

Oil & Gas Diversification Opportunities



Diversification

Diversification is exploring new markets, taking new risks, building new products and realising new opportunities.

Scottish oil and gas companies have a global reputation for excellence, built over 50+ years of exploration and extraction in the harsh North Sea environment. Throughout this period the Scottish oil and gas supply chain has continually evolved in line with changing industry requirements, delivering new solutions that have been employed at home and abroad. From pioneering new extraction techniques to tap previously inaccessible North Sea reserves to developing new performance management solutions to drive efficiencies in an increasingly price conscious industry, the Scottish supply chain has long been at the cutting edge of innovation.

While Scottish and international oil and gas markets will continue to supply new opportunities for many decades to come, there is also huge potential for Scottish companies to leverage their expertise to develop and deliver solutions for a range of other markets. Through diversification, Scottish oil and gas companies can build new revenue streams, new capabilities and new solutions so they are better able to respond to whatever new challenges and opportunities the future may bring.

This guide has been designed for Scottish oil and gas companies with an interest in new markets and new opportunities. Split into three sections — Sectors, Oil & Gas Segmentation and Diversification Model Options — the guide is intended to serve as a starting point for companies considering diversification as part of their corporate strategy.

The guide opens with an evaluation of 24 sectors that share some similarities with oil and gas, each offering differing degrees of potential for new entrants from oil and gas. It goes on to look at capabilities within the oil and gas supply chain and where they might be applied within other sectors. The guide concludes with an overview of the different models of diversification.

Accompanying the guide (and available to download) are a series of fact sheets profiling the sectors that present the greatest opportunities for oil and gas supply chain companies. Each fact sheet identifies UK and international market opportunities, applicable oil and gas skills & expertise, potential routes to market, and sources of further information and support.



Sectors

Sectors

Scotland is world renowned for its capabilities in offshore oil and gas, many of which have been applied to solving seemingly impossible challenges of designing and deploying new technologies that perform complex tasks in difficult operating environments. The broad range of capabilities within the Scottish oil and gas supply chain have considerable potential to be applied to solving the challenges of a range of other sectors, particularly those emerging sectors where process are still being optimised and supply chains are not yet well established.

As part of the production of this guide, consultancy firm Pale Blue Dot undertook an exercise to map Scotland's oil and gas supply chain capabilities, segment them by discipline, and cross-reference them against the requirements of other sectors. In addition to identifying areas of crossover, Pale Blue Dot also considered the accessibility of a sector to new market entrants, its growth rate and its size. Figure A (opposite) is a visual representation of relative market size of 24 sectors that represent diversification prospects for the Scottish oil and gas supply chain. Figure B (below) is a ranked and colour coded list of the 24 sectors, displaying their compatibility with each oil and gas discipline.

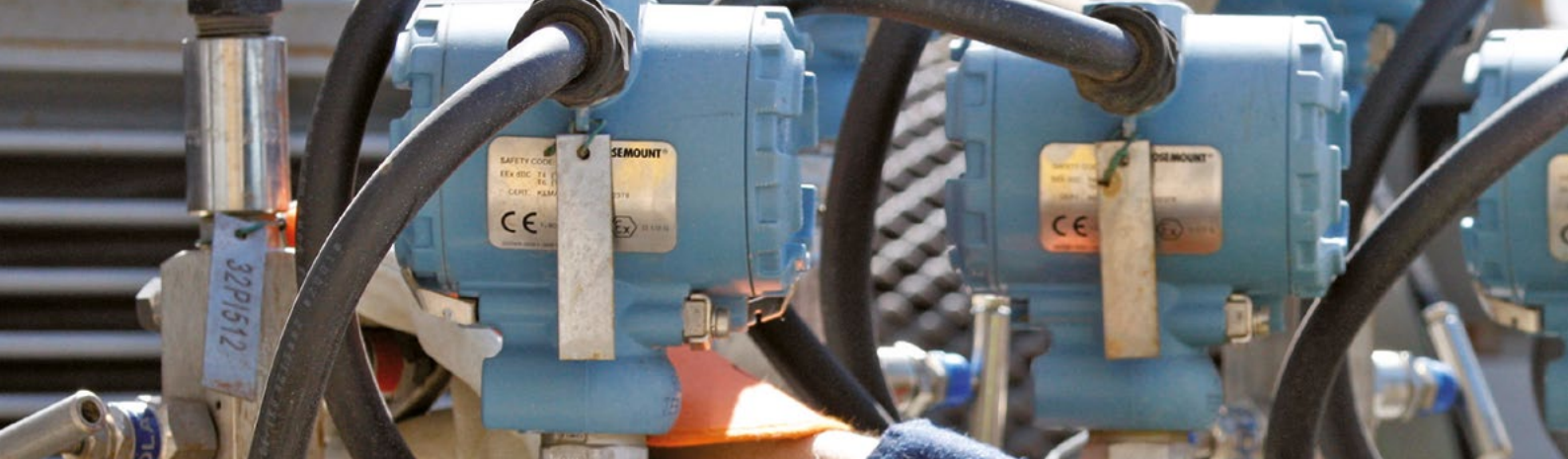
The sector specific opportunities for the oil and gas supply chain are explored in more detail within the fact sheets that accompany this guide, but key points to note are:

