



UK OFFSHORE ENERGY WORKFORCE TRANSFERABILITY REVIEW

Robert Gordon University

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Executive Summary

The combination of COVID-19, the energy transition, technology & innovation and changing industry dynamics is fundamentally re-shaping the future of the UK's energy sector. With the UK's track record as a world class basin for oil, gas and offshore wind and with ambitious targets to turn the UK into an offshore powerhouse, there is significant scope to create a new, leading net zero energy basin.

With over £170 billion projected to be invested on capital and operating activities in the UK offshore energy sector between 2021 and 2030 (including on oil and gas, offshore wind, carbon capture utilisation and storage (CCUS) and hydrogen), there will be many new opportunities for the UK offshore energy workforce.

The Robert Gordon University (RGU) UK Offshore Energy Workforce Transferability Review highlights that around 200,000 skilled people are projected to be required in the UK offshore energy industry to ensure delivery in 2030.

The review also envisages that the offshore energy workforce mix is expected to change significantly, with jobs in the offshore renewables sector increasing from 20% of the sector's roles in 2021 to c. 65% by 2030.

Key findings of the review are:

Workforce transferability

- Over **90%** of the UK's oil and gas workforce have medium to high skills transferability and are well positioned to work in adjacent energy sectors
- Around **80%** of the jobs in 2030 are envisaged to be in nine key job families - Operations, Technicians, Engineering, Projects, Commercial/Business development/Marketing, Procurement/ Supply chain management, Finance, HR and Health, Safety, Sustainability and Environment (HSSE)

- Soft skills and other non-technical skills are generally highly transferable to adjacent energy sectors
- Around **100,000** (c. 50%) of the jobs in 2030 are projected to be filled by people transferring from existing oil and gas jobs to offshore renewable roles, new graduates and new recruitment from outside the existing UK offshore energy sector
- With the increased energy system localisation and the emergence of integrated regional energy clusters, it is projected that the offshore energy workforce will become increasingly regionalised

2030 Workforce

- Around **200,000** people are likely to be required in 2030 to support activities in the UK offshore energy sector, including offshore wind, hydrogen, CCUS activities and oil and gas. This compares to around **160,000** people directly and indirectly employed in the UK offshore energy sector in 2021
- The offshore energy workforce mix is expected to change with over **65%** of the workforce by 2030 projected to support low carbon energy activities
- Of the **c. 200,000** people projected to be directly and indirectly employed in the UK offshore energy sector by 2030. **c. 90,000** (c. 45%) are projected to support offshore wind, **c. 70,000** (c. 35%) oil and gas, and **c. 40,000** (c. 20%) other offshore related energy projects and clusters



Action and delivery is key

- The prize of delivering the targets identified for offshore wind, oil and gas, hydrogen and CCUS by 2030 are material for the UK offshore energy workforce

This review indicates that the impact of reduced ambition, combined with lower activity level and accelerated decline in the oil and gas industry could reduce the offshore energy workforce requirements to fewer than **140,000** jobs by 2030

- It is key that UK and devolved governments work together with the offshore energy sector to ensure the managed transition of skills and experience in a way that protects and sustains key UK energy jobs
- The review also identifies the significant role the Higher Education sector can play to upskill and reskill the offshore energy workforce

With the overall number of jobs in the UK oil and gas industry projected to decline over time, the degree of transferability of jobs to adjacent energy sectors such as offshore wind, CCUS, hydrogen or other industrial sectors will be key to ensure the UK retains its world class skills and capabilities.

With many of the skills and competencies required for the offshore energy sector to be highly interchangeable, the energy transition offers a unique opportunity to create a new world class net zero energy workforce.

To assess the workforce impact for different scenarios a new, dynamic workforce transferability model was developed. The model provides insight on future workforce requirements, workforce movement by job family between adjacent energy sectors, and how to ensure a just and fair transition. The model can also provide real-time insights on the job and transferability impact of specific investment or policy decisions.



