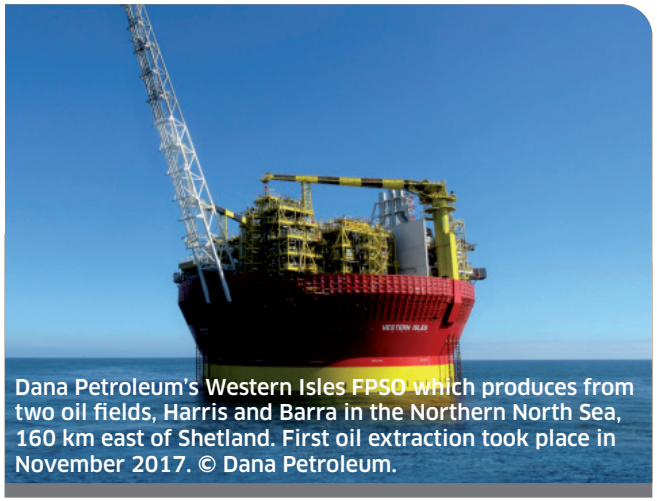
Oil and gas sector and infrastructure

Scottish Government
Riaghaltas na h-Alba
gov.scot

Key message

Oil and gas production has increased since 2014 as a result of investment. Long-term, production is in decline and is expected to continue for 20 years. Older, mature fields are reaching the end of their economic life and will require to be decommissioned. The UK is expected to become a significant decommissioning market globally.



Dana Petroleum's Western Isles FPSO which produces from two oil fields, Harris and Barra in the Northern North Sea, 160 km east of Shetland. First oil extraction took place in November 2017. © Dana Petroleum.

What, why and where?

Oil and gas exploration has been a major activity in Scottish offshore waters since the late 1960s. There are 112 active platforms and 14,801 km of pipeline. While production has increased since 2014 (Figure 1) following a period of significant investment during high oil prices, it is expected to return to a trend of annual decreases over the remainder of its lifespan. The Oil and Gas Authority (OGA) assume that production will decrease by 5% annually from 2024. Production on the United Kingdom Continental Shelf (UKCS) has decreased 34% (1990 to 2018), and is down 62% from peak production in 1999.

Most oil and gas fields in the Scottish sector of the UKCS are located in the North Sea (Figure 2). Only the Lybster field in the Moray Firth (started production 2012) is close to shore and within the 12 nautical mile Territorial Sea limit now that the Beatrice field has ceased production and hosts wind turbines. There has also been activity to the west of Shetland, following the discovery of the Clair Field in 1977 (production started 2005).

There is extensive infrastructure associated with these developments, both on the seabed and on land. This includes platforms, pipelines and terminals. There is currently no natural gas storage activity in Scottish waters.

Between 2011 - 2018 forty-two new fields started production. Decommissioning also commenced, albeit slower than originally anticipated as operational efficiency has extended field life and delayed decommissioning on many mature fields. During 2017, the number of wells decommissioned exceeded wells drilled for the first time (Oil & Gas UK, 2018a). The Decommissioning Action Plan (SE & HIE, 2016) sets out how to make the most of decommissioning opportunities.

For further information on this topic go to: https://marine.gov.scot/sma/assessment/oil-and-gas-sector-and-infrastructure

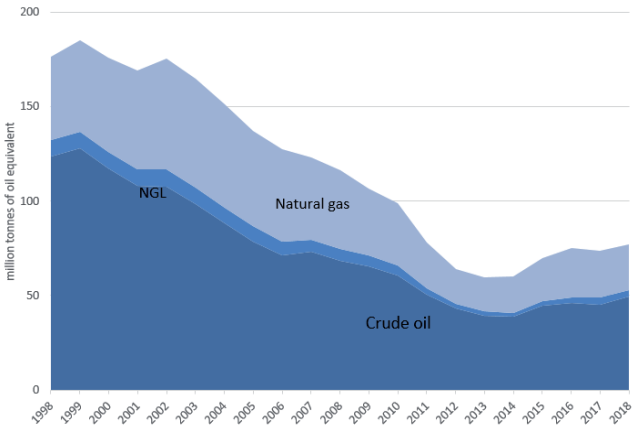


Figure 1:

Total oil and gas production (Mtoe), Scottish waters, 1998 to 2018. Source: Scottish Government (2019b).

NGL (Natural Gas Liquid) is a low-density mixture of hydrocarbon liquid that is present as gaseous components in the raw natural gas produced from many natural gas fields.

