

ECONOMY AND LABOUR MARKET

Oil and Gas Production Statistics

2015-16

Release Date: 14 September 2016

KEY FINDINGS

- In financial year 2015-16, oil and gas production in Scotland (including Scottish adjacent waters) is estimated to have been 70.0 million tonnes of oil equivalent (mtoe).
- Scottish production increased by 21.4% compared to 2014-5, and accounted for 81 per cent of the UK total.
- In 2015-16, oil and gas fields in Scotland accounted for 96 per cent of UK crude oil and natural gas liquids (NGL) production, and 60 per cent of UK natural gas production.
- In 2015-16, the approximate sales value of oil and gas produced in Scotland is estimated to be £13.4 billion.
- The approx. sales value decreased by 23.5% compared to 2014-15, despite an increase in production over the year, due to sustained low prices.
- In 2015-16, operating expenditure (excluding decommissioning) on oil and gas production in Scotland is estimated to be £6.8 billion, down 6.7% compared to the previous year.
- In 2015-16, capital expenditure on oil and gas fields in Scottish waters is estimated to be £10.2 billion, down 17.6% compared to the previous year.

This publication includes estimates of oil and gas production activity in Scotland (including Scottish adjacent waters). It reports production volumes, approximate sales income, operating costs and capital expenditure.

The results are consistent with recent production statistics and data published by the Department for Business, Energy and Industrial Strategy (BEIS, formerly DECC), and with the latest expenditure statistics in the Oil and Gas UK Activity Survey for 2015.

This release contains annual results for the calendar years 1999 to 2015 and financial years 1999-00 to 2015-16.

Key findings in this publication are reported for the financial year 2015-16, which includes the latest available estimates up to March 2016. Some trends in production are also reported in calendar year terms. All results are available on both timeframes in the background tables, along with the quarterly estimates underpinning the annual totals.

ABOUT THIS PUBLICATION

All statistics in this publication are consistent with information published by the Department for Business, Energy and Industrial Strategy (BEIS) for total UK oil and gas production, income and expenditure. This includes production from both offshore and onshore oil and gas fields. Estimates for Scotland are based on production data for each individual oil and gas field which is located in Scotland or Scottish adjacent waters.

The latest results are consistent with:

- Digest of UK Energy Statistics (DUKES) 2016
- Quarterly Energy Trends: June 2016 to 2016 Quarter 1
- Oil & Gas UK (OGUK) Activity Survey 2016
- Income from and expenditure on UKCS exploration, development and operating activities: annually 1970-2013

Estimates for the Scottish zone of the UK Continental Shelf are based on activities within the Scottish adjacent waters boundary¹, which was defined for the devolution of fisheries policy (Figure 1). The use of alternative boundaries is possible.

The Scottish Government uses this zone in economic statistics which include estimates of Scottish offshore activity, including Quarterly National Accounts and Government Expenditure & Revenue Scotland². For economic statistics it has become known as the 'illustrative geographical share' of UK offshore or extra-regio activities.

The UK oil and gas data published by BEIS reports production of crude oil and NGL in tonnes, and natural gas in GWh or standard cubic metres. All estimates presented in this publication are converted into the standard energy unit of Tonnes of Oil Equivalent (toe) to allow meaningful comparison between liquids and gases.

BEIS also publishes annual estimates of production revenue (approximate sales income), operating costs and capital expenditure for the UKCS based on an annual survey of extraction companies. In recent years this survey has been run by the trade body, Oil and Gas UK (OGUK), and results are published as results of the OGUK Activity Survey in February of the following year. Field level data on operating revenues and expenditure are not published. Instead, estimates of commercial activity arising from activities in Scottish adjacent waters are modelled using commercially sourced analytical data. This is also the data source used for provisional estimates for 2016 Quarter 1.