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The net zero basin

The future of the UK's energy sector is being fundamentally re-shaped through a combination of COVID-19, the energy transition, technology & innovation and changing industry dynamics. By building on the UK's track record as a world class basin for oil, gas and offshore wind, there is significant scope to create a new, leading net zero energy basin and turn the UK into an offshore powerhouse.

As evidenced in the [Offshore Wind: Sector deal](#) (2019), the [Offshore Wind Skills Intelligence Report](#) (March 2021), the [North Sea Transition Deal](#) (March 2021), in the '[Reimagining a Net Zero North Sea: an integrated energy vision for 2050](#)' (OGTC/Offshore Renewable Energy Catapult – November 2020) and other reports, there is a material prize for the UK to transform its offshore energy system and for the basin to play a key role in delivering UK net zero by 2050 (2045 in Scotland).

It is estimated that over £170 billion will be invested on capital and operating activities in the UK offshore energy sector between 2021 and 2030 (including on oil and gas, offshore wind, CCUS and hydrogen). With activity driving investment and investment driving demand for people, future jobs will be closely correlated to activity in the basin. Delivering a net zero UK offshore energy basin will create many opportunities for the energy supply chain. It will also protect and create new, highly skilled jobs in the sectors.

For the purpose of this review, the offshore energy industry comprises oil and gas, offshore wind, CCUS, offshore hydrogen¹ and associated onshore support activities.

¹ Including blue hydrogen and offshore/near shore green hydrogen

Oil and gas journey to net zero

As per the assumptions of the Committee on Climate Change (CCC) – [The Sixth Carbon Budget; The UK's path to Net Zero](#) (December - 2020), oil and gas will continue to play a key part in the UK energy mix, particularly in the near and medium term. Aligned to the CCC report, the [North Sea Transition Deal](#) and the [OGUK Pathway to a Net Zero Basin: Production Emissions Targets 2020](#) report, UKCS oil and gas production is projected to decline from around 1.6 million barrels of oil equivalent (mmboe per day) in 2020 to around 1 mmboe per day by 2030.

The industry is already committed to reducing operational emissions by 50% by 2030 (versus 2018 baseline), which will be delivered by a combination of lower production levels, reduced flaring/venting, and electrification of offshore platforms. The additional activity required to reduce operational emissions is included in the review.

In terms of decommissioning, the review assumes a continuous decommissioning programme, with decommissioning spend up to £1.5 billion per year ([Decommissioning Insights report](#) November 2020). For the purpose of this review, it is assumed that up to 10 offshore facilities will be decommissioned annually between 2021-2030.

It is also assumed that c. 50% of oil and gas related capital activity and up to 90% of the operating activity will be executed by a UK based workforce.

Offshore wind is powering up

With the ambition to increase installed capacity from 11 GW in 2021 to 40 GW by 2030, the UK is on track to become a leading offshore wind basin. To deliver this additional capacity, it will require the installation of over 2,500 new offshore wind turbines by the end of the decade. To do this, it will require the installation of one new wind turbine on average every weekday for nine years. The review assumes that turbine maximum output will increase from c. 12 MW/turbine in 2020 to 15 MW/turbine by 2030.

The investment in offshore wind between 2021-2030 is estimated to be over £70 billion, which is projected to create over 60,000 new jobs across the UK (Offshore Wind: Sector deal (2019); the Offshore Wind Skills Intelligence Report (March 2021); RGU analysis).

For the purpose of this review it is assumed that any capital activity (e.g. site preparation, equipment manufacturing, installation and commissioning) will be a continuous work programme, with crews moving between projects. Although the analysis assumes a degree of parallel activity, the overall jobs included are based on sustainable activities associated with installing up to 4GW of new offshore wind capacity per year between 2021 and 2030 (yielding up to 30GW of additional capacity by 2030).

Given the number of turbines and associated infrastructure to be installed, the review assumes annual efficiency and technology improvements, thereby reducing the number of people required over time. The analysis assumes a planning and consenting phase, a development and installation phase and an operations phase, with only a proportion of the projects in the planning and consenting phase actually being progressed.