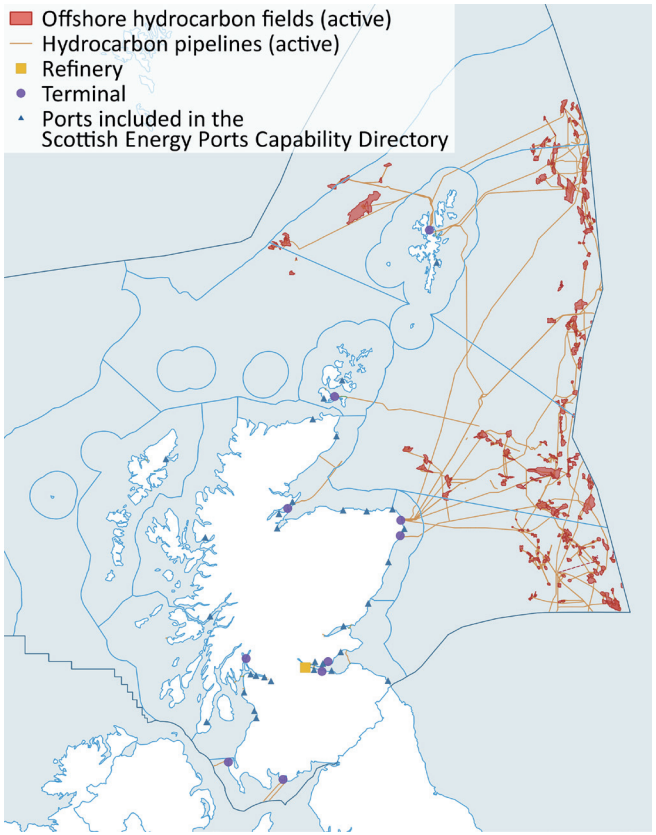


Figure 2:

Map of active offshore hydrocarbon fields, pipelines and main coastal infrastructure with Scottish Marine Regions and Offshore Marine Regions. November 2019. Source: OGA, Ocean Wise and Scottish Energy Ports Capability Directory.

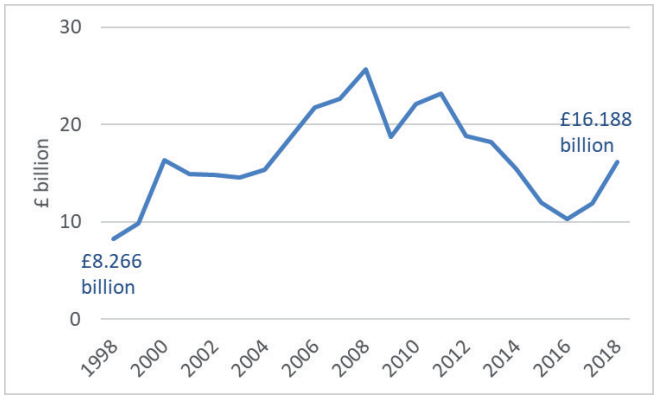


Figure 3:

GVA associated with Scottish Oil and Gas production. Source: Energy Statistics Database. Scottish Government (2019a).

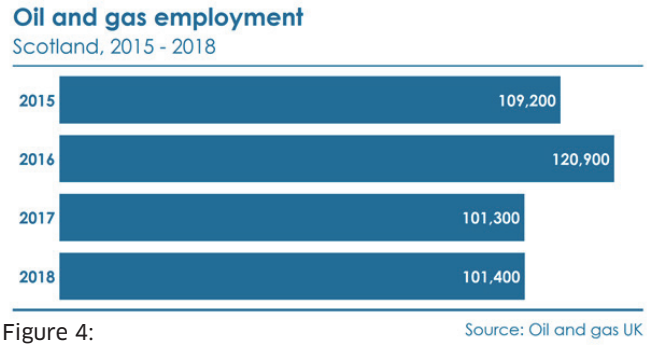


Figure 4:

Oil and Gas employment 2015-2018. Source: Economic Report, Oil & Gas UK (Oil & Gas UK, 2019c).

Contribution to the economy

The oil and gas industry is central to Scotland and the UK's economy. In 2018 the Gross Value Added (GVA) from oil and gas production in Scotland was estimated to be £16.2 billion representing 9% of Scotland's GDP (Scottish Government, 2019a) and contributing around £24 billion (1.2%) to UK GDP. GVA is the value of goods and services produced minus the cost of raw materials and other inputs used to produce them. Gross Domestic Product, abbreviated as GDP, is the total value of goods and services produced in a country.

The economic contribution of pipelines is included in the overall oil and gas value as they are part of the production process. Although pipelines do not have a direct economic contribution, they enable cost effective supply of oil and gas from the offshore fields.

Offshore activity is supported by a highly specialised supply chain which generated £27 billion of revenue in the UK in 2017 (Oil and Gas UK, 2019a).

Since responsibility for the oil and gas sector is reserved to the UK Government, all taxes go to the UK Treasury. Production from the UKCS has contributed significantly to UK tax revenues, with approximately £334 billion (in 2017-18 prices) paid since 1970-71 (NAO, 2019).

