STRIKING THE BALANCE

Building a sustainable UK offshore energy workforce

June 2025

RGU ENERGY TRANSITION INSTITUTE

CONTENTS

Executive summary 01

The UK offshore energy industry in a global context 06

RGU UK offshore energy supply chain spend and workforce demand model 09

Key findings 12

1. **The power balance is shifting** 12
2. **Planning the plan requires coordinated action** 14
3. **The fairytale outcome is for us to shape** 16
4. **Securing jobs requires urgent investment** 18
5. **Sustaining Scotland as an energy powerhouse requires hard choices** 21

Acknowledgement/Disclaimer 23

EXECUTIVE SUMMARY

The COP29 meeting in Baku in November 2024 reaffirmed that the world is rapidly running out of time to avert catastrophic climate change unless transformative action is taken. Having exceeded the 1.5°C warming threshold, with the potential for devastating temperature rises of up to 3°C by 2050, existing climate commitments and strategies are now insufficient to achieve net-zero targets in time.

According to the International Energy Agency (IEA), global energy demand grew at a greater-than-average pace during 2024, with increased supply of renewables and natural gas covering most of the additional energy needs. The IEA's **Global Energy Review** (2025) highlights that the acceleration in global energy demand growth in 2024 was led by the power sector, with global electricity consumption surging by nearly 1,100 terawatt-hours, or 4.3%. This was nearly double the annual average over the past decade. The sharp increase in the world's electricity use last year was also driven by record global temperatures, which boosted air conditioning demand, as well as by rising consumption from industry, the electrification of transport, the growth of data centres and artificial intelligence.

Global gas demand in 2024 increased by 2.7%, whilst oil demand grew by around 0.8% to a combined total of around 164 million barrels of oil equivalent per day (boe/d)[1].

As a G7 country, the UK is a leader in the global climate debate. Although the UK greenhouse gas emissions represent less than 1% of global emissions[2] its actions and commitments are a microcosm of the challenges and opportunities associated with a just, fair, and orderly energy transition.

Robert Gordon University's (RGU) Energy Transition Institute has independently developed a supply chain and workforce demand model, which has generated new insights into the prospective routes to a just and fair transition. This workforce visibility tool was first used in 2023 as the basis for RGU's **Powering up the Workforce** report and underpinned its 2024 publication **Delivering our energy future – Pathways to a 'just and fair' transition.** RGU's workforce analysis was also referenced and included in the UK Government's 2025 **Building the North Sea's Energy Future** consultation.

With UK offshore energy jobs still firmly in the political and media spotlight, this latest analysis uses the RGU modelling tool to update the findings of the earlier reports and describe three offshore energy workforce scenarios between 2025 and 2035.

It helps not only to inform the debate but also to move it on by extending the forecast window – scenarios in previous reports have typically used 2030 for this purpose – while providing fresh data on key trends around workforce demand. These include an acceleration in the potential downside if the low-case scenario, which reflects slower progress towards a successful transition, materialises.

[1] IEA Global energy review 2025
[2] Our World in Data 2025 – GHG emission in 2023

EXECUTIVE SUMMARY

The various scenarios in this report, which represent up to £350 billion of future investment in the UK offshore energy sector, signal a range of potential outcomes. Several factors are in play: government policies, evolving cost pressures, the impact of recent court decisions, industry dynamics and investor sentiment, among others.

However, an assessment of the present investment, commitment and business delivery landscape suggests a 2030 UK offshore energy workforce[3] demand level of between 125,000 and 163,000, compared to today's actual workforce figure of approximately 154,000. Attaining the goals associated with the high-case scenario could see workforce demand levels exceed 200,000.

These figures highlight the increased downside if only the most modest ambitions, as summarised in the low-case scenario, are met: the above figure of 125,000 represents a drop from the equivalent estimated figure of 130,000 contained in RGU's 2024 report Delivering our energy future – Pathways to a 'just and fair' transition.

The low case scenario also presents the prospect of oil and gas workforce numbers dropping from 115,000 today to as low as 57,000 by the early 2030s: a reduction of around 400 jobs – equivalent to the closure of the Grangemouth refinery – every two weeks.

The data underlines why there has to be a renewed sense of urgency behind the push towards a just transition. Previous RGU reports have referred to the pivotal importance of a shared agreement on short-term actions that will lead to a successful transition, but the need for such consensus and alignment is now more pressing than ever.

That need is fuelled further by the fundamental political and economic changes we are witnessing internationally. The route to sustained energy security is increasingly difficult to identify in an unpredictable world, which is why we are seeing countries such as the Netherlands, Denmark and Norway adopt a more cautionary approach meantime as they ramp up gas production alongside their low-carbon strategies. Germany's new energy minister, meanwhile, has called for a 'reality check' on its energy policy.

We have seen a well-documented intervention by the Tony Blair Institute for Global Change. And, domestically, we are witnessing in 2025 the stark realities of an industry experiencing great change as individual businesses conduct operational reviews and, in the case of one operator to date, announce large-scale job cuts. What is required now is honest and candid dialogue, involving all stakeholders, to settle on a common UK policy framework that achieves a genuinely just transition while preserving our energy resilience.

The first major milestone on the journey to a just and fair transition lies in what has been termed the 'goldilocks zone': the period – probably reached in the late 2020s – when, underpinned by a healthy and sustainable supply chain, the transferability of workers reaches its peak and workforce reductions in oil & gas are matched by increased activity levels in adjacent energy sectors.

Against the backdrop of the many uncertainties which continue to beset the global energy industry, it should be a shared ambition to create these 'just right' conditions – and capitalise on them to set the foundations for a sustainable and orderly transition.

What is required now is honest and candid dialogue, involving all stakeholders, to settle on a common UK policy framework

[3] For the purposes of this review, the offshore energy industry comprises oil and gas, offshore wind, carbon transportation, processing & storage (TPS), offshore hydrogen (including blue hydrogen) and associated onshore support activities. People, roles and workforce numbers quoted in this report reflect full-time equivalent roles.

KEY FINDINGS

01 The power balance is shifting

UK oil and gas workforce numbers have fallen, but that trend has been offset by increased overseas and renewables activities

- The overall UK offshore energy workforce between 2023 and 2024 remained broadly flat at 154,000
- The UK oil and gas workforce declined by around 5,000 jobs, from c. 120,000 in 2023 to around 115,000 in 2024 (± 3% range)
- At the same time, the renewables workforce increased from c. 34,000 to close to 39,000, against the backdrop of greater offshore wind spending in the pre-construction and construction stages
- In overall workforce terms, the balance between oil and gas and renewables workforce shifted from 80% / 20% in 2023 to around 75% / 25% in 2024

02 Planning the plan requires coordinated action

Workforce supply and demand will determine the level of recruitment and re-skilling required

- Depending on which scenario plays out, the direct and indirect **UK oil and gas workforce** is forecast to fall from 115,000 to between 57,000 and 71,000 by the early 2030s
- The **UK offshore renewables workforce** is forecast to increase from c. 39,000 in 2024 to between 84,000 and 153,000 by 2035
- At current investment, commitment, and business delivery projections, the likely 2030 UK offshore energy workforce demand is forecast to be between 125,000 and 163,000
- The high and mid case scenarios will require material recruitment and retraining to offset ongoing attrition – which will see the UK offshore workforce supply fall from 154,000 to around 135,000 by 2030 – and meet 2030 requirements. In the low case, more re-deployment and retraining rather than additional recruitment will be required to meet 2030 requirements

03 The fairytale outcome is for us to shape

Managing the *'goldilocks zone'* will be key to delivering a just, fair, and orderly transition

- Although the UK greenhouse gas emissions represent less than 1% of global emissions, its actions and commitments are a microcosm of the challenges and opportunities associated with the energy transition
- A new offshore energy workforce model is emerging, featuring a more transient and flexible workforce. There will be greater focus on capital activities and vocational work, and people will typically move from project to project across the country
- Before 2027, there is likely to be limited capacity for the UK offshore renewables sector to host and accommodate the quantity of oil and gas workers becoming available on the job market due to the decline in the oil and gas industry
- The UK offshore renewables workforce could exceed the oil and gas workforce from the late 2020s onwards, depending on the level of ambition realised

04 Securing jobs requires urgent investment

Promoting, delivering, and securing UK content[4] between 2025 and 2030 will be critical in sustaining a world-class offshore energy supply chain and workforce

- The current level of UK content in renewables is typically around 25% for capital activities and up to 85% for operating activities
- To maintain the offshore energy workforce at its 2024 level, the UK as a minimum has to deliver close to 40 GW of installed offshore wind, up to 40% UK capex content, and around 0.6 million boe/d oil and gas production by 2030
- Significant levels of new operational capacity and capability will be required to deliver on the ambition of up to 40% UK capex content for new offshore wind projects and up to 50% for oil and gas decommissioning work by 2030. Much of this new UK capacity will need to be developed ahead of final investment decisions
- It is estimated that each additional 10% of UK capex content for the offshore wind sector would yield between 7,000 and 12,500 jobs by 2030

[4] UK content is defined as the proportion of products or services provided or delivered in the UK by a domestic supply chain and a UK-based workforce rather than being imported

05 | Sustaining Scotland as an energy powerhouse requires hard choices

Without intervention, Scotland's supply chain and workforce will be impacted disproportionately

- Nearly 1 in 30 of Scotland's working population is currently employed in or supports the offshore energy industry, compared to a UK-wide figure of approximately 1 in 220
- The concentration is even higher in the North-East of Scotland, where close to 1 in 6 workers are engaged directly or indirectly in offshore energy
- The Scottish-based offshore energy workforce could decrease from c. 75,000 in 2024 to between 45,000 and 63,000 by the early 2030s
- Scotland needs to capture a significant share of future renewables activities, otherwise selective oil and gas activities may have to be sustained until the early 2030s to retain its offshore energy workforce, skills, supply chain, and economic contribution

The data in this report presents a clear call-to-action for politicians, industry leaders and other stakeholders: their plans, strategies and ambitions are interlinked behind the common overarching goal of a just transition, but those must become ever more closely aligned if the UK is to ultimately achieve the transition it wants. It is imperative to strike the right balance and create a genuinely cohesive approach.