For the purpose of this review, it is assumed that up to 40% of offshore wind related capex and up to 80% of offshore wind related opex activity will be executed by a UK-based workforce.

CCUS, hydrogen and regional clusters are bridging the gap

The UK Government's 10-Point plan (November 2020) assumes CCUS capacity to increase from <0.5 MtCO₂ in 2020, to 10 MtCO₂ by 2030. For the purpose of this review, it is assumed that two CCUS pilot projects will be on stream by 2025 and three commercial projects by 2030 (OGA 2020).

A similar increase is forecast for low carbon hydrogen production, increasing from <0.5 GW in 2020, to 5 GW by 2030. For the purpose of this review it is assumed that two blue hydrogen pilot projects will be on stream by 2025 and three commercial projects by 2030.

Similar to offshore wind, it is assumed that any CCUS, hydrogen or cluster capital activity (e.g. site preparation, equipment manufacturing, installation and commissioning) will be a continuous, sustainable work programme, with crews moving between projects.

For the purpose of this review, it is assumed that up to 60% of CCUS and hydrogen related capital and operating activities will be executed by a UK-based workforce.

Offshore wind is powering up



Key findings

Building on the ambitions and commitments outlined by industry and governments, this review provides additional insights on the Workforce Transferability of the UK offshore energy workforce to adjacent energy sectors.

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).

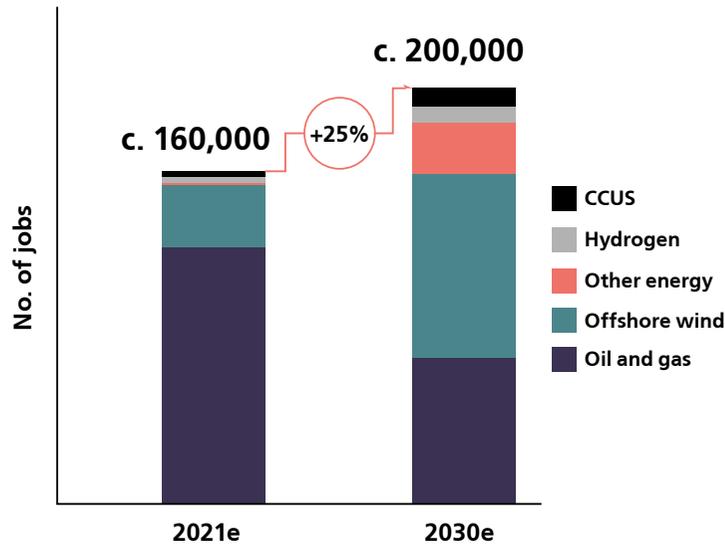
For workforce transferability to be applicable, the skills need to be required, the jobs need to be available and there needs to be sufficient financial incentive to move between the adjacent energy sectors.



Key findings

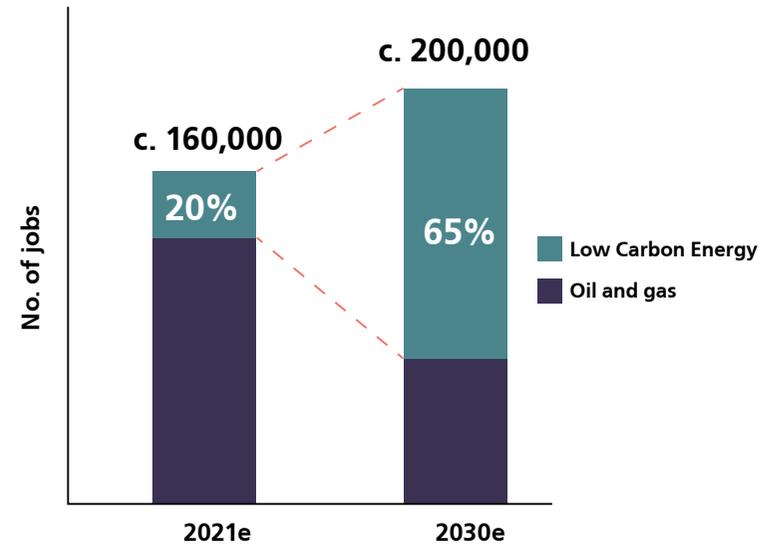
Projected UK offshore energy workforce demand in 2030