Relative Market Size Available to Oil & Gas



Figure A: Relative market size available to the oil and gas supply chain. The larger the box, the larger the market opportunity.

- The largest opportunities for early diversification are in Oil & Gas Decommissioning and Offshore Wind.
- Nuclear Decommissioning and Water & Wastewater present significant potential for new entrants from oil and gas.
- Hydrogen, Energy Storage, Carbon Capture & Storage, and Heating & Cooling represent potentially large, longer-term prospects.
- The oil and gas supply chain may be able to play an important role in the commercialisation of Wave & Tidal energy.
- The fast growing industrial biotechnology sector is the most likely point of entry into Life & Chemical Sciences.



Oil & Gas Segmentation

Oil & Gas Segmentation

A total of 24 sectors were assessed as part of the production of this guide, all of which exhibited some potential for diversification from offshore oil and gas. Figure B (opposite) maps each sector against five areas of oil and gas capability — Reservoirs, Wells, Facilities, Subsea and Support — showing the most relevant capabilities to any given sector as dark blue. The 24 sectors have also been ranked and colour coded to indicate their overall market potential for new entrants from oil and gas — the sectors with most potential are highlighted in green, moderate in yellow and minimal in red.

Examples of oil and gas capabilities with cross-sector applications are explored in more detail below.

Key Areas of Strength

Under the Water: Much of the current North Sea activity takes place 'under the water'. Supply chain expertise includes aspects such as seabed environmental services, subsea wells, subsea production facilities, subsea pipelines, control systems, jackets, risers, remotely operated vehicles and autonomous underwater vehicles. The supply chain around these activities includes engineering, fabrication, installation vessels, remote operations, electrical and hydraulic systems,

	Sector	Resvr	Wells	Facilities	Subsea	Support
1	Decommissioning					
2	Offshore Wind					
3	Heating & Cooling					
4	Hydrogen					
5	Nuclear					
6	Unconventional Gas					
7	Carbon Capture & Storage					
8	Energy storage					
9	Knowledge					
10	Water & Wastewater					
11	Wave & Tidal					
12	Chemical & Life Science					
13	Hydro					
14	Aerospace					
15	Defence					
16	Construction					
17	Marine					
18	Downstream Oil & Gas					
19	Midstream Oil & Gas					
20	Textiles					
21	Rail					
22	Mining					
23	Food & Drink					
24	Thermal Generation					

Figure B: A summary of sector opportunities across the oil and gas segments. Darker blue indicates more opportunity.

monitoring and measurement, seabed developments, seabed fixings and materials longevity. These capabilities are directly transferable into other 'below water' marine sectors such as Offshore Wind, Wave & Tidal, Midstream, Decommissioning and CCS. Skills and specialist technologies are also transferable

into other sectors with complex remote operations such as Nuclear Decommissioning and Mining.

Above the Water: Over its history, the North Sea has been at the forefront of offshore oil and gas developments. Supply chain expertise includes: semisubmersible, jack up and platform drilling operations,



topsides design, installation and operations, floating production systems, offshore safety systems, marine vessels and offshore support logistics. The supply chain around these activities includes engineering, fabrication, operations, maintenance, process systems, HSE systems, mechanical, electrical and hydraulic systems, control systems and marine services. These capabilities are directly transferable into other 'above water' marine sectors, such as Offshore Wind, Wave & Tidal, Decommissioning and CCS. Skills and specialist technologies are also transferable into other sectors with complex industrial processes such as Nuclear Decommissioning, Downstream, Chemical & Life Sciences and Thermal Generation.

