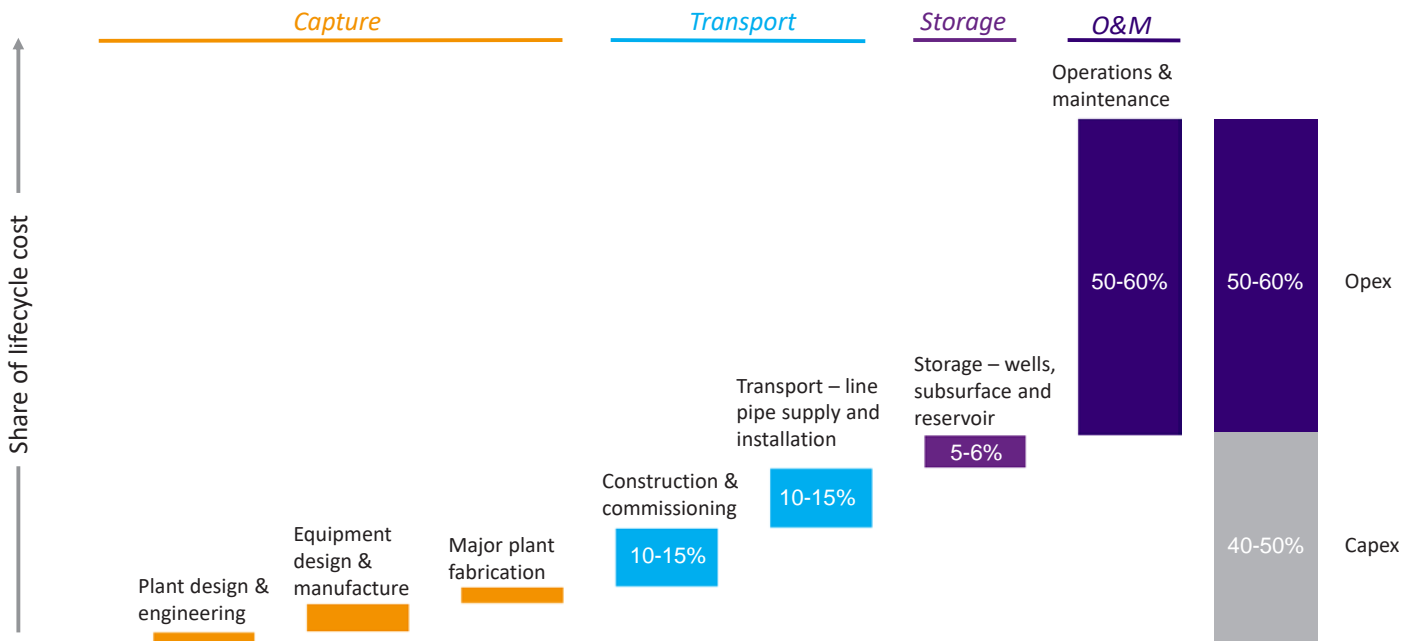
Over the next decade, the UK CCS market is anticipated to grow to around £2bn/year and potentially £3bn/year by 2040. This would mean a cumulative £20bn spend to 2035 and £34bn to 2040. Unlocking CO₂ imports will offer an opportunity to increase this further, potentially by another £10bn.

Low-carbon hydrogen

Low-carbon hydrogen, like CCS, is a critical enabler for net zero and improved energy security as well as economic and industrial growth. The UK has a focus on green (using renewable energy to split water molecules) and blue hydrogen (using steam reformation of methane), with a 2030 target of 6 GW from green and 4 GW from blue.