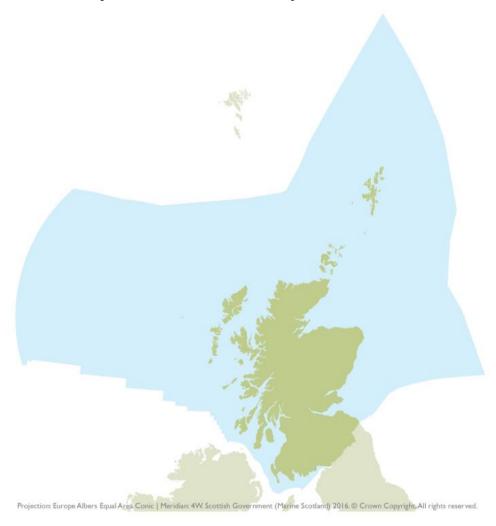
In this publication, approximate sales income represents the market value of oil and gas at the time of production and is not based on actual company sales data. In reality, oil and gas is generally traded with complex pricing structures, but the approximate sales income estimates are indicative of levels and trends.

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¹ Scottish Adjacent Waters Boundary Order (1999)

² http://www.gov.scot/Topics/Statistics/Browse/Economy

Figure 1: Scottish Adjacent Waters Boundary



Further information on the Oil and Gas Production statistics is provided in the methodology paper published at:

http://www.gov.scot/Topics/Statistics/Browse/Economy/oilgas/ProductionMethods

OIL AND GAS PRODUCTION VOLUMES

In 2015-16, total oil and gas production in Scotland (including Scottish adjacent waters) is estimated to have been 70.0 million tonnes of oil equivalent (mtoe). This was an increase of 21.4% compared to 2014-15, and accounted for 81 per cent of total UK production. Estimates for the first quarter of 2016 show that oil and gas production remains at its highest level in four years.

Table A
Scottish Oil and Gas Production Volumes (mtoe) and Annual Change (%)

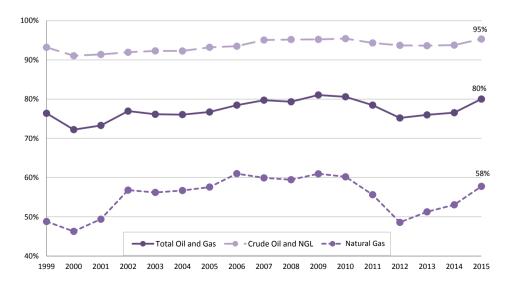
	Crude Oil & NGL	Natural Gas	Total Oil & Gas			
2013-14	42.1 - 3.2%	16.4 + 5.4%	58.6 - 0.9%			
2014-15	40.7 - 3.4%	17.0 + 3.6%	57.7 - 1.5%			
2015-16	49.3 +21.2%	20.7 +21.8%	70.0 +21.4%			

Note: Totals may not sum due to rounding. More detailed information is available in the background table 1.1

UK Oil and gas production declined rapidly between the turn of the century and 2013. Production levelled off during 2014 and then increased significantly during 2015, following several years of substantial investment in the development of new and existing fields.

Between 1999 and 2015 the proportion of total UK production from fields in Scottish adjacent waters has generally been around 75-80 per cent. For crude oil and natural gas liquid (NGL) production, the proportion in Scottish waters has been over 90 per cent in all years, reaching 95 per cent in 2015. The proportion of UK natural gas production in Scotland has been more variable, ranging between 45-60 per cent. The development of new gas fields has seen the proportion increase in recent years, with 58 per cent occurring in Scotland in 2015, increasing to 60 per cent in the latest financial year when 2016 Quarer 1 is accounted for.

Figure 2: Percentage of UK production in Scottish Adjacent Waters



Crude oil and natural gas liquids

Offshore oil production on the United Kingdom Continental Shelf began in 1975 following the discovery of the Forties oil field off the east coast of Aberdeen. Further discoveries of oil soon followed as companies from around the world took out leases on sectors of the North Sea, leading to a hundredfold increase in UK oil production in the first ten years of activity. After a temporary decline in the late 1980s, oil production from the UKCS peaked at the turn of the century and then declined sharply until 2014.