UK offshore energy workforce
2021 - 2030*



* Direct and indirect jobs

Increase of low carbon UK offshore
energy workforce by 2030

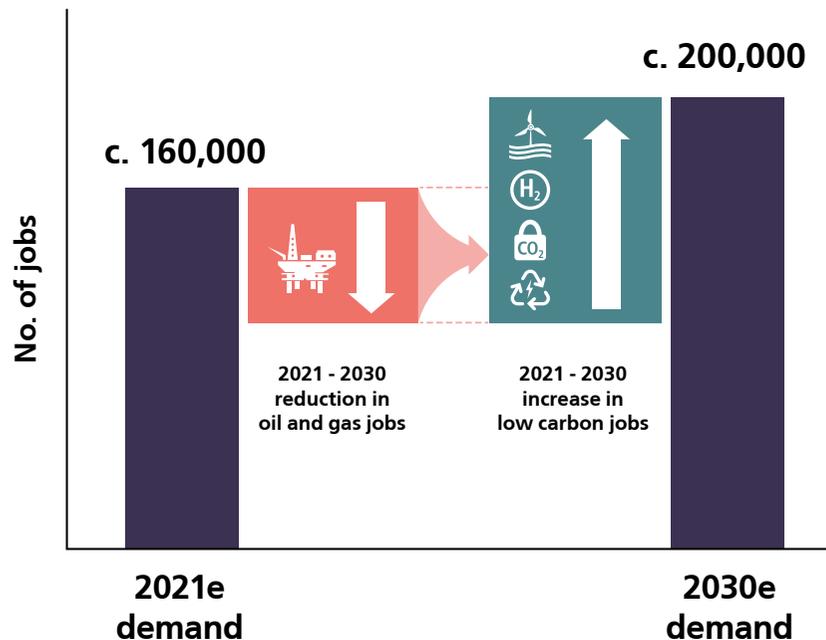


- Projected £170+ billion investment on capital and operating activities in the UK offshore energy sector between 2021-2030
- Around 200,000 people are forecast to be required in 2030 to underpin the developing offshore wind, hydrogen, CCUS as well as the vital ongoing oil and gas activities in the UK offshore energy sector. c. 70,000 (c. 35%) are expected to support oil and gas, c. 90,000 (c. 45%) offshore wind and c. 40,000 (c. 20%) other offshore-related energy projects and clusters including CCUS and hydrogen
- This compares to around 160,000 people directly and indirectly employed in the UK offshore energy sector in 2021
- The offshore energy workforce mix is expected to change with over 65% of the workforce by 2030 anticipated to support low carbon energy activities