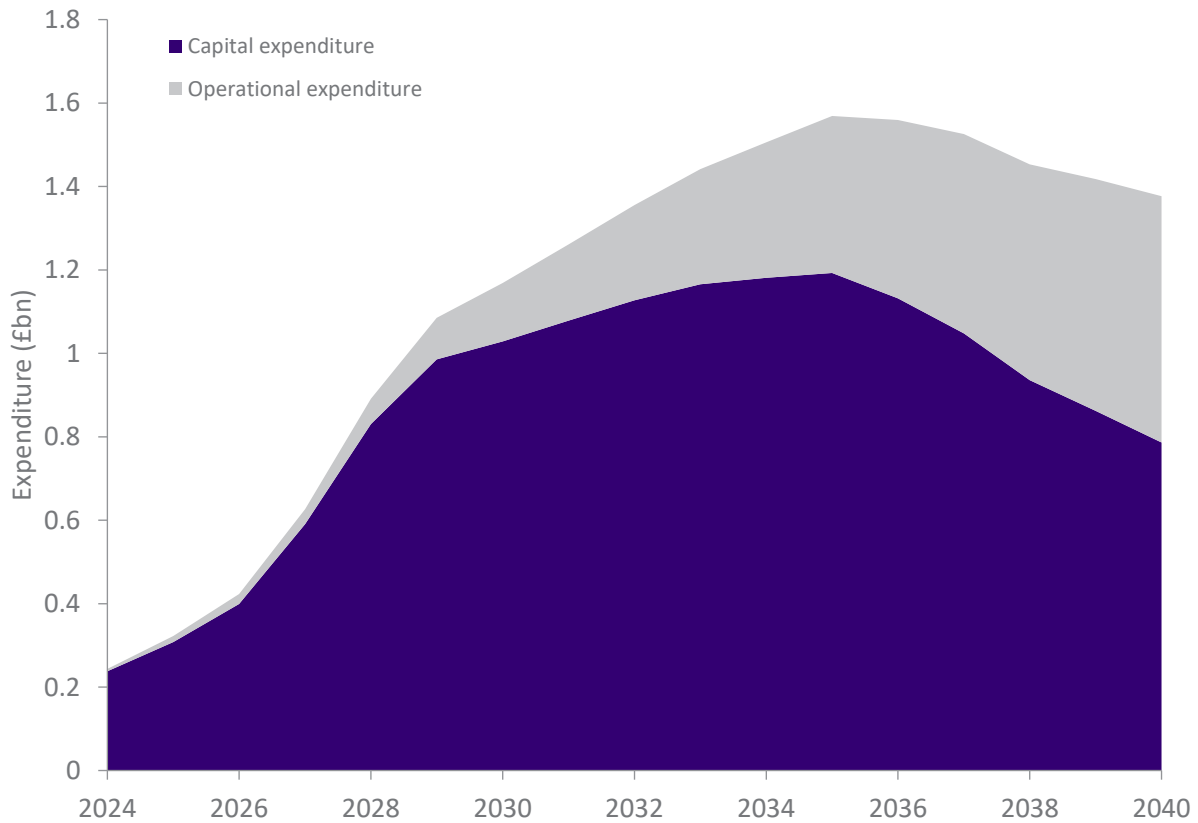
The possible uses for hydrogen are substantial, with industry, power, heat, transport and blending all potential off-takers. There has been recent policy development such as the Industrial Energy Transformation Fund (IETF), hydrogen to power consultation, transport demonstration projects and decision to allow 20% blending in the gas grid. Exports of low-carbon hydrogen also present a significant opportunity.