Production of crude oil and NGL in Scottish adjacent waters peaked at 139.8 mtoe in 1999 and subsequently declined by an average of 7.9% per year until 2014 (Figure 3). In 2015, total crude oil and NGL production in Scottish waters was estimated at 47.2 mtoe, 15.2% higher than 2014. This level is around a third of the production peak in 1999.

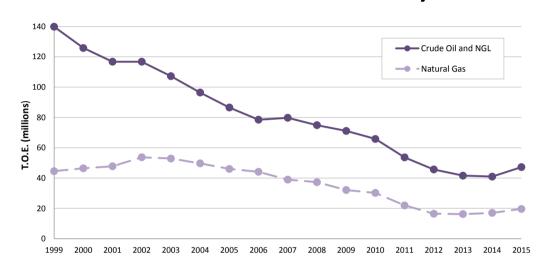


Figure 3: Oil and Gas Production Volumes in Scottish Adjacent Waters

Natural gas

Gas production on the United Kingdom Continental Shelf began in the late 1960s following the discovery of large natural gas reserves off the coast of Grimsby in 1965. This discovery encouraged further exploration in the region and production increased year on year until the mid-1970s when production levelled off. The privatisation of the UK gas industry in 1986 signalled the beginning of a substantial upsurge in natural gas production on the UKCS which continued throughout the 1990s before peaking in 2000. UK gas production declined for thirteen consecutive years until 2014 and in 2015 was just over a third of the peak level recorded in 2000.

Peak production of natural gas in Scottish waters – 53.7 million toe in 2002 – occurred two years later than the peak in total UK production due to new fields beginning production in Scottish waters. During this time there was a marked increase in the proportion of total UK gas production occurring in Scottish waters, from 46 per cent in 2000 to 57 per cent in 2002 (Figure 2). Since 2002, on average 57 per cent of UK total gas production has occurred in Scottish adjacent waters – with 58 per cent of activity taking place in Scotland in 2015, and 60 per cent in the latest financial year.

OIL AND GAS INDUSTRY INCOME AND EXPENDITURE

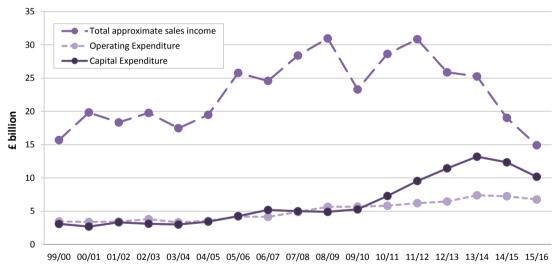
In financial year 2015-16, the approximate sales value of UK-produced oil and gas is estimated to be around £16.1 billion. Of this, £13.4 billion is estimated to be from production in Scottish waters (Figure 5), accounting for 83 per cent of the UK total. The Scottish proportion of approximate sales income is higher than the production share (80%) because prices for crude oil and NGL are generally higher than for gas.

Table B
Scottish Oil and Gas Summary Income and Expenditure (£ million)

	Approx. Sales Income	Operating Expenditure	Capital Expenditure			
2013-14	23,812 <i>- 2.4%</i>	7,393 +14.5%	13,189 +15.3%			
2014-15	17,516 -26.4%	7,243 - 2.0%	12,346 - 6.4%			
2015-16	13,395 -23.5%	6,755 - 6.7%	10,168 -17.6%			

Note: Totals may not sum due to rounding. More information is available in the background table 2.1

Figure 5: Oil & Gas Income and Expenditure in Scottish Adjacent Waters



Operating expenditure in the Scottish portion of the UKCS is estimated to have been £6.8 billion in 2015-16, down 6.7% from £7.2 billion the previous year, and despite the increase in production. This indicates that operating companies have been reducing costs and improving efficiency. However it should be noted that these values do not include any decommissioning costs.