The oil and gas industry continues to be a major employer. Oil & Gas UK estimates that in 2018 some 101,400 Scottish based jobs were supported by the servicing of activity on the UKCS and in the export of oil and gas related goods and services. This includes not just direct employment but also wider effects on the supply chain. Overall, 39% of all jobs supported by the oil and gas industry are based in Scotland (Oil & Gas UK, 2019b).

The oil and gas sector remains vital to both the UK and Scottish economies. The North Sea remains an attractive place to invest, with around £11.3 billion of operating and capital expenditure in 2018 alone (Scottish Government, 2019b).

Decommissioning accounted for around 8 per cent of overall UKCS oil & gas industry expenditure in 2018 (Oil & Gas UK, 2018a).

Examples of socio-economic effects

- Employment, both offshore and onshore.
- Transferable skills of use to other sectors, in particular the offshore renewable energy industry.
- Exports of both crude hydrocarbons and refined products.
- Research that can be transferred to other sectors.
- Supply chain benefits to a global market.
- Energy security from indigenous resource.
- Impacts on other sea users

Pressures on the environment

An OSPAR agreed list of marine pressures is used to help assessments of human activities in the marine environment. The marine pressure list has been adapted for use in Scotland via work on the Feature Activity Sensitivity Tool (FeAST). Oil and gas sector and infrastructure activities can be associated with 25 marine pressures – please read the pressure descriptions and benchmarks for further detail.

Forward look

Scottish waters are a mature oil and gas province but there could be up to 20 billion barrels of oil still recoverable from the UKCS, compared with 44.7 billion produced by the end of 2018. This could sustain production for at least the next 20 years (OGA, 2019a).

In 2018 the industry set out its Vision 2035, a plan developed by Oil & Gas UK (Oil and Gas UK, 2018b) together with Oil & Gas Authority to add a generation of life into the UKCS. The Vision 2035 also outlines how the industry intends to continue to meet the UK's oil and gas needs from domestic resources, while progressively reducing associated production emissions and developing decarbonisation technologies.

In its Decommissioning Insight Facts and Figures (Oil & Gas UK, 2018a) (publication is updated annually, also see Oil and Gas UK Decommissioning), the industry highlights:

- 203 fields are to undergo decommissioning activity over next decade.
- 2,379 wells are expected to be decommissioned over the next ten years.
- 5,724 km of pipelines are due for decommissioning by 2027.

The timing of decommissioning will be subject to multiple factors such as trends in oil and gas prices, increased recovery from existing fields, future fiscal and regulatory regimes, reduction of decommissioning costs and technical innovations.

A potential new activity will be the use of depleted fields to store carbon dioxide captured onshore (see Carbon Capture Utilisation and Storage section).

Economic trend assessment

The offshore hydrocarbon fields are not present in Scottish Marine Regions (SMRs) and so the reporting is on the basis of OMR only. Trends are based on combined oil, Natural Gas Liquids, gas in Mtoe (million tonnes of oil equivalent) and values between 2014 to 2018 (see table in Contribution to the Economy section). Confidence is three stars as based on published national statistics.

Economic trend : Scotland

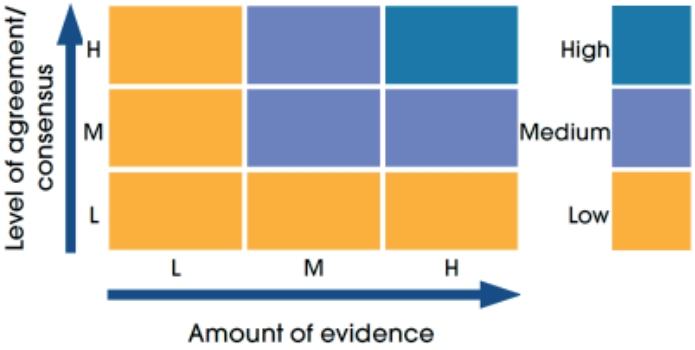
Based on offshore production between 2014-2018

Region assessed	Trend with confidence
SSA	
East Shetland Shelf	
Fladen and Moray Firth Offshore	
Long Forties	
Moray Firth	
North Scotland Shelf	
North and West Shetland Shelf	