> **The UK stands at the brink of a new industrial revolution for the offshore energy sector. By capitalising on new opportunities, the UK can enhance its energy security and strengthen the country's position as a global leader in offshore energy.**

Professor Paul de Leeuw
Director
p.de-leeuw@rgu.ac.uk

Sumin Kim
Principal Project Manager
s.kim5@rgu.ac.uk

Energy Transition Institute Robert Gordon University, Aberdeen, UK

THE UK OFFSHORE ENERGY INDUSTRY IN A GLOBAL CONTEXT

The COP29 meeting in Baku in November 2024 reaffirmed that the world is rapidly running out of time to avert catastrophic climate change unless transformative action is taken. Having exceeded the 1.5°C warming threshold, with the potential for devastating temperature rises of up to 3°C by 2050, existing climate commitments and strategies are now insufficient to achieve net-zero targets in time.

From a renewable perspective, global solar and wind power experienced unprecedented growth during 2024, showcasing how sustainable technologies can reshape our energy landscape. Global solar capacity reached a record 2 terawatts (TW) in 2024, with more capacity installed in the past two years than in the previous six decades combined.

Meanwhile, global wind capacity reached 1.2 TW in 2024. In 2023/24 alone, a record 230 GW of new wind capacity was added globally. Global wind power is forecast to triple its cumulative capacity by 2030, while solar power is expected to increase fourfold over the same period.

Despite the global climate emergency, world oil and gas production reached a new peak of close to 165 million boe/d.

As a G7 country, the UK plays a leading role in the global climate debate. Although the UK greenhouse gas emissions represent less than 1% of global emissions, its actions and commitments are a microcosm of the challenges and opportunities associated with a just, fair, and orderly energy transition. The UK's domestic on and offshore wind represented c. 3% of global capacity during 2024, whilst the UK's domestic oil and gas production represented c. 0.6% of global demand during 2024.

The UK's **Clean Power 2030 Action Plan** demonstrates the nation's ambition to generate enough clean power to meet total annual electricity demand, with unabated gas generation as a back-up supply.

UKCS OIL AND GAS

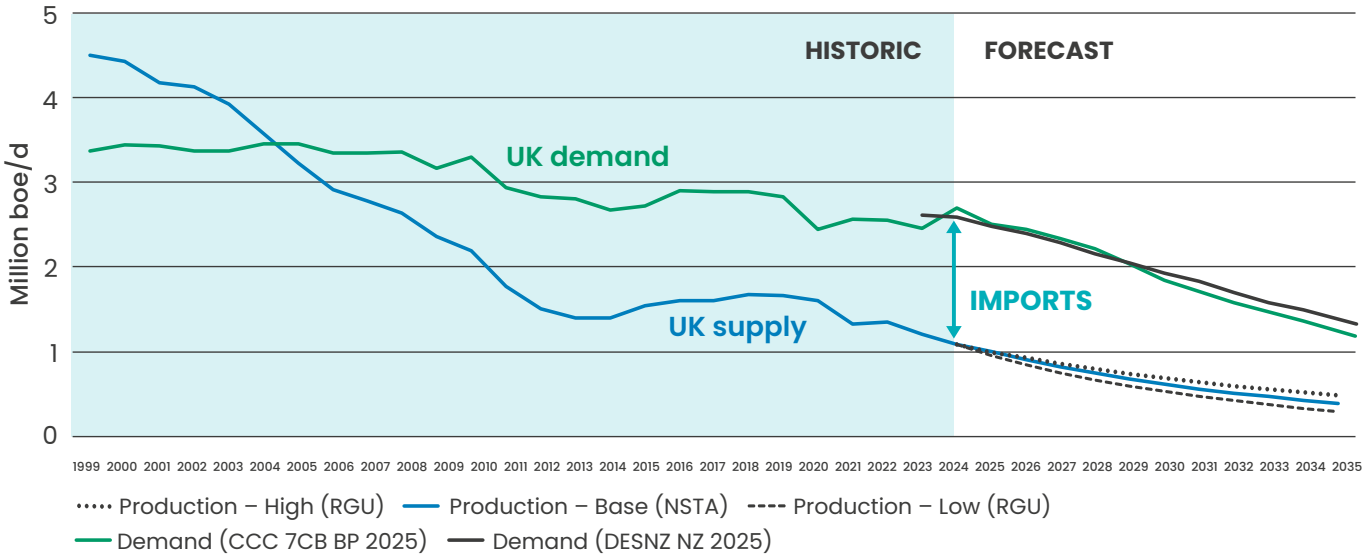
The UK oil and gas production peaked in 1999/2000 at 4.5 million barrels of oil equivalent per day (boe/d). The UK oil and gas industry has now experienced over a quarter of a century of decline, with 2024 production (1.09 million boe/d) down by almost 75% from its peak[5] (figure 1). UK oil and gas production declined by c. 10% between 2023 and 2024, which was three times faster than the average underlying global sector decline (c. 3%)

By 2050, and with new licences, the North Sea's oil output is expected to decrease by 90% compared to 2024 levels. Without new licences, the oil and gas industry is forecast to decline by around 95% by 2050 from 2024 levels[6].

The UK oil and gas demand has declined from c. 3.4 million boe/d in 1999/2000 to c. 2.7 million boe/d in 2024. The Department for Energy Security and Net Zero (DESNZ) and the Climate Change Committee (CCC) forecast that the UK will consume c. 13 billion barrels of oil equivalent (boe) between 2025 and 2050 (figure 1). To meet UK demand, close to 30% is likely to come from domestic supply, with the remaining 70% imported[7].

Balancing sustainability, energy security, affordability, jobs and supply chain requirements with a just, fair, and orderly transition requires choices to be made about the future of North Sea production. To reflect the possible range of outcomes, RGU used scenario analysis as part of this review to assess the impact of policy and investment decisions on the UK offshore energy supply chain and workforce.

UK oil and gas supply and demand



Future UK oil and gas demand
c. 13 billion barrels oil equivalent (bn boe) between 2025/50 (CCC)

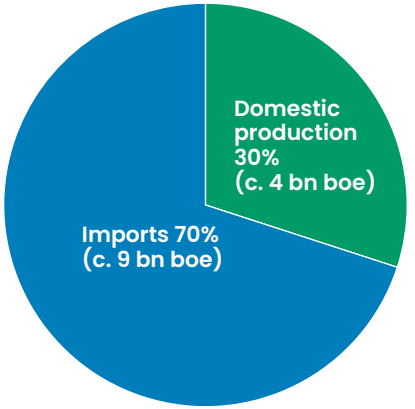


Figure 1

[5] NSTA oil and gas production projection Oct 2024
[6] NSTA March 2025 – oil and gas production projection and DESNZ – Net Zero Strategy delivery pathway
[7] CCC 2025 – Seventh Carbon budget (7CB), Balanced Net Zero pathway (BP), oil and gas supply and demand

UK OFFSHORE WIND, CARBON CAPTURE, USAGE AND STORAGE, AND HYDROGEN

The UK offshore installed wind capacity was c. 14.8 GW at the end of 2024. Although over 6 GW of new UK offshore wind capacity is currently under construction and installation, the trade body RenewableUK highlighted that 2024 marked the first year since 2016 without any new offshore wind projects being fully commissioned.

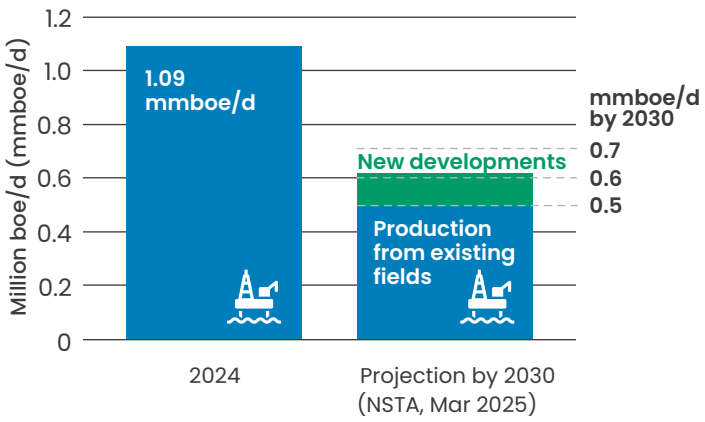
Consistent with global trends, the number of offshore wind planning applications in the UK increased in 2025, resulting in the capacity of projects within the UK's planning systems almost tripling. Four projects (totalling 1.3 GW) were granted planning consent in 2024, while fourteen planning applications (15.4 GW) were submitted. This brings the total capacity in the planning system to c. 23 GW, out of a total of 80 GW for new projects in the pipeline up to 2040[8] (figure 2).

To develop 50 GW offshore wind capacity by 2030, the UK is expected to install around 35 GW of new wind capacity by the end of this decade, equivalent to nearly 6 GW annually. To put this into context, it will require the installation of over 2,700 new turbines (equivalent to roughly one new turbine every day for the remainder of this decade), over 8,100 new turbine blades, over 9 million tonnes of steel, and over 6,000 kilometres of new seabed cabling.

The CCC (Seventh Carbon Budget 2025) expects offshore wind to scale up to 70 GW by 2035 and 88 GW by 2040. Overall, UK electricity generation (including offshore wind) is forecast to increase from 127 GW in 2025 to 341 GW by the mid-2040s, eventually reaching 427 GW by 2050, reflecting a 3.4-fold expansion.

The UK Government has committed up to £22 billion over the next 25 years to support Track 1 carbon capture, usage and storage (CCUS) and blue hydrogen projects. The Government's investment is expected to attract a further c. £8 billion in private funding, contributing to the UK's goal of net-zero emissions by 2050.