Capital expenditure in Scottish adjacent waters is estimated to have decreased by 17.6% to £10.2 billion in 2015/16, as the recent wave of development capital which began in 2010/11 (Figure 5) continued to tail off.

Impact of prices on sales income

In financial year 2015-16, oil and gas production in Scottish adjacent waters is estimated to have increased by 21.4% compared to 2014-15 due to the continued upturn in production throughout 2015 and into 2016. At the same time, the approximate sales value of Scottish oil and gas decreased by 23.5% due to sustained low prices throughout the year following the sharp fall in oil prices in late 2014.

The fall in approximate sales income was the result of an estimated 35% decline in average overall prices for oil and gas³. The implied average oil and gas price (per tonne of oil equivalent) in 2015-16 is estimated to be less than half the value it was just two years ago.

Figure 6 demonstrates how the change in sales value depends on a combination of changes in prices and production volumes. In many years since 2000-01 there has been an increase in sales income despite falling production because of price inflation. The opposite situation has occurred in in the latest two years, when stable or increasing production volumes have been outstripped by falling prices.

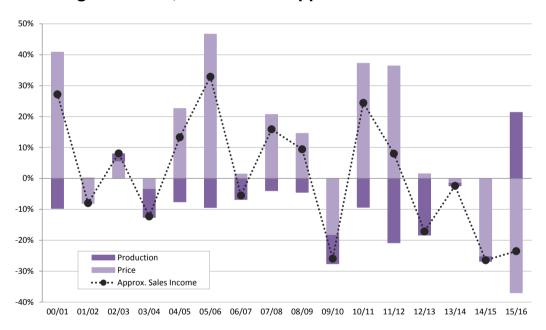


Figure 6: Changes in Price, Volume and Approximate Sales Income

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The implied deflator for oil and gas production is a measure of approximate producer prices. It is calculated by dividing approximate sales value by produced volume/tonnage. The implied average price applies to total production of both oil and gas, in £/toe.

BACKGROUND NOTES

This is the first release of Oil and Gas Production Statistics as an annual official statistics publication. Previous results were published as experimental statistics between November 2013 and October 2015 as part of the Scottish National Accounts Programme (SNAP). Details on the development of the statistics and previous releases can be accessed at www.gov.scot/snap.

Tables

A full set of background tables can be accessed from the online version of this publication, including calendar year, financial year, and quarterly results for activity in Scotland (including small amounts of onshore activity in some years), total UKCS activity (including onshore) and total UK offshore activity.

Methodology and User Guide

Further information on the Oil and Gas Production statistics is provided in the associated methodology paper published at:

http://www.gov.scot/Topics/Statistics/Browse/Economy/oilgas/ProductionMethods

Production units

The production data published by BEIS is presented in various volumetric, mass and energy units. BEIS report Crude oil and NGLs in tonnes, and natural gas in both GWh and standard cubic metres⁴.

In this publication all estimates are converted into the standard energy unit of Tonnes of Oil Equivalent (toe) to allow for comparison between liquids and gases. A tonne of oil equivalent is the amount of oil, gas or NGL equivalent to 11,630 kWh or 41.868 GJ.

The data is converted to TOE using the following conversion factors.

Crude Oil: 1 tonne = 1.09 toe NGLs: 1 tonne = 1.16 toe

GAS: 1,000 standard cubic metres = 0.92 toe

Other Scottish oil and gas statistics

The Scottish Government has developed a range of statistics relating to oil and gas extraction activity in Scotland and Scottish adjacent waters. Some of these are established national statistics, while others remain in development as exerimental statistics within SNAP.

Estimates of the Gross Value Added (GVA) and public sector revenues related to oil and gas extraction activity occuring in Scottish adjacent waters are included in the national statistics publications <u>Quarterly National Accounts Scotland (QNAS)</u> and <u>Government Expenditure and Revenue Scotland (GERS)</u>.

Estimates of <u>supply and demand</u>, <u>imports and exports of oil and gas</u> have been published as part of SNAP, including physical (quantity) commodity balances and nominal (cash) values. These remain in development and are currently published as experimental statistics. The results are also used within the energy balance esimates in the annual <u>Energy in Scotland</u> publication.