Key findings

Projected UK offshore energy workforce transferability

UK offshore energy jobs

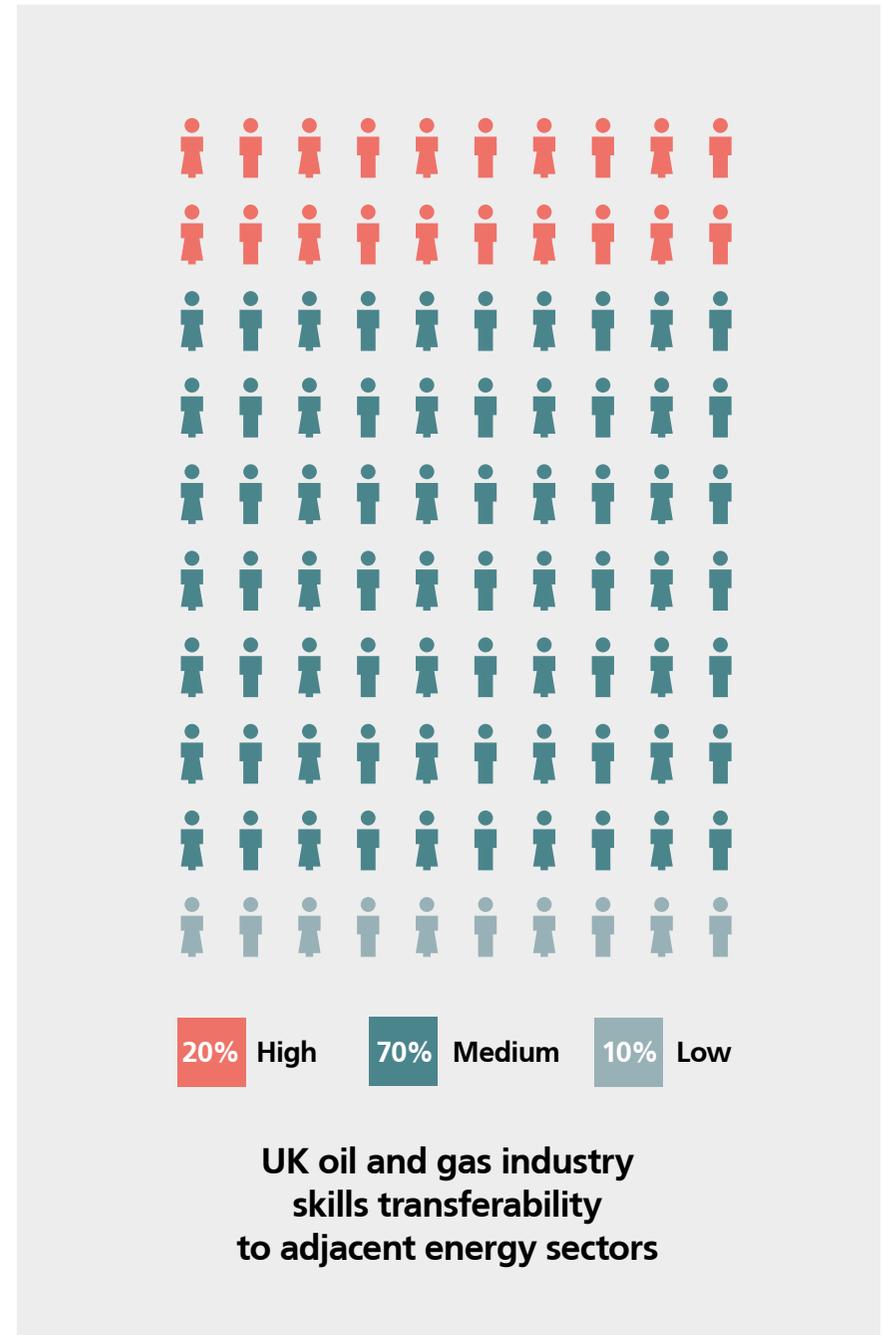


- Number of new direct and indirect jobs in the low carbon offshore energy sector are projected to increase by c. 100,000 between 2021 and 2030, offsetting the projected decline in oil and gas jobs over the same period
- Opportunity to fill the jobs in the new low carbon offshore energy sector through:
 - The transfer of jobs from the oil and gas industry
 - New graduate and vocational recruitment
 - Recruitment from outside the existing UK offshore energy sector
- The job transition will require close coordination and support, in particular over the periods when workforce supply is anticipated to exceed demand
- Successful transition will underpin the 'just transition' agenda and will retain high skilled UK jobs

