

The UK Offshore Supply-chain Dilemma

Stimulating Increased Offshore Oil and Gas Activity in the UK Threatens Its Renewable Power Ambitions

Executive Summary

Crippling energy prices across Europe have prompted the UK government to re-examine its approach towards its indigenous oil and gas reserves.

Reversing previous trends, a series of support measures have been announced over the course of 2022 to stimulate oil and gas production. This has come through an additional licencing round, accelerating new field development processes, and offering investment tax breaks.

At the same time, the UK government has increased its offshore wind capacity ambitions from 11 gigawatts (GW) of current total installed capacity to 50 GW to be installed over the next eight years.

The offshore wind industry shares critical supply chains with the offshore oil and gas sector. Both rely on a limited pool of available ports, vessels and personnel. Stimulating both sectors at the same time will spur competition over scarce resources, driving up costs—which will affect the lower-margin offshore wind sector more severely than the oil and gas sector.

Measures that support investment in the oil and gas sector are misguided. There are inadequate resources for the UK to ever be self-sufficient in this sector again, and increased stimulus programs will only put additional pressure on costs and installation timelines for offshore wind farms.

This potentially creates a damaging situation regarding the UK's future energy provision and security of supply. It risks compounding price volatility and sustaining emissions by slowing the progress of offshore wind, a resource that is abundant, clean and cheap by comparison.

Introduction

In 2021, the UK government issued its Net Zero Strategy, which provided a commitment for the UK to reach net zero by 2050, in part by promoting increased use of renewable power generation.¹ This would support “removing dirty fossil fuels” from the UK energy mix and reduce the impact of “energy price spikes caused by volatile international fossil fuel markets.”²

In response to the Russian invasion of Ukraine, the UK government has come under increasing pressure to act to stabilise markets and manage the huge cost increases in energy provision that the conflict has caused for UK consumers.

In somewhat of a U-turn, the UK government under former Prime Minister Boris Johnson introduced a new British Energy Security Strategy in April 2022. The strategy included support for increasing UK Continental Shelf (UKCS) oil and gas production, while also setting out a more aggressive target for offshore wind capacity additions.

Stimulus to the UKCS oil and gas market was to come in the form of a new licencing round to be managed by the North Sea Transition Authority (NSTA), and the establishment of a Gas and Oil New Project Regulatory Accelerator, with a mandate to support the acceleration of named projects and reduce their development timelines.

In late May, then-Chancellor of the Exchequer Rishi Sunak introduced a “windfall tax,” or Energy Profit Levy (EPL), on oil and gas companies operating in the UKCS, to redistribute profits being made from commodity price increases to support consumers. An additional 25 percent tax on profits made from UK oil and gas extraction has been levied, although the taxation burden can be reduced as much as 91 percent when offset against new investment. The new tax provides an incentive for increased UKCS oil and gas spending on developments and new extraction.

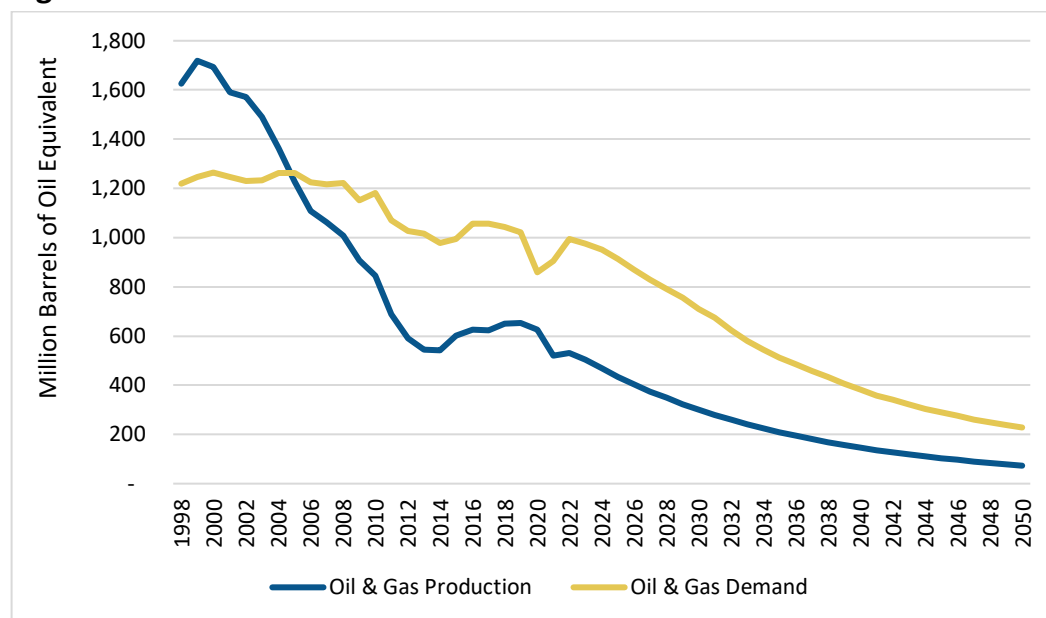
As a major European and global economy with a population of 67 million, the UK is a large consumer of oil and gas products.³ In 2021, 76 percent of the UK’s energy supply came from natural gas and oil and petroleum products alone.⁴