⁴A standard cubic metre of gas is the amount of gas in a cubic metre at standard conditions – temperature of 15 C°, and pressure of 1.01325 bars.

Table 1.1: Oil and Gas Production Volumes

million tonnes of oil equivalent (mtoe)

		S	cotland ¹			United Kingdom ²					
	Total Production	Crude Oil and NGL	of which: crude oil	of which: NGL	Natural Gas	Total Production	Crude Oil and NGL	of which: crude oil		Natural Gas	
Calendar Year ³											
1999	184.4	139.8	130.8	9.1	44.6	241.4	150.1	139.8	10.3	91.4	
2000	172.3	125.8	117.1	8.7	46.5			128.5	9.7	100.4	
2001	164.6	116.8	108.2	8.6	47.8	224.6	127.8	118.1	9.6	96.8	
2002	170.5	116.8	107.9	8.9	53.7	221.5	127.0	117.1	9.9	94.5	
2003	160.1	107.2	98.7	8.5	52.9	210.3	116.2	106.6	9.6	94.1	
2004	146.2	96.4	88.3	8.2	49.7	192.2	104.5	95.4	9.1	87.7	
2005	132.6	86.6	78.6	7.9	46.1	172.8	92.9	84.1	8.7	80.0	
2006	122.6	78.5	71.1	7.4	44.1	156.3	84.0	75.9	8.0	72.3	
2007	118.7	79.8	73.2	6.6	39.0	148.9	83.9	76.7	7.2	65.0	
2008	112.2	74.9	68.2	6.7	37.3	141.4	78.7	71.4	7.3	62.7	
2009	103.3	71.1	65.5	5.7	32.1	127.4	74.7	68.5	6.2	52.7	
2010	96.0	65.8	60.7	5.2	30.2	119.1	69.0	63.3	5.7	50.2	
2011	75.6	53.7	50.3	3.4	22.0	96.4 56.9		52.9	3.9	39.5	
2012	62.2	45.7	43.3	2.4	16.5	82.7	48.7	45.8	2.9	33.9	
2013	57.9	41.6	39.5	2.1	16.2	76.1	44.5	41.9	2.5	31.7	
2014	58.0	41.0	38.6	2.4	17.0	75.8	43.7	40.8	2.8	32.1	
2015	66.9	47.2	44.7	2.5	19.7	83.6	49.5	46.7	2.9	34.0	
Financial Year⁴											
1999/00	184.6	139.1	129.9	9.2	45.5	244.0	149.9	139.6	10.3	94.1	
2000/01	166.7	120.9	112.4	8.4	45.8	231.7	132.7	123.3	9.4	99.0	
2001/02	166.9	117.4	108.8	8.6	49.5	222.6	128.3	118.6	9.6	94.3	
2002/03	170.8	116.2	107.2	9.0	54.6	221.9	125.9	115.9	10.0	96.0	
2003/04	155.2	103.6	95.3	8.3	51.6	204.1	112.6	103.3	9.3	91.4	
2004/05	143.5	94.0	85.7	8.3	49.5	187.7	101.5	92.4	9.2	86.2	
2005/06	130.0	84.8	77.2	7.6	45.2	169.7	90.9	82.5	8.4	78.8	
2006/07	121.1	77.8	70.4	7.3	43.3	151.4	83.0	75.0	7.9	68.4	
2007/08	116.3	78.7	72.1	6.6	37.6	147.1	82.6	75.4	7.2	64.5	
2008/09	111.1	74.5	68.1	6.3	36.6	138.4	78.1	71.2	6.9	60.3	
2009/10	100.8	69.9	64.4	5.5	30.9	124.7	73.5	67.4	6.1	51.1	
2010/11	91.4	62.9	58.2	4.7	28.5	113.6	66.0	60.8	5.2	47.7	
2011/12	72.4	51.7	48.5	3.2	20.6	92.9	54.8	51.0	3.8	38.1	
2012/13	59.1	43.5	41.4	2.2	15.6	78.9	46.5	43.9	2.6	32.4	
2013/14	58.6	42.1	39.9	2.2	16.4	76.9	45.0	42.3	2.6	32.0	
2014/15	57.7	40.7	38.4	2.3	17.0	75.2	43.3	40.6	2.7	31.8	
2015/16	p 70.0	49.3	46.6	2.7	20.7	86.1	51.6	48.5	3.1	34.6	