Key findings

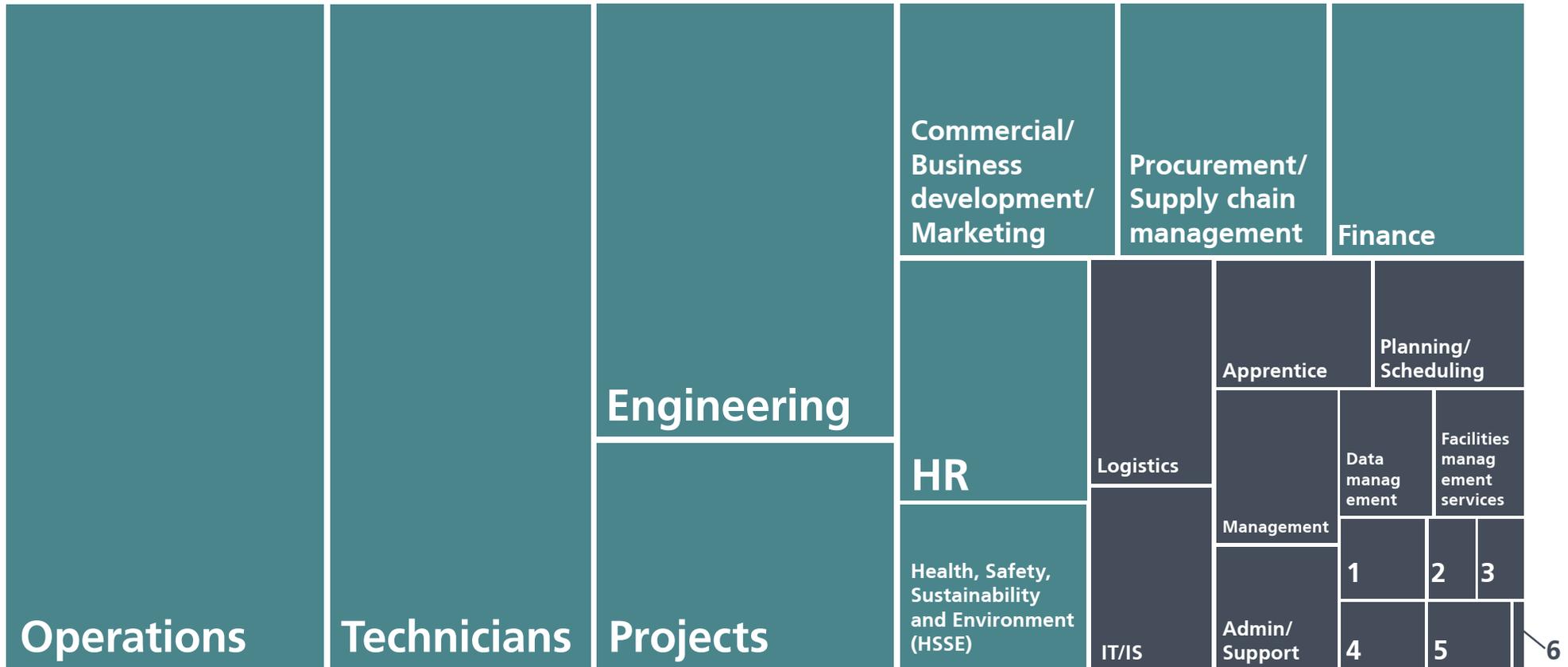
UK offshore energy workforce skills transferability

- Over 90% of the UK's oil and gas workforce have medium to high skills transferability
- Soft skills, business skills and other non-technical skills are generally highly transferable to adjacent energy sectors
- Transition training and upskilling will be required to enable the creation of a UK offshore energy workforce
- Around 80% of the UK offshore energy jobs in 2030 are likely to be in nine key job families
 - Operations, Technicians, Engineering, Projects, Commercial/Business development/ Marketing, Procurement/Supply chain management, Finance, HR and HSSE
- With the increased energy system localisation and the emergence of integrated regional energy clusters, it is projected that the offshore energy workforce and skills requirements will become increasingly regionalised



Key findings

Around 80% of the UK offshore energy jobs in 2030 are projected to be in nine key job families



Total projected 2030 offshore energy workforce split by key job families. Size of the box represents the projected numbers of people in the job family