Under the Ground: Due to the high cost of operating offshore in the North Sea, the region has been at the forefront of technology developments related to drilling and subsurface evaluation. Supply chain expertise includes: deviated and horizontal well drilling, downhole drilling tools, completion equipment, well intervention services, subsurface imaging, subsurface modelling and data collection and management. These capabilities are transferable into other sectors where activities take place under the ground, including: Nuclear (waste disposal), Unconventional Gas (outwith Scotland), CCS, Oil & Gas Decommissioning, Mining and Energy Storage.

Summary of key industries with early opportunities (by segment)

Reservoirs, Drilling & Wells Capabilities: Early reservoir and wells opportunities are focused in Oil & Gas Decommissioning, Water and Unconventional Gas (outwith Scotland).

Oil & Gas Decommissioning is the most obvious opportunity to pursue, locally available and with the lowest barriers to entry. Well plugging and abandonment makes up about half of all decommissioning spend and should therefore be a key area of focus for relevant companies. Likewise, all fields require subsurface studies (but not normally new data acquisition) in order to confirm that the field has achieved Maximum Economic Recovery (MER).

Water and Unconventional Gas (outwith Scotland) are likely to be principally international markets, so whilst there is early opportunity, it may be difficult to develop local track-record before exporting services. These sectors may suit organisations already operating internationally. The Knowledge sector is also in a position to benefit from oil and gas expertise in reservoirs and wells.





Platforms & Topsides Capabilities: These broad capabilities applied offshore for oil and gas are also relevant to onshore projects across a wide range of sectors. Offshore specific capability has direct relevance for Offshore Wind and includes the design and installation of offshore structures (for turbines and substations), steelwork and maintenance. Sectors involving onshore projects require similar capabilities and will be of value in Nuclear Decommissioning and Water including: process design and construction, equipment (including rotating machinery), steel and fabrication, engineering skills of various types, and operations and maintenance support. Similar capabilities are also required in other sectors including Downstream, Midstream and Mining. Bringing these capabilities to bear in established sectors may be challenging unless a specific differentiated capability exists.

Subsea Capabilities: The oil and gas sector has significant subsea capability and seeking out new deployment opportunities for these capabilities will be critical for diversification. Offshore Wind and Oil & Gas Decommissioning present the most accessible opportunities in the near-term. Near-term opportunities are also evident in Midstream Oil & Gas. For Offshore Wind relevant capabilities include cables and cable installation, site evaluation, foundations, installation equipment and a wide range of input for floating wind projects. For Oil & Gas Decommissioning relevant capabilities include facilities removal, seabed clearance and site surveys. Subsea opportunities for Midstream infrastructure are likely to be primarily international, and could include subsea pipelines, umbilicals, engineering and design, site surveys, installation and maintenance support.





Integral & Support Services Capabilities: These wide-ranging services are probably the most easily transferred capabilities from oil and gas into other sectors and have wide relevance in many sectors. In Scotland, the most significant near-term opportunities are for Oil & Gas Decommissioning and Offshore Wind, including: development and consenting, project management, port services, logistics, and installation support services.

Summary of key industries with longer-term opportunities (by segment)

Reservoirs, Drilling & Wells Capabilities: Longer-term opportunities for reservoir and wells include: CCS, Energy Storage (compressed air energy storage, gas storage and hydrogen storage in salt caverns), Hydrogen (principally for storage) and Heating (geothermal). Of these sectors, only CCS will utilise the depth of capability and potentially the volume of capacity currently provided by the oil and gas sector. However, given the formative nature of these sectors, potential exists for repositioning oil and gas supply chain businesses to serve these growth markets.

Platform & Topsides Capabilities: In the longer-term, most of the capabilities within this oil and gas segment could be applied to enabling project developments in Wave & Tidal, Energy Storage, Hydrogen, Water and Heating. CCS is likely to involve minimum facilities offshore installations similar to oil and gas.

Subsea Capabilities: In the longer-term, the main additional sectors will be Wave & Tidal and CCS. Wave & Tidal will utilise many of the capabilities developed by oil and gas, and subsequently repurposed by Offshore Wind. Timing is such that developers are likely to seek prior offshore renewable energy experience, which will be best developed by supporting Offshore Wind. Subsea opportunities for CCS facilities are likely to be mainly international, and could include subsea pipelines, umbilicals, engineering and design, site surveys, installation and maintenance support.