UK oil and gas production (2024/30)



UK offshore wind project capacity by status

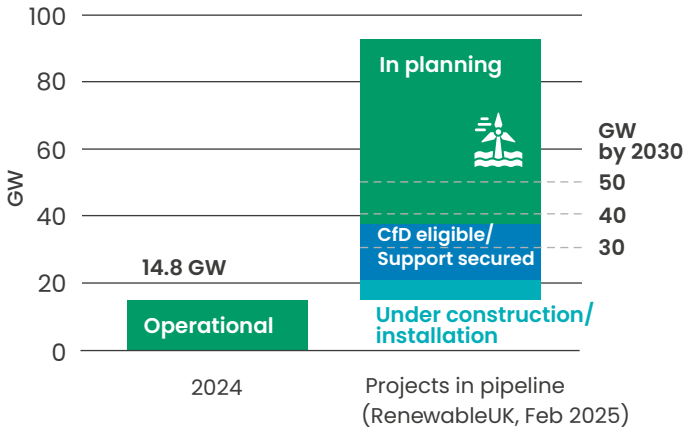


Figure 2

[8] RenewableUK – UK wind and global offshore wind: 2024 in review

RGU UK OFFSHORE ENERGY SUPPLY CHAIN SPEND AND WORKFORCE DEMAND MODEL

Over the last few years, RGU has developed a highly interactive workforce and supply chain visibility tool. The findings stemming from its application underpinned the 'Powering up the Workforce' (2023) and 'Delivering our Energy Future: Pathways to a just and fair transition' (2024) reports.

Using a wide range of government and industry data, and incorporating input from over 40 companies and organisations, the 2025 model maps out the latest spending and workforce requirements by:

1. **Individual offshore energy sectors (offshore wind, carbon transport, processing & storage (TPS), hydrogen, and oil and gas)**
2. **Future UK offshore energy scenarios (representing rapid, moderate and slow transitions)**
3. **Type of expenditure (development expenditure, capital expenditure (capex), operational expenditure (opex), and decommissioning expenditure)**
4. **Sub-sectors (including operations, maintenance, facilities, subsea, logistics, and drilling/wells)**
5. **UK nations (England, Scotland, Wales, and Northern Ireland)**
6. **UK content scenarios (representing high, medium, and low UK content assumptions)**

The 2025 model also captures the most recent input data and activity forecasts from the Climate Change Committee (CCC), RenewableUK (RUK), Offshore Energies UK (OEUK), North Sea Transition Authority (NSTA), Carbon Capture and Storage Association (CCSA), Offshore Wind Industry Council (OWIC), National Grid, UK Government, Scottish Government, government agencies, companies, and many other sources. This process ensures that the information included in the model and associated scenarios is a fair and reasonable reflection of future industry activity and demand.

For this review, the offshore energy industry comprises oil and gas, offshore wind, carbon TPS, offshore hydrogen (including blue hydrogen), and associated onshore support activities. People, roles, and workforce numbers quoted in this report reflect direct and indirect full-time equivalent (FTE) roles. The analysis does exclude induced jobs in the wider economy.

Recognising the uncertainty around what the UK could look like in both 2030 and 2035, three scenarios were developed to describe the range of possible energy futures for the country (figure 3).

SCENARIO 1 (HIGH CASE)

Reflects the Clean Power 2030 ambition set out by the UK Government (2024). The scenario assumes 50 GW of offshore wind installed by 2030. In the longer term, the scenario assumes 90 GW of installed wind capacity, 30 GW of installed hydrogen capacity, and 70 million tonnes per annum of CO_2 ($MtCO_2$) injectivity by 2035. The 90 GW installed wind capacity target comprises 65 GW fixed wind and 25 GW floating wind capacity.

SCENARIO 2 (MID CASE)

Represents a mid-point scenario and assumes offshore wind, hydrogen, and CO_2 injectivity reach 70 GW, 20 GW, and 50 $MtCO_2$ by 2035 respectively.

SCENARIO 3 (LOW CASE)

Reflects significantly slower progress toward delivering a successful energy transition, with offshore wind, hydrogen, and CO_2 injectivity reaching 50 GW, 10 GW, and 30 $MtCO_2$ by 2035 respectively.

For the purposes of this report, UK content is defined as the proportion of products or services provided or delivered in the UK by a domestic supply chain and a UK-based workforce rather than being imported.

At present, UK capex content in renewables is typically around 25%, for opex it is up to 85%. The Offshore Wind Sector Deal (OWSD) and North Sea Transition Deal (NSTD) reflect the ambition to increase UK content for new projects to greater than 50% by 2030.

Four different UK content cases have been developed (figure 4). These range from full domestic execution of all offshore energy activities to more moderate assumptions, in which 25–50% of capex and up to approximately 85% of opex activities are undertaken by UK-based supply chains and workforce.

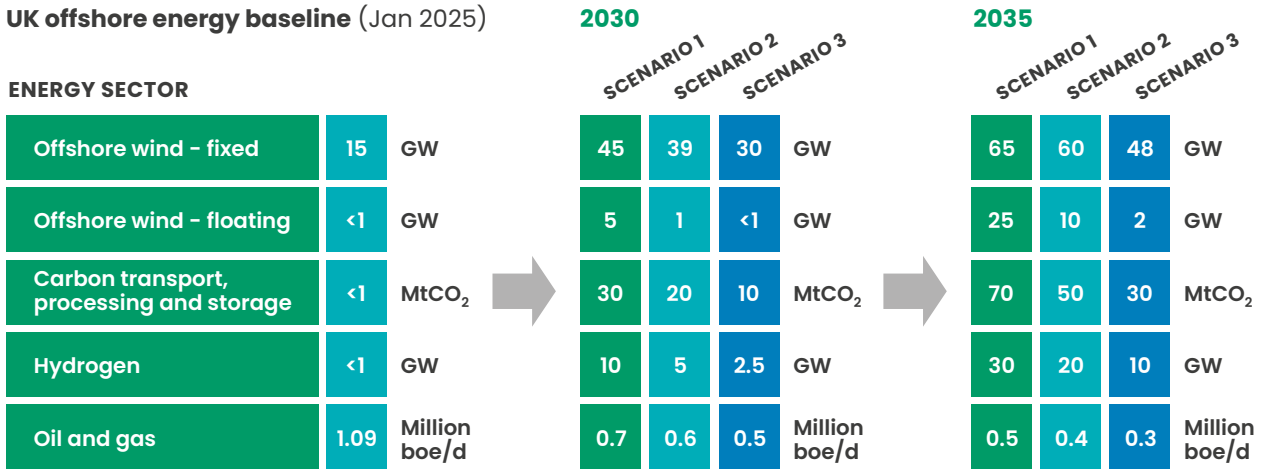
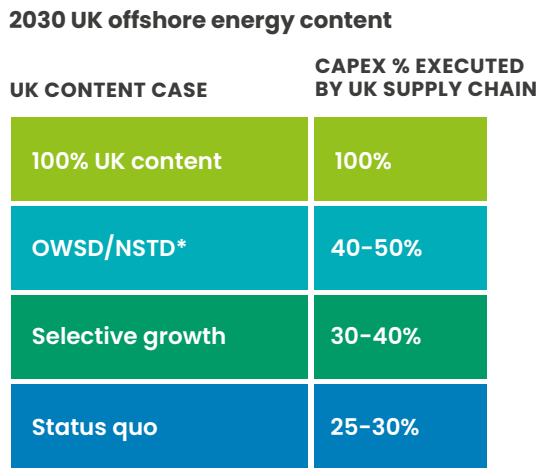


Figure 3



*Offshore Wind Sector Deal / North Sea Transition Deal

Figure 4

Based on current uncertainties, continued low investor confidence, and negative market sentiment, the scenarios assume that UK oil and gas production will decline from 1.09 million boe/d in 2024 to between 0.3 and 0.5 million boe/d by 2035.

To deliver scenario 1, the UK offshore energy sector needs to spend up to £350 billion between 2025 and 2035 across offshore wind, hydrogen, carbon TPS and oil and gas activities. The equivalent spending for scenarios 2 and 3 activities is £280 and £215 billion, respectively (figure 5).

Close to 60% of the UK offshore energy spending between 2024 and 2035 is forecast to be on offshore wind, c. 30% on oil and gas activities, with the remaining c. 10% on hydrogen and carbon capture activities.

Of the projected spend in the offshore energy sector between 2024 and 2035, RGU estimates that c. £110 billion is currently approved and/or already in operation. However, around 70% (£240 billion) in scenario 1, close to 60% (or £170 billion) in scenario 2, and c. 50% (or £105 billion) in scenario 3 are still subject to approval by operators and/or developers.

UK offshore energy spend (2025/35 estimated)

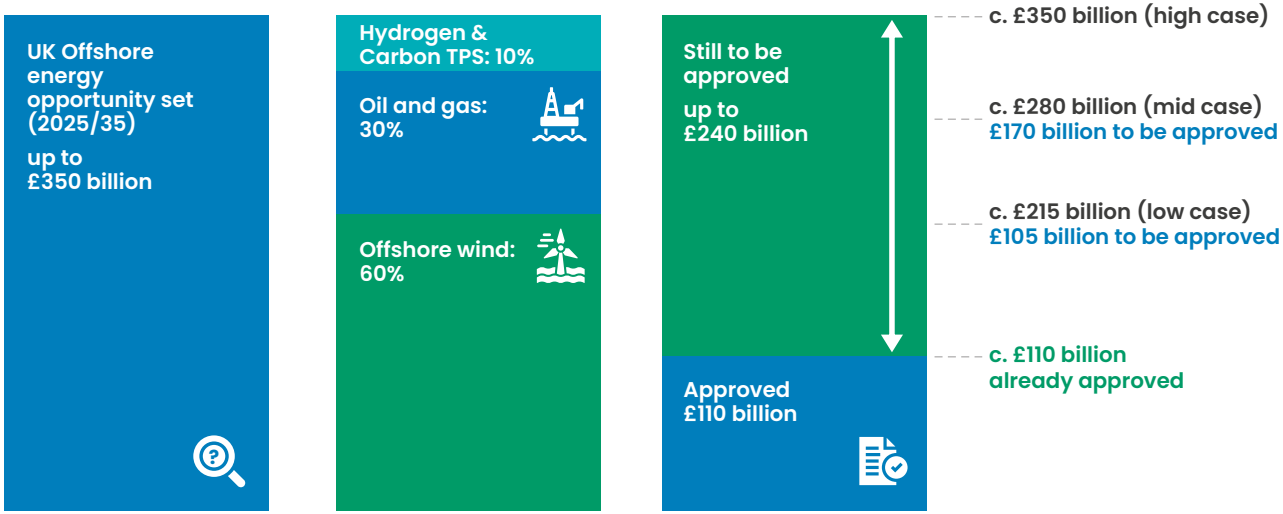


Figure 5

KEY FINDINGS

01 The power balance is shifting

THE DECLINE IN THE UK FOCUSED OIL AND GAS WORKFORCE DURING 2024 HAS BEEN OFFSET BY INCREASED OVERSEAS AND RENEWABLES ACTIVITIES

Despite a challenging business environment, the UK's overall offshore industry spend between 2023 and 2024 has remained in the £22-24 billion range. However, this masks underlying changes and inflationary pressures in specific sectors and spending areas. Reflecting ongoing activities, commitments, and uncertainties, capital, operating, and decommissioning expenditure in the UK oil and gas sector were sustained at over £5 billion, £8 billion, and £2 billion respectively[9].