Figure 22
Up to half of the CCS lifecycle costs come before starting operations



Sources: Rystad, OEUK

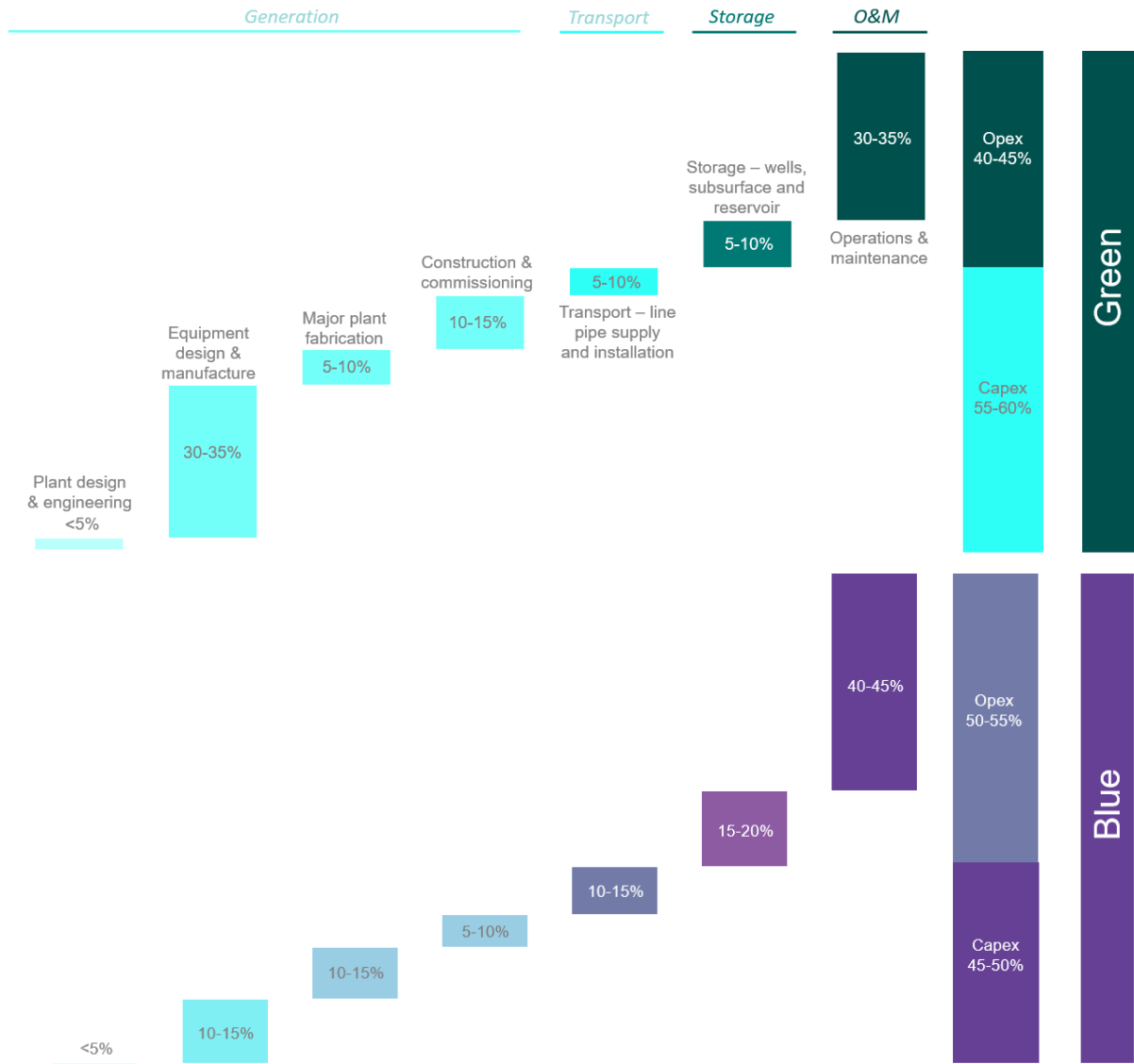
Figure 23
Hydrogen: expenditure is expected to grow significantly late this decade/early next



Sources: Rystad, OEUK

Figure 24

Green hydrogen projects are more capital-intensive than blue, which has more costs associated with operations



Source: Rystad, OEUK

It is possible that hydrogen will grow in to a £1.5bn/year market by the early 2030's, with significant growth in the second half of this decade as the sector establishes. Cumulative spend could almost reach £15bn by 2035 and £25bn by 2040. Like CCS, much of the project spend will be front-loaded, as around half the lifecycle costs are development capex. The breakdown in spend will be different across green and blue projects.

The first allocation round under the Hydrogen Production Business Model took place in December. It resulted in 11 successful projects which are now to be offered contracts totalling 125 MW capacity – half the original aim of the round – at a weighted average strike price of

£241/MWh. This is lower than the initial strike price seen in other nascent industries such as floating wind.

Development of transportation and storage (T&S) infrastructure is needed, and the government has signified the importance of developing the network by creating the Hydrogen Transport Business Model and the Hydrogen Storage Business Model. The first allocation rounds for these are expected at the end of 2024. These are positive steps to kickstart the delivery of this critical and enabling infrastructure at pace. This ambition needs to translate into an enabling T&S infrastructure that connects producers, offtakers, and, in the future, export opportunities.



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