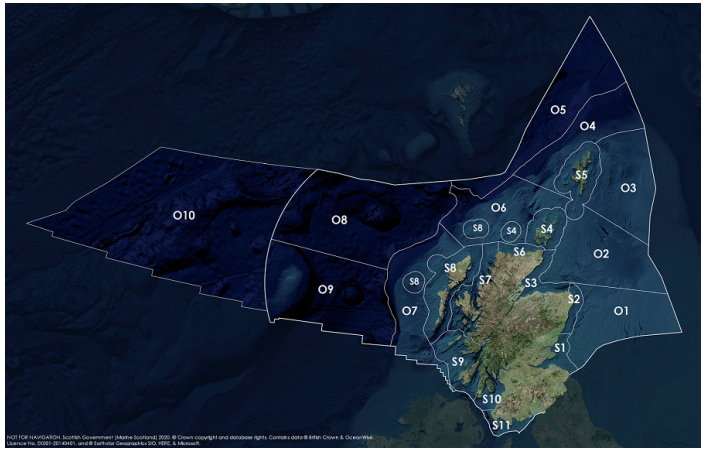
Status and trend assessment legend

Status assessment (for Clean and safe, Healthy and biologically diverse assessments)		**Trend assessment (for Clean and safe, Healthy and biologically diverse and Productive assessments)**	
	Many concerns		No / little change
	Some concerns		Increasing
	Few or no concerns		Decreasing
	Few or no concerns, but some local concerns		No trend discernible
	Few or no concerns, but many local concerns		All trends
	Some concerns, but many local concerns	**Confidence assessment**	
	Lack of evidence / robust assessment criteria	**Symbol**	**Confidence rating**
	Lack of regional evidence / robust assessment criteria, but no or few concerns for some local areas		Low
	Lack of regional evidence / robust assessment criteria, but some concerns for some local areas		Medium
	Lack of regional evidence / robust assessment criteria, but many concerns for some local areas		High

Overal confidence

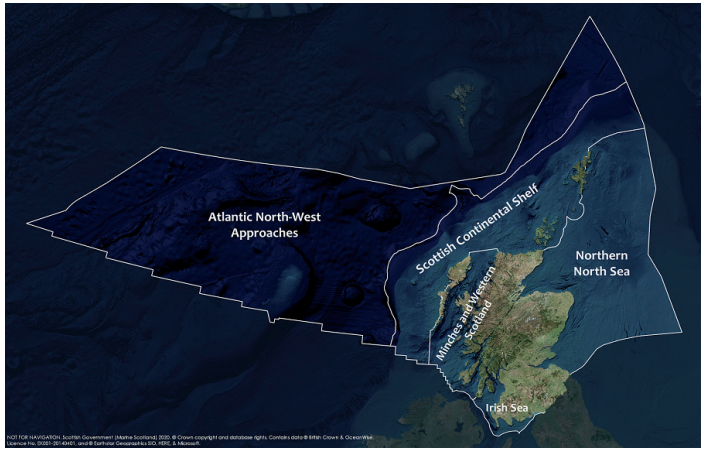


Assessment regions

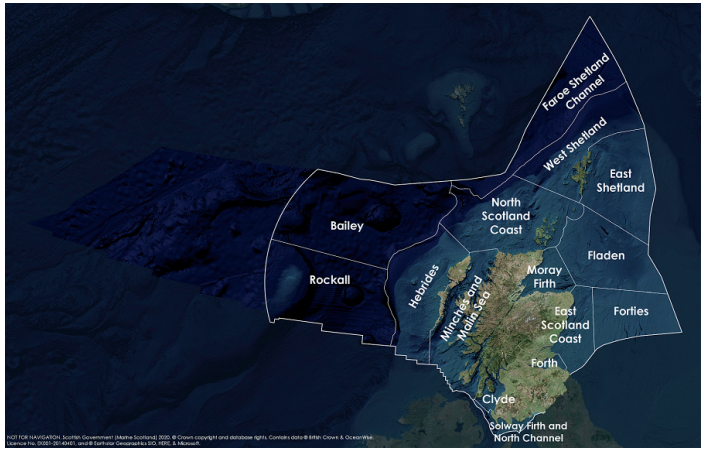


The Scottish Marine Regions (SMRs; S1 – S11) and the Scottish Offshore Marine Regions (OMRs, O1 – O10)

Key: S1, Forth and Tay; S2, North East; S3, Moray Firth; S4 Orkney Islands, S5, Shetland Isles; S6, North Coast; S7, West Highlands; S8, Outer Hebrides; S9, Argyll; S10, Clyde; S11, Solway; O1, Long Forties, O2, Fladen and Moray Firth Offshore; O3, East Shetland Shelf; O4, North and West Shetland Shelf; O5, Faroe-Shetland Channel; O6, North Scotland Shelf; O7, Hebrides Shelf; O8, Bailey; O9, Rockall; O10, Hatton.



Biogeographic, Charting Progress 2 (CP2) Regions. These have been used as the assessment areas for hazardous substances.



Scottish Sea Areas as used in Scotland's Marine Atlas 2011. These are sub divisions of the biogeographic, or Charting Progress 2 (CP2), Regions.

Scottish Government
Riaghaltas na h-Alba
gov.scot
marinescotland

NatureScot
Scotland's Nature Agency
Buidheann Nàdair na h-Alba

JNCC
Joint Nature Conservation Committee

SEPA
Scottish Environment Protection Agency

This material was published on the Scottish Marine Assessment 2020 portal, December 2020