From a UK offshore renewables perspective, industry capital spending increased by 15% from £6 billion to £7 billion between 2023 and 2024. With the offshore energy industry spending driving activity and workforce demand, the expenditure profile determines a new 2025 baseline workforce forecast for the UK offshore energy sector.

With the emergence of a new, more flexible, mobile, and sector-agnostic UK offshore energy workforce, the analysis highlights that the overall UK offshore energy workforce between 2023 and 2024 remained broadly flat at 154,000 roles.

However, building on the latest industry spend data and correcting for inflationary pressure, RGU forecast that the UK oil and gas workforce has declined by around 5,000 jobs, from c. 120,000 in 2023 to around 115,000 roles in 2024[10] (figure 6). RGU analysis assumes that of the 5,000 UK oil and gas jobs lost, c. 2,500 roles are associated with retirement and attrition (including people leaving for other sectors), with the remainder explained by a combination of people moving overseas, working on overseas activities from the UK, transferring to new renewables activities, and people being temporarily between roles.

With around 90% of the UK oil and gas workforce deployed in the supply chain, most of the workforce changes occurred in the service sector.

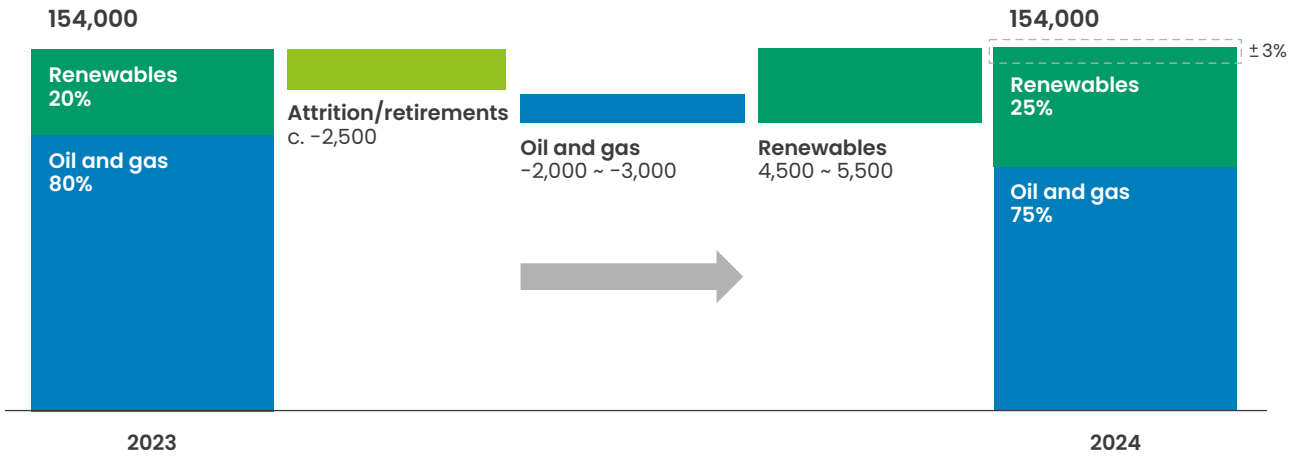
Looking forward and underscoring the ongoing challenges in the UK oil and gas sector, several companies[11] announced a restructuring, mergers, and/or other organisational changes. Recognising a typical 6–18-month lag time between announcing and completing organisational changes, the RGU analysis assumes that most of the job and supply chain impacts from the recent announcements and budget cuts will materialise during late 2025/early 2026.

With offshore wind spending increasing in the pre-construction and construction stages during 2024, RGU estimates that the renewables workforce increased from c. 34,000 in 2023 to close to 39,000 in 2024[12].

The 2025 refreshed RGU analysis also highlights that the balance between oil and gas and renewable roles shifted from approximately 80/20% in 2023 to around 75/25% in 2024. Approximately 55% of the workforce activities in the offshore energy industry are classified as opex activities, with the remaining c. 45% linked to capex and decommissioning-related activities.

[9] OEUK January 2025 spend data, NSTA March 2025 forecast.
[10] The analysis reflects a ±3% range around the new baseline number of 115,000.
[11] Including Apache, bp, Shell, Equinor, Repsol, NEO, Harbour Energy, Wood, Saipem and Subsea 7.
[12] With a ±10% range (reflecting some of the temporary and transient nature of the work programmes).

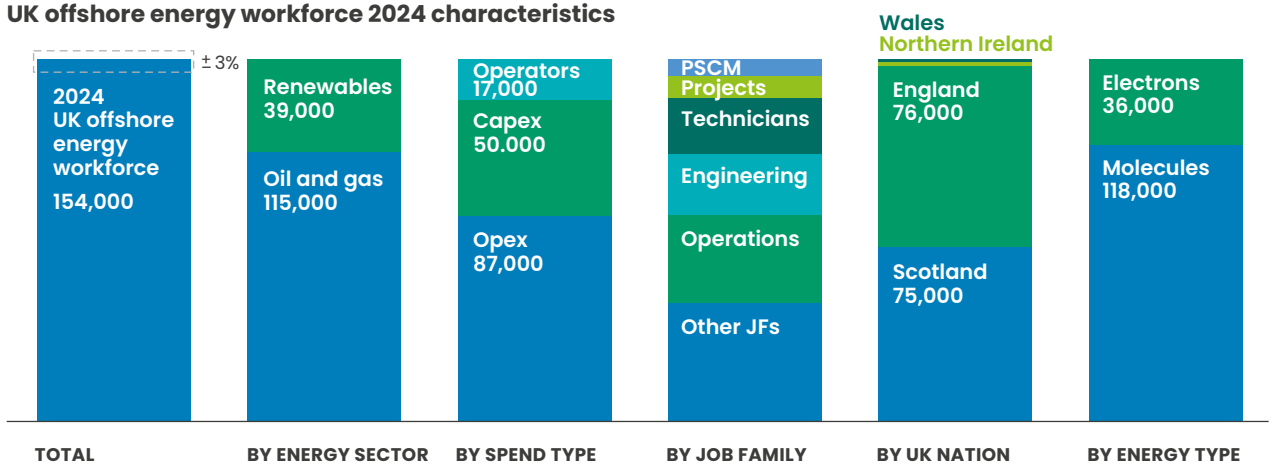
UK offshore energy workforce 2024



*Workforce: direct and indirect, FTE, numbers are rounded

Figure 6

UK offshore energy workforce 2024 characteristics



*Workforce: direct and indirect, FTE, numbers are rounded

Figure 7

The top five job families (operations, engineering, technicians, projects, and procurement and supply chain management (PSCM)) represent around 70% of all jobs in the UK offshore energy sector (figure 7).

Roughly half of the UK offshore energy workforce is based in Scotland, with the remainder in England and other UK nations. Close to 25% of the workforce is 'electron focused' (offshore wind), with the remainder focused on 'molecules' (oil, gas, CO_2, hydrogen). This is expected to be closer to 50/50% by 2030.

This analysis also includes updated technology and innovation assumptions, particularly around the potential impact of artificial intelligence (AI) on the UK offshore energy workforce. Although AI is expected to augment and increase workforce productivity, over time it will reduce and/or replace transactional and operational tasks. Building on recent reports[13] and RGU analysis, up to 28% of offshore energy tasks and activities are transactional or administrative. To reflect latest technological developments, the 2025 RGU workforce analysis now assumes that AI and associated technologies will displace up to 5% of transactional activities in the renewables sector by 2030 and up to 10% by 2035.

[13] McKinsey 2024, Department of Education 2024, Tony Blair Institute for Global Change 2024, PwC/DESNZ 2021

02 | Planning the plan requires coordinated action

WORKFORCE SUPPLY AND DEMAND WILL DETERMINE THE LEVEL OF RECRUITMENT AND RE-SKILLING REQUIRED

The North Sea's future success depends on a well-managed transition to a lower-carbon future, ensuring that a gap does not open at the expense of a just, fair, and orderly transition for communities, jobs, and a net-zero future.

The UK oil and gas production peaked in 1999/2000 at 4.5 million boe/d. The UK oil and gas sector has now experienced over a quarter of a century of decline, with 2024 production (1.09 million boe/d) down by almost 75% from its peak. Given the maturity of the basin, it will continue to decline over time. However, the nature and pace of this decline will be a result of political and fiscal choices, and associated investment appetite.