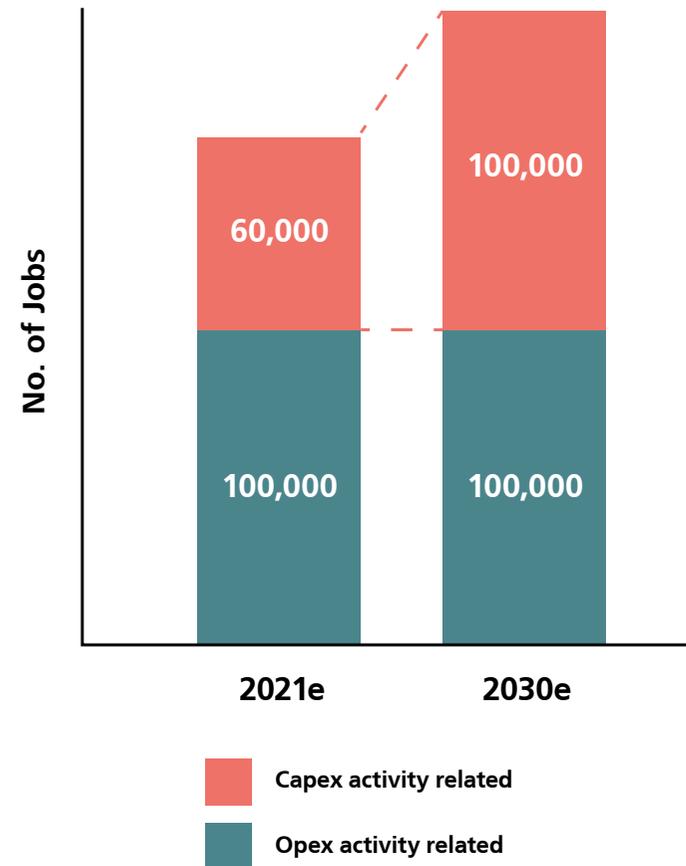
- 1. Drilling/Wells
- 2. Office facilities management
- 3. Communications
- 4. Legal
- 5. Subsurface
- 6. Decommissioning

Key findings

Projected UK offshore energy workforce activities

- In 2021 it is estimated that c. 60,000 (c. 37%) of people are associated with capital expenditure and around 100,000 (c. 63%) with operating expenditure workforce
- In 2030 and with a shift towards offshore wind, CCUS and hydrogen related capital activities, this is projected to be around 100,000 (c. 50%) and 100,000 (c. 50%) respectively
- Continued investment is required to protect and sustain jobs
- Local content and exports are key underpinnings for future jobs

Projected UK offshore energy activities by capex and opex



Key findings

Action and delivery is key

Scenarios considered

Recognising uncertainties and industry dynamics, a range of energy scenarios for 2030 and associated workforce implications were analysed (see figure 1). The scenarios reflect the ambitions set by the UK Government, the devolved Governments, the Committee on Climate Change, the industry sector/transition deals and other industry commitments. With increased energy convergence and system integration, the review also assumed that up to 15% of the workforce (up to 25,000 people) will be involved with other net zero offshore energy related activities, such as wave and tidal, energy storage, energy integration, net zero technology development, exports and other activities connecting the UK offshore energy sector to the wider UK and global energy systems.

To assess the workforce impact for each of the scenarios, a new dynamic workforce transferability model was developed. The model provides insight on workforce movement by job family between adjacent energy sectors and on how to ensure a just and fair transition. The model can also provide real-time insights on the job and transferability impact of specific investment or policy decisions.

Offshore energy	Scenarios by 2030		
	Low case	Base case	High case
 Oil & Gas	7% decline*	5% decline*	3% decline*
 Offshore Wind	30 GW	40 GW	40 GW
 Hydrogen	4 GW	5 GW	6 GW
 CCUS	10 MtCO ₂	10 MtCO ₂	22 MtCO ₂
 Other Energy	5,000 people	25,000 people	25,000 people
Projected workforce in 2030	c.140,000	c.200,000	c.220,000