¹ HM Government. [Net Zero Strategy: Build Back Greener](#). October 2021.

² *Ibid.*

³ Office of National Statistics. [Overview of the UK population: 2020](#). February 2022.

⁴ Department for Business, Energy, and Industrial Strategy. [Digest of UK Energy Statistics](#). 2022.

Figure 1: UK Oil and Gas Production and Demand Outlook to 2050

Source: North Sea Transition Authority, Climate Change Committee Balanced Net Zero Pathway and IEFA conversion.

In the past two decades, oil and gas production from the UKCS has fallen, so the UK relies on imports to meet 66 percent of its gas needs and 82 percent of its oil needs.⁵ The decline is a function of the maturity of a basin that has been producing since the 1970s. Although there are still oil and gas reserves in the UK, the country is unlikely to be self-sufficient in oil and gas supply again.

According to the British Energy Security Strategy (BESS), there are 7.9 billion barrels of oil reserves and 560 billion cubic metres (bcm) of gas remaining in the UKCS. For context, this equates to 15 years of oil and seven years of gas based on 2022 demand figures.⁶ In a 2020 analysis, the NSTA estimated much lower figures of 4.8 billion barrels of oil, and 357 bcm of gas, almost half the BESS estimate.

The BESS does not provide specific references or methodologies for its reserve estimates. It is likely that they include “yet to find” resources, or those that have not been properly explored or tested. As such, these figures come with a high degree of uncertainty since the reserves may not exist, may be too technically challenging to extract, or may be uneconomical.

⁵ Department for Business, Energy, and Industrial Strategy. [Digest of UK Energy Statistics](#). 2022.

⁶ Reserves figures quoted from page 18 of the [British Energy Security Strategy](#) divided by 2022 demand figures from the North Sea Transition Authority, [Production and Expenditure Projections](#), August 2022.

Notwithstanding indigenous production and the potential exploitation of additional reserves, any stimulus of the UK offshore oil and gas sector will not increase supply, improve availability, or lower prices for the consumer.

“I think it’s unlikely, given it’s a mature basin and the geology is well-known, that we’re suddenly going to have a situation where we are significantly growing production again,” said Andy Samuel, head of the NSTA.⁷

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A marginal increase of UKCS production will not improve “security of supply” for the UK. Most of the UK’s oil is exported,⁸ and pricing of oil and gas is determined by global or regional benchmarks.⁹ Thus there is little direct impact on supply or pricing for UK consumers. In short, stimulating UKCS production does nothing to ease the current crisis.

Offshore Wind Capacity Additions

The target for installed capacity contained in the BESS increased from 40 GW to 50 GW by 2030, including 5 GW of floating wind capacity. This is to be achieved by reducing the consent timeline for projects from four years to one, in addition to several amendments to national policy statements, including environmental measures, habitat assessments, the creation of an acceleration task force, and a fast-tracking process for priority cases. The measures collectively aim to reduce the administrative burden and timelines to expedite new developments.