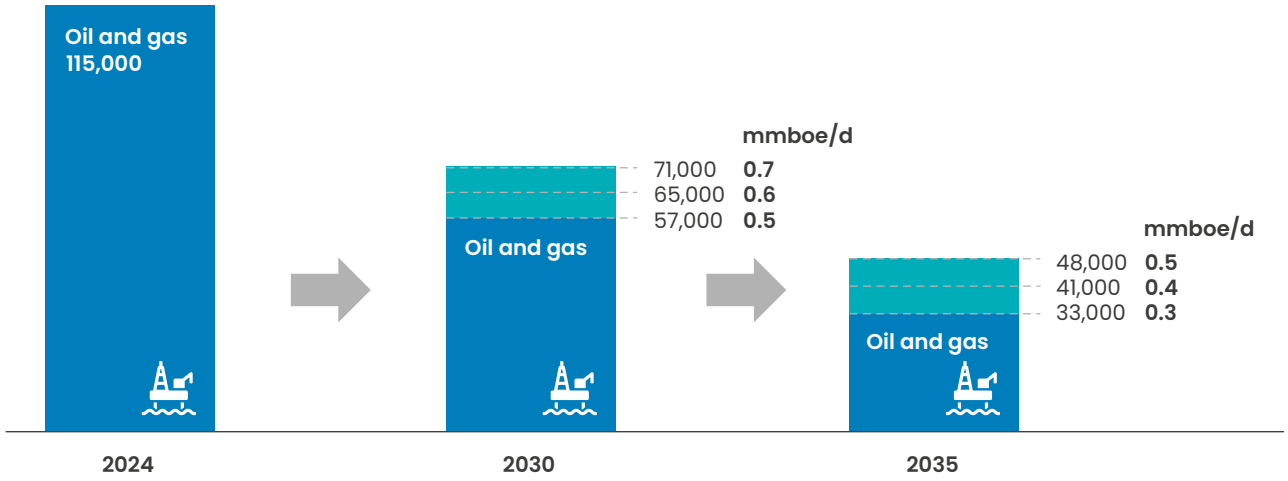
Based on current uncertainties, low investor confidence, and negative market sentiment, the RGU scenarios assume that UK oil and gas production will decline from 1.09 million boe/d in 2024 to between 0.5 and 0.7 million boe/d by 2030, and between 0.3 and 0.5 million boe/d by 2035.

Depending on which scenario will play out, the direct and indirect UK oil and gas workforce is expected to fall from 115,000 to between 57,000 and 71,000 by the early 2030s, with further declines to between 33,000 and 48,000 by 2035 (figure 8).

To put this in a wider UK and Scottish context, the UK's annual oil and gas workforce decline could be multiple times the number of jobs at risk associated with the closing and re-purposing of the Grangemouth oil refinery. It will be critical to prepare the workforce for the upcoming transition, and re-purpose the industry's capacity and capability accordingly.

To deliver the UK Government's plan for a clean power system by 2030, Britain needs to install some 35 GW of new offshore wind capacity by the end of this decade or close to 6 GW per year for the remainder of this decade.

UKCS oil and gas workforce



*UK content for all scenarios: Status quo *Workforce: direct and indirect, FTE, numbers are rounded

Figure 8

High case scenario 1 reflects the Government's Clean Power 2030 ambition and the requirement to triple current offshore wind capacity to c. 50 GW. Scenarios 2 and 3 reflect 40 GW and 30 GW of installed wind capacity by 2030. The three scenarios reflect installed wind capacity of between 50 and 90 GW by 2035.

Combined with targets for hydrogen (10-30 GW) and carbon TPS (30 -70 $MtCO_2$) by 2035, the offshore renewables workforce is forecast to increase from c. 39,000 in 2024 to between 84,000 and 153,000 by 2035.

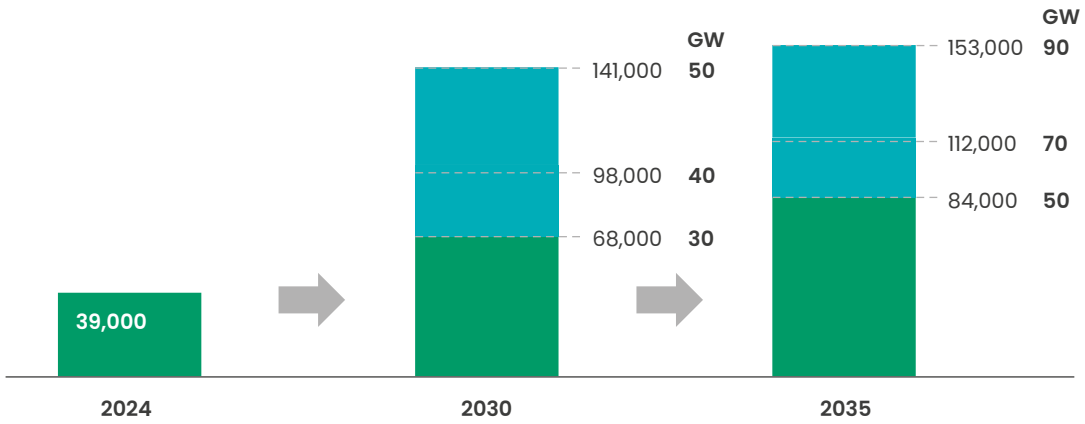
In addition to the three scenarios and reflecting global uncertainties, a further sensitivity analysis was carried out to assess the supply chain and workforce implications of a material delay to the UK's offshore energy transition. Assuming only 25 GW offshore wind, 2 GW hydrogen and 8 $MtCO_2$ carbon TPS can be operational by 2030, renewable jobs will reduce from c. 68,000 in scenario 3 to around 45,000 by 2030.

Mapping the journey between 2025 and early 2030s, the analysis highlights that ongoing attrition, people moving to overseas roles, people working on overseas activities from the UK, and retirement will reduce the existing UK offshore workforce supply by up to 19,000 people to around 135,000 over the period (figure 10).

At current investment, commitment, and business delivery projections, the likely 2030 UK offshore energy workforce demand is forecast to be betwee 125,000 and 163,000.

Although the workforce shape, make-up, skills requirements, and work location are projected to change significantly, scenarios 1 and 2 will require material recruitment and retraining to offset the attrition and meet 2030 requirements. However, scenario 3 will predominantly require ongoing re-deployment and retraining, rather than additional recruitment, to meet 2030 requirements.

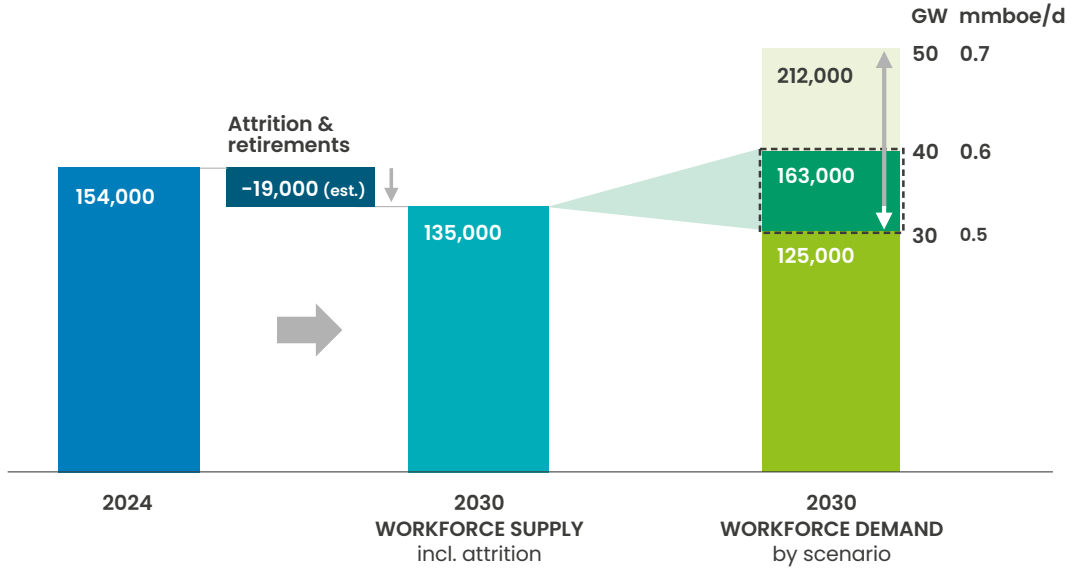
UK offshore energy renewables workforce



*UK content: Scenario 1 – OWSD, Scenario 2 – Selective growth, Scenario 3 – Status quo
*Workforce: direct and indirect, FTE, numbers are rounded

Figure 9

UK offshore energy workforce – supply, attrition and future demand (2025/30)



*UK content for all oil and gas scenarios: Status quo, UK content for renewables: Scenario 1 - OWSD, Scenario 2 - Selective growth, Scenario 3 - Status quo *Workforce: direct and indirect, FTE, numbers are rounded

Figure 10

03 The fairytale outcome is for us to shape

MANAGING THE *'GOLDILOCKS ZONE'* WILL BE KEY TO DELIVERING A JUST, FAIR, AND ORDERLY TRANSITION

With the UK oil and gas industry continuing to decline and the offshore renewables agenda accelerating, the future activity mix is projected to change materially. A new offshore energy workforce model is emerging, with jobs concentrated around key energy clusters and specific activities across the UK. There will be a more transient and flexible workforce, with an increased focus on capital activities and vocational work, and people typically moving from project to project across the country. The workforce operating facilities are assumed to be more constant, less transient, and clustered around operational centres.