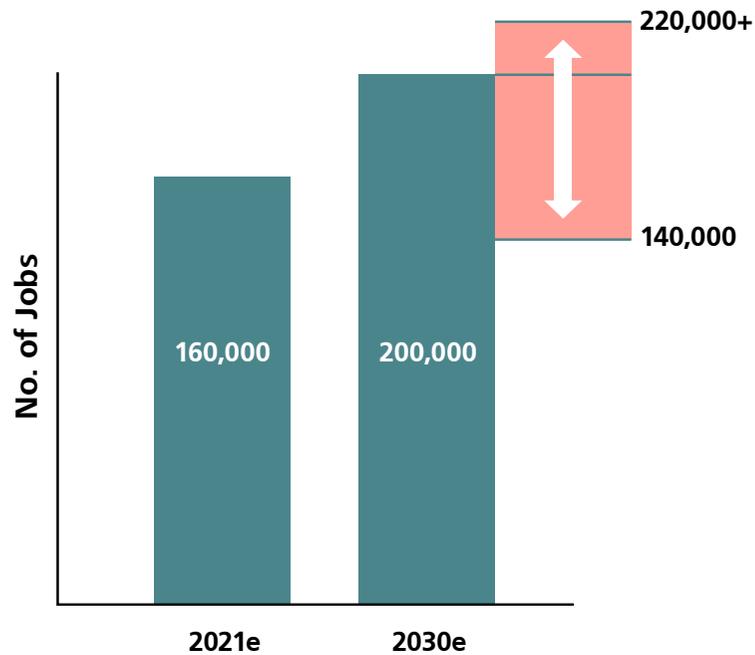
* average annual production decline between 2021 – 2030

figure 1 - Low, base and high scenarios by 2030

Key findings

Action and delivery is key

Impact of scenarios on UK offshore energy workforce



- The Workforce Transferability Review identifies a material prize for c. 200,000 UK offshore energy jobs in 2030
- Co-ordinated action will be required to deliver the offshore energy ambitions and increase activities further
- Scenario analysis indicates a range of between 140,000 and 220,000+ jobs, depending on delivery
- Critical role for Governments and industry to manage the transition of skills and experience in a way that protects, sustains and grows UK offshore energy jobs

Next steps

With the overall number of jobs in the UK oil and gas industry projected to decline over time, the degree of transferability of jobs to adjacent energy sectors such as offshore wind, carbon capture and storage, hydrogen or other industrial sectors will be key to ensure the UK retains its world class skills and capabilities.

With many of the skills and competencies required for the offshore energy sector to be highly interchangeable, the energy transition offers a unique opportunity to create a new world class net zero energy workforce.

This review highlights the material prize for the UK. Successful delivery of the UK and Scottish energy transition ambitions has the opportunity to secure around **200,000** jobs in 2030 for the offshore energy workforce.

The review also identifies the significant role that the higher education sector can play to meet future industry demand.

The workforce transferability model can assist government, government agencies, industry sectors, trade associations, companies, education institutions, unions, training providers and other stakeholders to provide real-time insights on the jobs and transferability impact of specific investment or policy decisions. The aim is to expand the scope over time to provide a more holistic view of the workforce transferability in the UK's emerging net zero energy sector.



Methodology and disclaimer

The UK Offshore Energy Workforce Transferability Review was conducted by Robert Gordon University's (RGU) Energy Transition Institute between October 2020 and May 2021. For the purpose of this review, the offshore energy industry comprises oil & gas, offshore wind, CCUS, hydrogen and associated onshore support activities. People, roles and workforce numbers quoted in this report reflect full-time equivalent roles.

The focus of the review was to:

1. Assess the high-level future workforce demand for the offshore energy industry
2. Determine the high-level workforce transferability between adjacent offshore energy sectors
3. Develop a workforce demand and transferability forecasting model for the offshore energy industry

In the preparation of this review ("**Review**"), 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**") in order to build the knowledge and to enable the delivery of the Review. This Review 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 Review.

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Acknowledgements

We would like to take the opportunity to thank all of the organisations and individuals who have contributed to this review. Their input was greatly appreciated and - where possible - the comments and information received are reflected in this review.