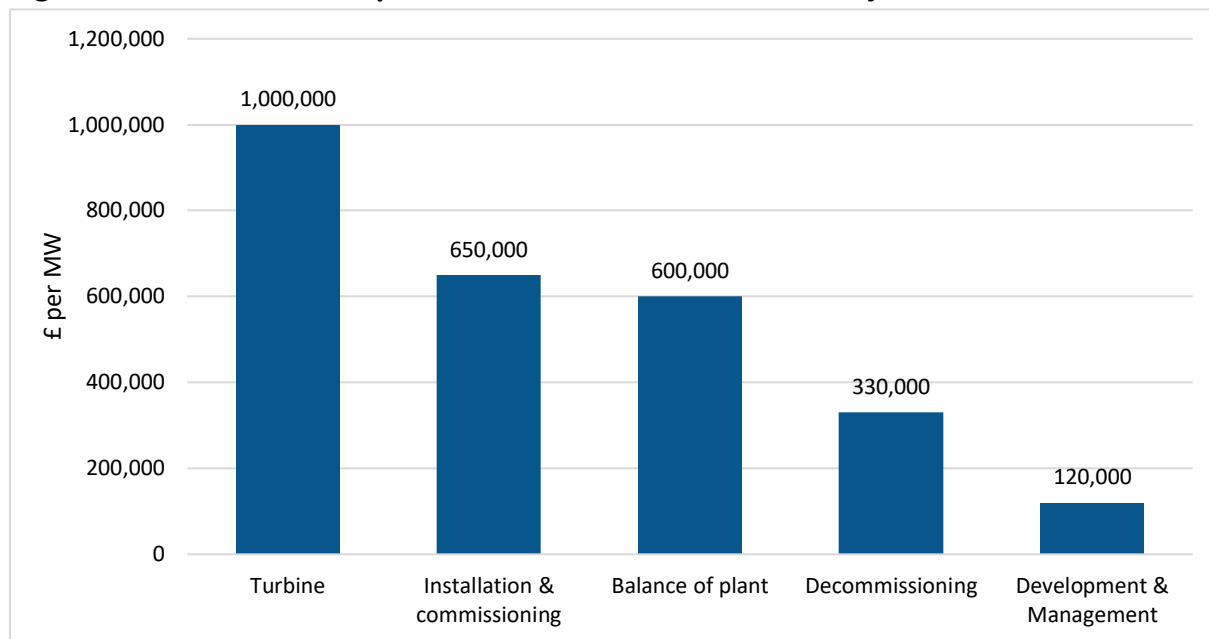
For context, UK offshore wind capacity currently stands at 11.3 GW, spread across 42 wind farms that have been installed over the past 21 years. Another eight sites are under construction where the developer has confirmed their final investment decision, but they are not yet fully operational. Projects under construction are much larger, with seven of the eight having more than 1 GW of capacity. The new projects cumulatively are expected to increase capacity by 9 GW—almost doubling UK capacity to more than 20 GW once complete.¹⁰

⁷ Financial Times. “North Sea gas field permits to be fast-tracked to boost UK production.” October 2022.

⁸ 81 percent of UK oil production was exported in 2021. See Department for Business, Energy, and Industrial Strategy. [Digest of UK Energy Statistics](#), 2022.

⁹ UK gas production is priced through the National Balancing Point (NBP) and the main European gas hub is the Title Transfer Facility (TTF) in the Netherlands, while oil is a global commodity across a number of benchmarks, namely Brent crude in the UK.

¹⁰ The Crown Estate. [Offshore Wind Report](#). 2021.

Figure 2: Rounded Cost £ per MW for UK Offshore Wind Project

Source: ORE Catapult, *Guide to an Offshore Wind Farm*.

In less than a decade, the UK is setting an exceptionally high target considering that it aims to increase offshore wind capacity by approximately 150 percent in half the time of historical projects. While the increased size of turbines and larger windfarms that are in the project pipeline will help bring capacity online more quickly, the supply chain challenges associated with this aggressive build-out should not be underestimated.