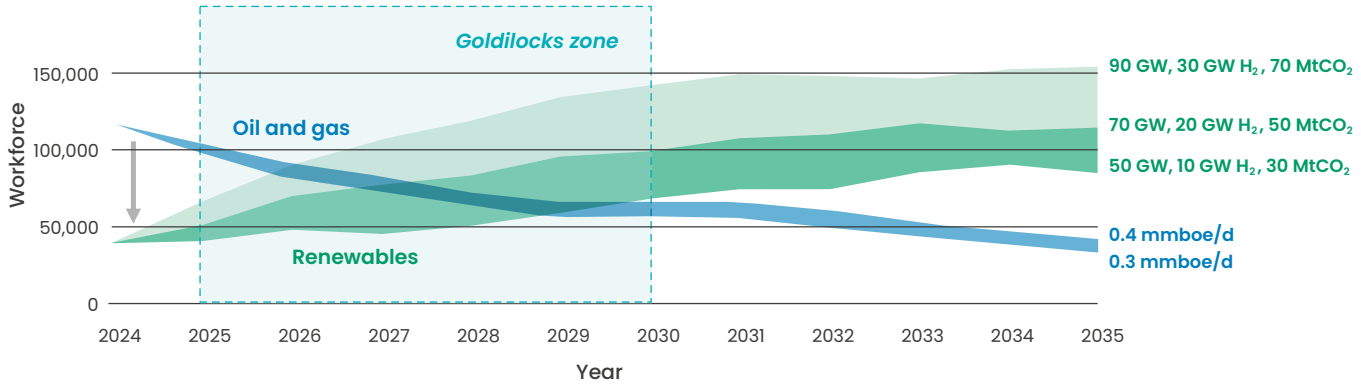
The analysis assumes a **'goldilocks zone'** during the late 2020s when the UK supply chain capacity and capability can be sustained and developed, and the transferability of the offshore energy workforce can be optimised. The **'goldilocks zone'** also assumes that workforce reductions in one sector are matched by increased activities in adjacent energy sectors.

Before 2027, there is likely to be limited capacity for the UK offshore renewables sector to host and accommodate the quantity of oil and gas workers becoming available on the jobs market due to the decline in the oil and gas industry.

Depending on the level of ambition realised, the UK offshore renewables workforce is expected to exceed the oil and gas workforce from the late 2020s onwards (figure 11).

Previous RGU analysis highlighted that over 90% of the UKCS oil and gas workforce have medium to high transferability to the offshore renewables sector, although there may be an ongoing need for targeted retraining or upskilling to bridge any gaps.

Projection of UKCS oil and gas and UK offshore renewables workforce



*Workforce: direct and indirect, FTE, numbers are rounded

Figure 11

In an accelerated transition, close to three out of five people in the offshore energy workforce are expected to support the renewables industry by the early 2030s, compared to one in four in 2024. With a slower transition, which falls short of the ambitions outlined by governments and industry, this ratio is likely to be closer to 50/50 by 2030. The analysis highlights that the UK offshore energy workforce impacts and transferability[14] will vary by scenario and job family (figure 12).

The analysis indicates that those working in UK-focused subsurface, drilling and offshore facilities management services and catering roles will be disproportionally impacted by the changing nature of the basin.

For those employed in offshore facilities management and catering roles, equivalent roles are available onshore. For those in the drilling and subsurface job families, there will be ongoing workforce demand in the UK and globally (including oil and gas, hydrogen storage, CCUS, and geothermal activities), but this will require people to work more flexibly and/or to move to where new opportunities arise.

The scenarios also assume that individuals will be able to transfer between adjacent energy sectors when their current job ceases to exist, subject to the appropriate training and accreditation. People can – and often will – transfer at any time.

UK offshore energy workforce impact by job family and scenario (2024/30)

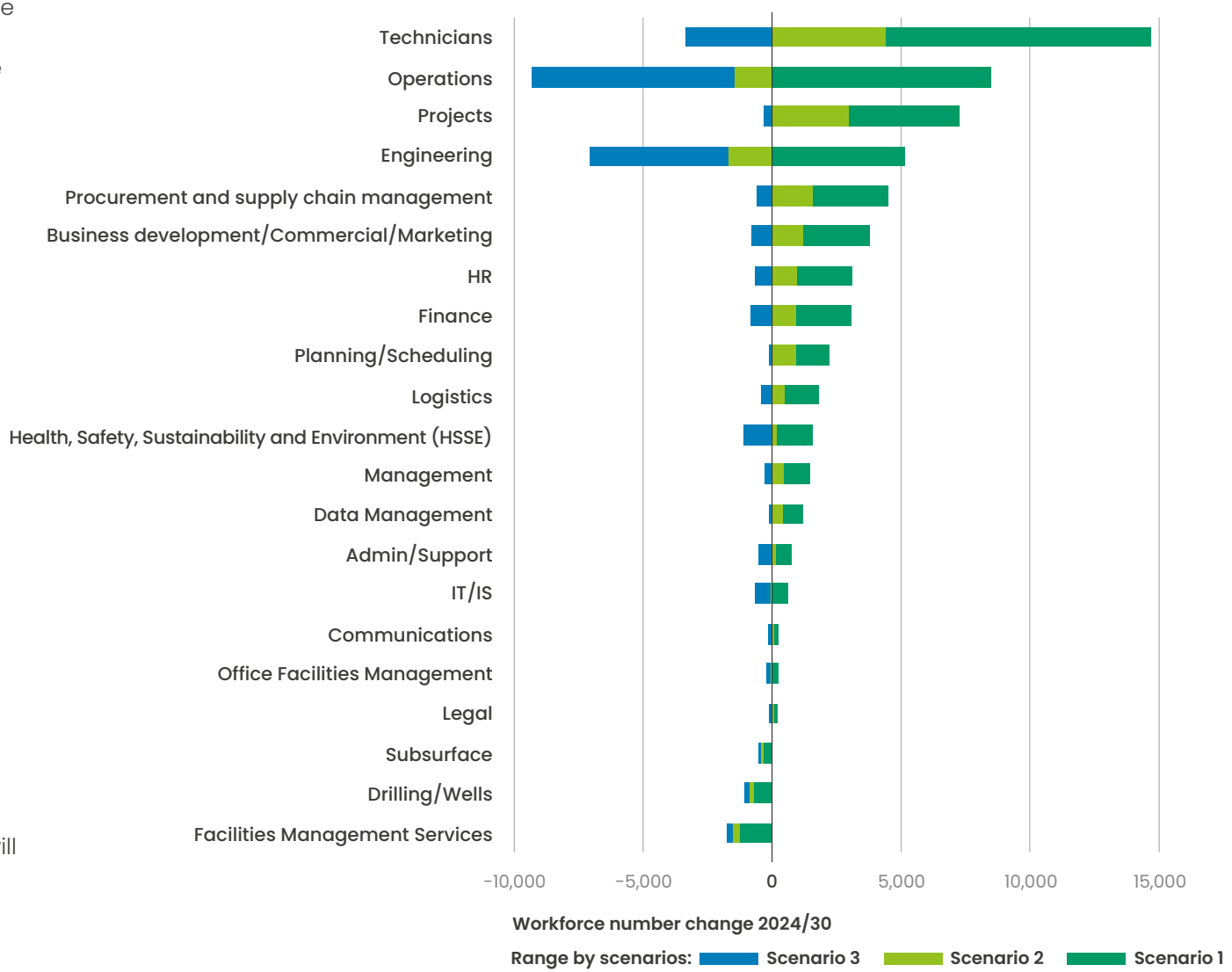


Figure 12

[14] For the purposes of this review, workforce transferability refers to people who change roles within the offshore energy sector and where their skills are either fully or partially transferable to the new roles (subject to any induction and training requirements). Transferability is subject to a job being available, similarity of work, similarity of skills, similarity of reward/terms & conditions, work location, and individual willingness for people to transfer

04 Securing jobs requires urgent investment

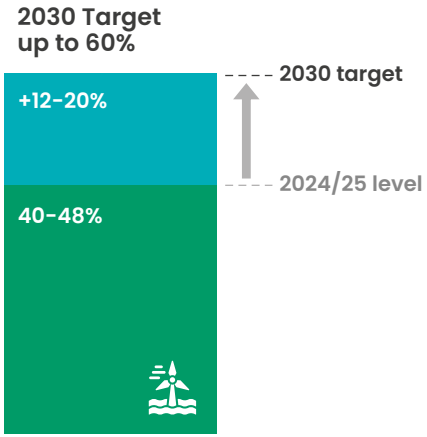
PROMOTING, DELIVERING, AND SECURING UK CONTENT BETWEEN 2025 AND 2030 WILL BE CRITICAL TO SUSTAIN A WORLD-CLASS OFFSHORE ENERGY SUPPLY CHAIN AND WORKFORCE

Since the publication of RGU's previous supply chain and workforce reports in 2023 and 2024, the geopolitical and UK landscapes have evolved significantly. The UK Government is now focusing on a growth-driven and re-industrialisation strategy, aimed at boosting domestic capabilities. This strategic shift is partly a response to increasing global uncertainties, including trade restrictions, tariffs, and geopolitical tensions that have disrupted and dislocated global supply chains.

The risk of tariffs and trade barriers has further amplified the need for the UK to strengthen its local supply chain and UK content, ensuring that critical renewable energy components such as wind turbine nacelles, blades, and storage systems are produced closer to home.

Industry[15] and RGU analysis highlights that the current level of UK content in renewables is typically around 25% for capital activities and up to 85% for operating activities (figure 13).

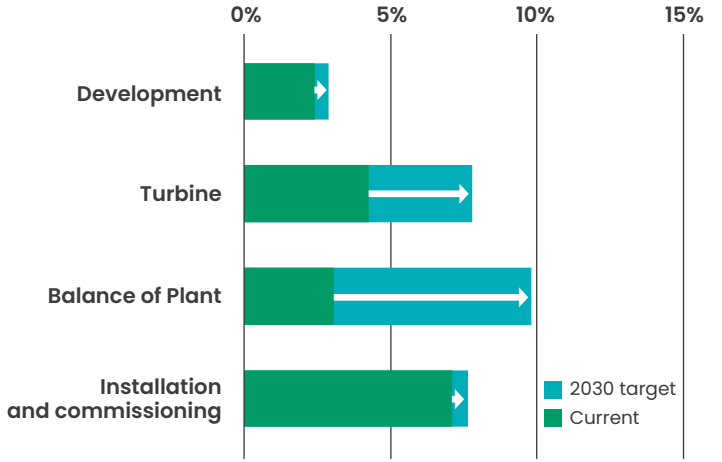
UK content - offshore wind
current and 2030 target



c. 25% for capital activities and up to 85% for operating activities. Combined total 40-48% UK content

Figure 13

Example UK offshore wind capex content
current and 2030 target



Typical % UK capex content

Source: BVG associate, company data, RGU analysis

[15] Offshore Renewables Catapult/BVG Associates/RenewableUK/OEUK: UK content is defined as the proportion of products or services provided or delivered in the UK by a domestic supply chain and a UK-based workforce rather than being imported.