Diversification Model Options

Diversification into another sector should be seen as part of a long-term corporate strategy. As such, it requires consideration of the specific capabilities being delivered, the specific requirements of the target sector and an understanding of market potential. A number of models may be adopted by companies seeking diversification, as outlined below.

Direct Sales

Direct sales of an existing oil and gas product or service are likely to be the exception rather than the rule. Even short-term opportunities will require effort to understand the market and develop a brand presence through marketing and engage in business development/sales activities.



Figure 1: Direct Sales Business Model

Product/Service Development

Following identification of a specific opportunity, a business develops a targeted product or service to suit a specific sector need before effectively entering the new sector.



Figure 2: Product/Service Development Business Model

Targeted Recruitment or Acquisition

A business makes a small acquisition or targeted recruitment of individuals in order to better understand the new sector, enabling the development of synergies with the existing business (or development of a targeted product or service) and access the new sector from a position of knowledge.



Figure 3: Targeted Recruitment or Acquisition Business Model



Figure 4: Alliance/Partnership Business Model

Alliance/Partnerships

A business identifies a partner within the new sector with whom there is mutual benefit in close collaboration; generally, because the companies can co-develop a product or service that would not have been possible for either company alone. The companies then promote this combined offering into the new sector.

Establish Subsidiary

A business with sufficient confidence in the market may choose to set up a subsidiary within the new sector. This could enable a targeted brand/product/service to be developed and offered, locating a business close to customers, or provide a focused entity that concentrates on the new market without the diversion of existing oil and gas sector activity.

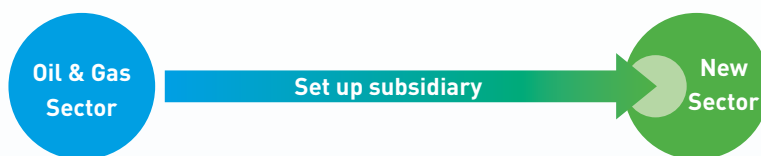


Figure 5: Subsidiary Business Model



Figure 6: Partner or Subcontractor Business Model

Partner or Subcontract

A business may identify another oil and gas supply chain company that is active in the new sector and with whom there could be synergies. It may be possible to develop these new sector synergies and use existing access to pull through products or services.

Create a Collaborative Group with other SMEs

A group of SMEs may together be able to create a compelling offering for a new sector.

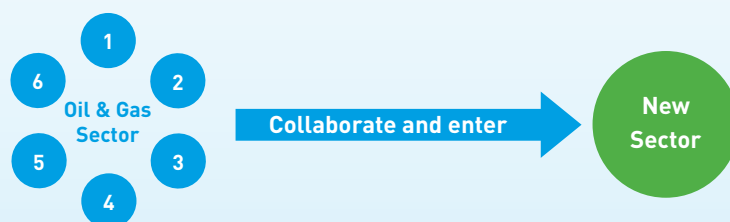


Figure 7: Collaborative Group Business Model



Figure 8: Mutual Exchange of Support Business Model

Mutual Exchange of Support

A business in the new sector may be interested in entering the oil and gas sector and therefore willing to provide a mutual exchange of support to enable an oil and gas supply chain business to enter the new sector.

Ready to Diversify?

Scotland's world leading oil and gas companies have a fantastic track record and are renowned for being on the cutting edge of innovation.

Scottish oil and gas supply chain companies are well placed to access the opportunities profiled in this guide and accompanying fact sheets. By serving different markets, companies like yours can spread risk and mitigate some of the challenges being faced by offshore oil and gas. However, it's important to note the differences between the sectors and figure out which represent the best fit for your company's capabilities.

This guide has been designed as a starting point for companies considering diversification as part of their corporate strategy. It is part of a portfolio of information and support from Scottish Enterprise to help companies identify, understand and access diversification opportunities.

Are you ready to take the next step? We are here to help

Our services are designed to help your company. From management training to financial support, from finding collaborative partners to international trade missions, we can help grow your business at home and abroad.

We also offer various expert support programmes to help your company build a diversification strategy, exploring:

- Market entry requirements;
- Market/supply chain positioning;
- Your company's capabilities and how these can be used in other sectors; and
- The suitability of your products and services to other sectors.

If you want to learn more about the support we can provide and the opportunities diversification can offer, please visit

www.scottish-enterprise.com/industry-support/oil-and-gas
or call us on **0300 013 3385**



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Pale Blue Dot (PBD) deliver management consultancy to the energy industry, helping organisations create opportunities and mitigate risks arising from changes in the energy markets.



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