Considerable investment, equipment and service provision will be required for the UK to meet its offshore wind capacity additions. The cost of installing 1 megawatt is about £2.4 million; it will require £70 billion of capital investment over the next eight years, fuelling demand for turbines, installation and commissioning vessels, port infrastructure, cables, foundations, substations, and personnel.

Oil and Gas and Renewable Transfer of Knowledge and Capability

In its 2019 Offshore Wind Outlook, the International Energy Agency (IEA) noted significant crossover of oil and gas sector capability within the offshore wind market. Its analysis suggests that 40 percent of the full lifetime costs of the standard offshore wind project has significant synergies with the offshore oil and gas sector.¹¹

Although turbine manufacturing is specific to wind power, other activities are not. The construction of the foundations, subsea structures, cables, operations and maintenance, and project management skills support the cross-sector utilisation of

¹¹ IEA. *Offshore Wind Outlook*. November 2019.

vessels, port facilities, and personnel across both the offshore wind and the oil and gas market.

To achieve its offshore wind ambitions, the UK will be in part relying on the capabilities of the oil and gas sector to support the buildout, while also investing in offshore wind capability. Specific investment in port facilities to support lay-down areas and deep-water channels for floating wind will be required, in addition to Wind Installation Vessels (WIVs) to support increasing turbine sizes.

Although there is a buildout of capacity for wind-specific vessels, there are several other vessels used during an offshore wind project, including supply vessels, tugs, and light and heavy construction vessels from the Subsea Construction Support Vessel (SCSV) fleet to support construction activities, cable-lay, grouting, boulder clearing, and survey work.

According to IHS Markit, about 18 percent of the global SCSV fleet which traditionally was exclusive to the oil and gas sector was being used for offshore wind in 2022. The figure is expected to increase to 21 percent by 2026.¹² Given that about 31 percent of the global fleet is within Europe and that demand is expected to increase by over 20 percent this year alone, simultaneous demand growth in both sectors has the potential to lead to increased scarcity and further price increases.

Clarkson's, a shipbroker, recently highlighted that the market for construction vessels in Europe has continued to tighten over the summer months, and that vessels costs have increased by approximately 47 percent in 2022. Expectations of continued tightness have prompted the oil and gas sector to secure available vessels for 2023, while offshore wind clients may find it increasingly difficult to find "affordable tonnage."¹³

In addition to increased vessel demand, the large capital expenditure buildout in offshore wind is expected to create an employment boom to meet the demands over the balance of the decade. According to the Offshore Wind Industry Council, there were 31,000 people employed both directly and indirectly in the UK offshore wind sector in 2022. The workforce is expected to grow by 214 percent to more than 97,000 by 2030.¹⁴

To meet the additional demand requirement, it is expected that a large proportion of the oil and gas workforce will diversify into the wider energy sector. According to the RGU Energy Transition Institute, the buildout of offshore wind capacity is paramount to supporting more than 200,000 energy sector positions by 2030, of which around 100,000 personnel are expected to transfer from the oil and gas sector.¹⁵

¹² IHS Markit. [SOS for SOVs? Webinar](#). October 2022.

¹³ Clarksons Plc. [Construction Support Offshore Vessel Market Update](#). September 2022.

¹⁴ Offshore Wind Industry Council. [Offshore Wind Skills Intelligence Report](#). May 2022.

¹⁵ RGU Energy Transition Institute. [UK Offshore Energy Workforce Transferability Review](#). May 2021.

Scarcity of Supply: Oil and Gas Wins

Historically, this transfer of oil and gas capability into the offshore wind market was welcomed when market downturns in 2014 and 2020 crippled the oil and gas service sector. Activity plummeted, creating severe overcapacity and reduced pricing, leading to downsizing of capability, redundancies, reduced capex for new equipment including vessels, and service providers taking on breakeven or loss-making contracts to survive.

Up until the mid- to late 2000s, the oil and gas market was effectively the sole driver of UK offshore supply chain demand. Before the 2014 downturn, offshore wind charterers could only find older and redundant vessels but have since become accustomed to sourcing very capable vessels at historically low rates since they could offer longer-term contracts to owners keen for utilisation.¹⁶

In a market with scarcity of supply, buyers of goods and services that pay a higher price will prevail. Vessel contracts are either made through a spot market or are bid for time charters. Prevailing market conditions will have a large impact on pricing, and with tighter capacity expected, only those with the deepest pockets will secure supply.