The UK Government's plan to deliver a clean power system by 2030 will require a tripling of current offshore wind capacity. However, the scenarios to create a just, fair and orderly transition and to de-risk delivery depend on critical assumptions that are by no means certain.

For the UK to realise the future scenarios outlined in this report, the nation will need to manufacture more of its wind turbines and associated infrastructure, instead of importing most parts from overseas. UK local content policies must evolve to reflect this new reality, including:

- **Incentivising domestic production through policy support, tax incentives, and targeted subsidies**
- **Encouraging developers to consolidate demand and source components from UK-based suppliers**
- **Establishing long-term agreements with local manufacturers to stabilise demand.**

By capitalising on these changes, the UK can enhance its sovereign supply chain capacity and increase UK capex content for new offshore wind projects up to 40% and oil and gas decommissioning activities up to 50% by 2030. To ensure that contracts are being placed in the UK, a significant element of this new capacity needs to be developed now, ahead of final investment decisions.

Based on current public commitments and announcements, the UK should be able to deliver the scenario 3 outcomes. Without intervention, however, it is likely to fall short of delivering the outcomes outlined in either scenario 1 or 2. This means that without intervention, the UK offshore energy workforce will remain in the 125,000-163,000 range for the remainder of this decade.

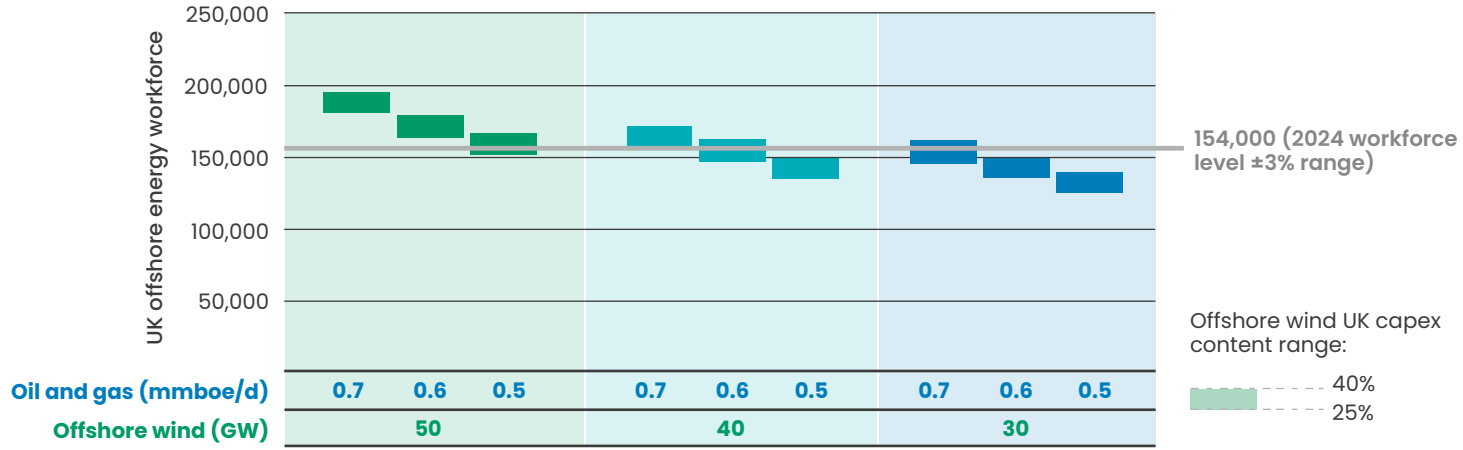
RGU analysis also highlights that each additional 10% of UK capex content for the offshore wind sector is estimated to yield between 7,000 and 12,500 jobs by 2030.

Given the limited scale of UK hydrogen and carbon TPS activities during the 2020s, the analysis assumes that UK content for these activities will likely be similar to that of the oil and gas industry.

UK content contribution will also be critical to ensure a just, fair, and orderly transition for the UK's world-class offshore energy workforce and supply chain. Figure 14 highlights that to maintain the offshore energy workforce at the 2024 level, the UK as a minimum has to deliver close to 40 GW of installed offshore wind, up to 40% UK capex content, and around 0.6 million boe/d of oil and gas production by 2030.

If the UK is unable to meet its offshore wind and UK content ambitions by 2030, it faces a critical challenge in maintaining its offshore energy supply chain capacity, workforce capabilities, and broader energy ecosystem. In this scenario, decision-makers have the option to bridge the gap by advancing other activities, including selectively supporting the oil and gas sector. This interim approach could help sustain the existing infrastructure, workforce, and industrial capabilities until the renewables sector, along with its associated ecosystem, reaches the necessary scale and maturity to support long-term energy security and economic stability.

Activity levels required by 2030 to sustain the workforce at 2024 level (or better)



*Hydrogen 2.5 GW and Carbon TPS 10 $MtCO_2$
*Oil and gas, Hydrogen, Carbon TPS UK capex content: Status quo 25-30%
*All energy UK opex content: 80-85%
*Workforce: direct and indirect, FTE, numbers are rounded

Figure 14

05 | Sustaining Scotland as an energy powerhouse requires hard choices

WITHOUT INTERVENTION, SCOTLAND'S SUPPLY CHAIN AND WORKFORCE WILL BE IMPACTED DISPROPORTIONATELY

Building on RGU's 2024 analysis, nearly 1 in 30 of Scotland's working population is currently employed in or supports the offshore energy industry, compared to a UK-wide figure of approximately 1 in 220. The concentration is even higher in the North-East of Scotland, where close to 1 in 6 workers are engaged directly or indirectly in offshore energy, and this figure rises to nearly 1 in 4 when including induced jobs.

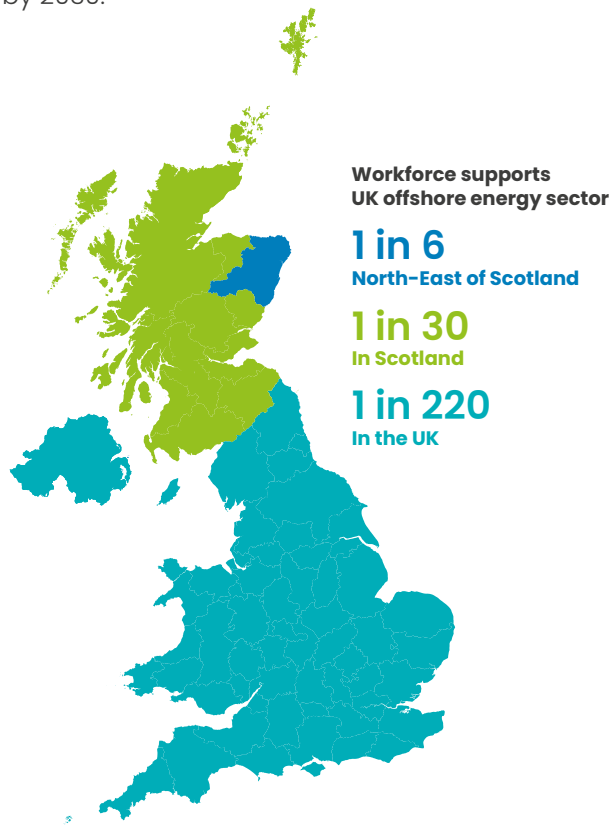
The 2025 analysis further reveals that c. 75% of the UK offshore energy workforce is currently engaged in the oil and gas sector, with the remaining 25% supporting renewables. Given the North-East of Scotland's role as the operational hub for the transitioning UK oil and gas industry, the workforce distribution in Scotland is more heavily weighted towards oil and gas and operational activities compared to other regions in the UK.

As Scotland transitions towards a new energy future, there will be a shift from operational to capital-intensive activities, primarily involving the development of wind farms, hydrogen infrastructure, and CCUS facilities. The UK has identified six industrial clusters to support this transition, with only one located in Scotland. This suggests that over time, a portion of the workforce from the North-East of Scotland may need to relocate – or work remotely from Scotland – to support these clusters, necessitating a more flexible, transient, and capital project-oriented workforce.

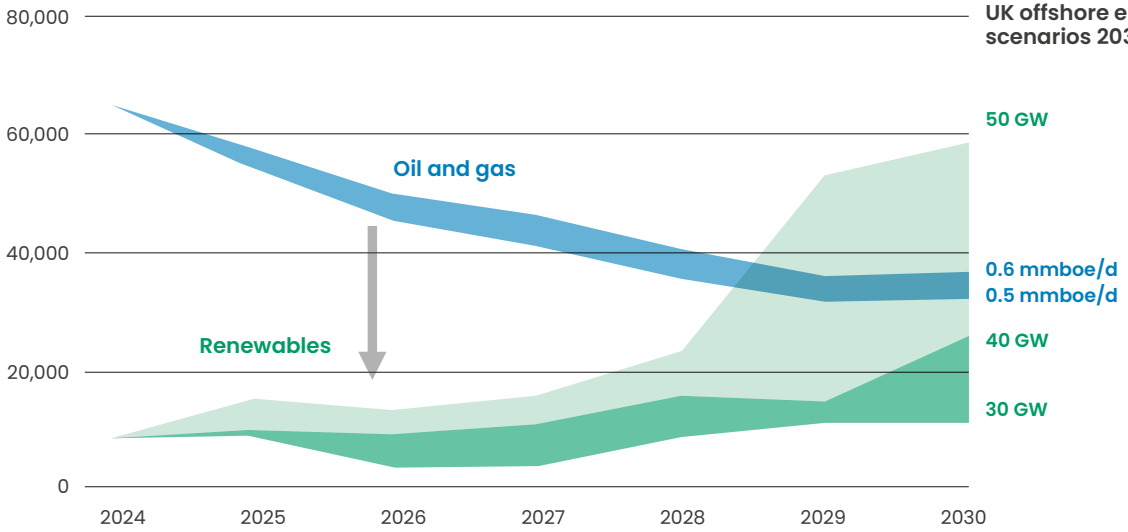
With over 80% of the UK offshore wind and cluster projects in construction/installation (by GW) between 2025 and 2030 forecast to be outside Scotland, sustaining other energy related activities will be critical to ensure Scotland can retain its supply chain capacity and jobs before ScotWind, INTOG and other activities come online in the early 2030s (figure 15).

Therefore, the potential risks for Scotland's supply chain and workforce are substantial. If Scotland fails to capture the full range of offshore energy opportunities and oil and gas decline continues to accelerate, the Scottish-based offshore energy workforce could decrease from c. 75,000 in 2024 to between 45,000 and 63,000 by 2030.

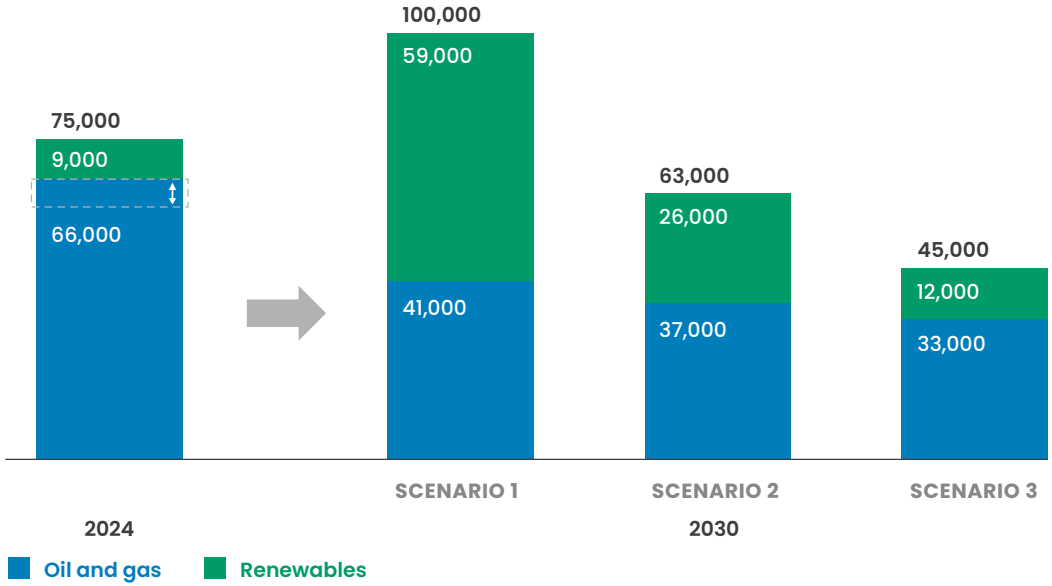
Scottish-based oil and gas jobs represent most of this decline, with jobs forecast to decline from c. 66,000 in 2024 to between 33,000 and 37,000 by 2030.



Scotland based oil, gas and renewables workforce scenarios (2025/30)



Scotland offshore energy sector workforce (2025/30)



*Workforce: direct and indirect, FTE, numbers are rounded

Figure 15

Although a wide range of new energy and infrastructure activities are planned across Scotland[14], the degree of UK offshore energy supply chain overlap with the onshore energy sector is estimated to be lower than 40%[15], thereby limiting the supply chain transferability between the offshore and onshore energy sectors.

If Scotland is unable to scale up local content or to capture a significant share of future renewables activities, selective oil and gas activities may need to be sustained over the remainder of this decade to meet the specific objectives of retaining key skills and capabilities. This will also ensure a just, fair and orderly transition for the Scottish-based offshore energy workforce, skills, and supply chain, and sustain the economic contribution from the offshore energy sector.

[14] Energy Statistics for Scotland (2024) identified over 900 energy projects across Scotland, with an estimated capacity of 65GW. Of these, 640 were renewable electricity generation projects with an estimated capacity of c. 37 GW (c. 16 GW offshore wind, and c. 15 GW onshore wind). Over 260 projects were associated with c. 28 GW of electricity storage (c. 21 GW battery storage)

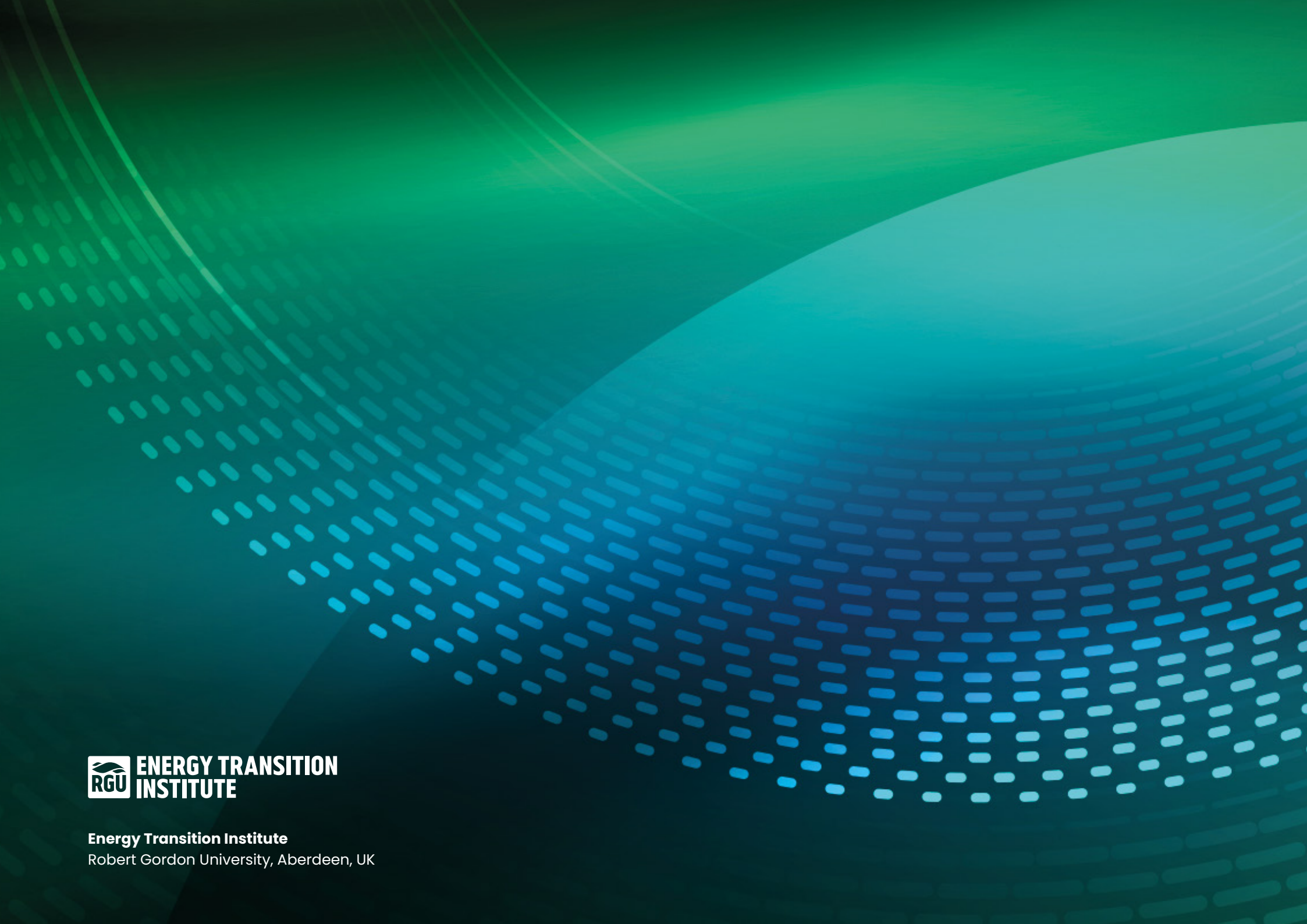
[15] Compared to c. 80% supply chain transferability for CCUS/blue hydrogen and c. 60% transferability for offshore wind (OEUK/Rystad 2024) Onshore work has limited transferability, as around 60% of it involves equipment and installation, such as turbine and blade manufacturing (DESNZ/UK parliament – Renewable energy: Costs 2024)

Acknowledgement

RGU would like to take the opportunity to thank all organisations and individuals who have contributed to this report. Their input is appreciated and – where possible – the comments and information received are reflected in this report.

Disclaimer

In the preparation of this report ("Report"), Robert Gordon University ("RGU") has used the information provided by companies, individuals and a wide range of other sources (including web research, public-domain information sources, survey data and RGU's own internal sources) ("Information") to build the knowledge and to enable the delivery of the Report. This Report is based solely on the Information and is not intended to be a comprehensive review of all potentially relevant issues relating to its subject matter. It is intended to draw attention to those issues which – in RGU's absolute discretion – are material to the Report. While this Report has been prepared in good faith, and RGU has utilised reasonable care to validate the data presented in the Report, neither RGU nor any of RGU subsidiaries or holding companies, partners, officers, employees, consultants, agents or other representatives, provide any representations, warranties, assurances or undertakings, expressed or implied, as to the adequacy, authenticity, accuracy, completeness or reasonableness of the Information, data or opinions that third parties or secondary sources provided to RGU. All and any such responsibility and liability are expressly disclaimed. RGU shall not be liable for any losses, damages, costs or other consequences arising out of or in connection with this Report, including without limitation any recommendations, views or opinions that are expressed therein. The information contained in the Report is based on subjective estimates and assumptions. No representation, warranty, assurance or undertaking is given by RGU as to the reasonableness or achievement of any projected results, estimates or prospects that will be attained in the ever-changing dynamic market environment.



Energy Transition Institute
Robert Gordon University, Aberdeen, UK