The same is true for the workforce. The downturns in the oil and gas sector have reduced capacity from historical levels. As markets recover, there is already tightness of availability across many disciplines. It is likely that the oil and gas sector will offer market-leading remuneration packages to secure talent in order to retain and attract personnel into the market, as they have historically done.

This presents a major problem for UK wind developers since they can't compete with the oil and gas sector on profitability. This is partly because oil & gas projects are inherently *riskier* and therefore command a higher required return from investors. Meanwhile renewables projects, which often include long-term contracted revenues, are generally lower risk with lower returns—which can, paradoxically, put them at an economic disadvantage.

Wood Mackenzie, a research firm, noted that at a \$50 oil price, oil and gas projects are generating an internal rate of return (IRR) of 16-17 percent.¹⁷ Offshore wind projects by comparison are lower, at 8-12 percent.

The major wind farm owner Equinor, in their Capital Markets Update 2022, estimated that offshore wind projects were likely to range between 4 percent and 8 percent in real base project returns. With current Brent crude oil prices hovering at around \$80 a barrel and the targeting of quick return investments by oil and gas companies, it is likely that the differences in profitability are much higher.

¹⁶ Hagland Shipbrokers, Subsea Market Report, Summer 2022.

¹⁷ Wood Mackenzie. [How Big Oil is set to transform the offshore wind sector](#). April 2021.

Implications for Offshore Wind

The economics of offshore wind power generation are positive when compared to fossil fuel power generation. The last offshore wind auction had an electricity price of £48 per megawatt hour (MWh); electricity produced by gas-fired stations was £420 per MWh during late summer—nine times more expensive.¹⁸ The economic benefits are in addition to both the zero emissions from renewable power generation, and the security of supply from price stability and energy availability to UK consumers.

The UK and the wider global economy are currently struggling with high inflation, rising interest rates, and currency price fluctuations that will affect costs across all industries. Raw material prices have increased significantly since 2020, including steel and copper that the offshore wind industry needs.

Turbine manufacturers, which represent around 42 percent of the capital expenditure on a new project, are starting to show signs of financial stress.¹⁹ Two of the largest providers, General Electric Renewables and Siemens Gamesa, have both announced job losses as they struggle with rising costs, longer lead times, and historical fixed pricing that is damaging returns.²⁰

Any additional stimulus within the UK offshore oil and gas sector has the propensity to compound these problems. Installation and commissioning, representing 27 percent of project costs, relies on the incumbent vessel fleet. As demand increases and capacity tightens, there will be additional costs—and perhaps more importantly, availability issues—for the offshore wind sector.

The same is true of the people required to support the offshore wind buildout. Inflationary pressure will exist from the general economic environment, putting upward pressure on wages. There is potential for the wage issue to be compounded from competing sectors, fuelling cost and availability issues.

The potential crowding out of offshore wind developers for people and assets runs the risk of delaying projects in a highly ambitious growth market. Any delayed roll-out of increased renewable power generation capacity will continue to expose UK consumers to volatile commodity pricing and availability threats, while also jeopardising net-zero targets.

¹⁸ Ember. [A path out of the gas crisis](#). 23 September 2022.

¹⁹ ORE Catapult. [Guide to an Offshore Wind Farm](#).

²⁰ Financial Times. [European wind industry 'struggling' with rising costs](#). 11 October 2022.

Conclusion

The UK has inadequate oil and gas resources to be self-sufficient again, and any policy movements that support the sector will have a limited impact on improving energy security. Stimulating the oil and gas sector is likely to increase inflationary pressures and reduce capacity in a shared offshore wind supply-chain. This could ultimately lead to higher and more volatile energy prices for UK consumers, while increasing the risk that the UK will miss its climate targets.

There is a relatively short window of time for the UK to build out its offshore wind capacity to 50 GW by 2030. It makes far more economic and environmental sense to put as much policy support as possible into building out renewable power generation capacity, namely from offshore wind, where the resource is abundant, clean and cheap by comparison.

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