Notes:

p: provisional estimate

Scotland includes Scottish Adjacent Waters
 United Kingdom Continental Shelf totals include offshore and onshore production
 Calendar year annual production consistent with Digest of UK Energy Statistics (DUKES), published 28 July 2016
 Financial year production consistent with Quarterly Energy Trends to Quarter 1 2016, published 30 June 2016

Table 2.1: Oil and Gas Income and Expenditure £ million

	Scotland ¹						United Kingdom ²						
	Approximate Sales Income ⁵						Approx	imate Sales	Income ⁵				
	Total Oil & Gas	of which: crude oil & NGL	of which: natural gas	Other Income ⁶	Operating Expenditure ⁷	Capital Expenditure ⁸	Total Oil & Gas	of which: crude oil & NGL	of which: natural gas	Other Income ⁶	Operating Expenditure ⁷	Capital Expenditure ⁸	
Calendar Year ³													
1999	12,528	10,129	2,399	906	3,299	3,297	16,015	10,984	5,031	1,436	4,249	3,520	
2000	18,798	15,765	3,033	1,071	3,268	2,459	23,998	17,392	6,606	1,488	4,360	3,098	
2001	17,258	13,300	3,958	1,068	3,400	3,371	22,749	14,609	8,140	1,435	4,347	3,990	
2002	17,856	13,313	4,543	1,084	3,685	3,187	22,722	14,523	8,199	1,397	4,596	3,988	
2003	17,468	13,299	4,169	1,164	3,537	2,908	22,024	14,470	7,554	1,538	4,496	3,746	
2004	17,763	13,580	4,183	886	3,516	3,261	22,219	14,743	7,476	1,178	4,516	3,698	
2005	22,093	16,980	5,113	1,082	3,722	3,935	27,256	18,242	9,014	1,451	4,701	4,831	
2006	25,238	18,529	6,709	1,242	4,338	5,243	31,032	19,843	11,189	1,658	5,452	6,429	
2007	24,638	19,648	4,990	1,361	4,656	5,014	29,051	20,653	8,398	1,814	5,830	6,393	
2008	32,257	25,957	6,300	1,419	5,533	4,932	37,918	27,306	10,612	1,816	6,857	6,054	
2009	20,674	17,165	3,509	1,402	5,628	4,805	23,865	18,075	5,790	1,800	6,940	5,940	
2010	26,173	21,512	4,661	1,401	5,833	6,680	30,365	22,610	7,755	1,800	7,170	7,400	
2011	29,242	24,896	4,346	1,373	5,762	9,100	34,415	26,525	7,890	1,800	7,060	10,700	
2012	25,691	22,143	3,548	1,489	6,298	10,821	31,060	23,685	7,375	1,800	7,800	13,300	
2013	23,603	19,957	3,646	1,420	7,127	13,296	28,480	21,330	7,150	1,800	8,900	16,000	
2014	20,347	16,910	3,437	1,501	7,911	12,866	24,526	18,000	6,526	1,800	9,700	14,800	
2015	14,450	10,992	3,458	1,521	6,689	10,787	17,596	11,576	6,020	1,800	8,200	11,600	
Financial													
Year⁴													
1999/00	14,753	12,412	2,340	947	3,470	3,087	18,458	13,534	4,924	1,449	4,413	3,415	
2000/01	18,765	15,254	3,511	1,070	3,375	2,687	24,573	16,819	7,754	1,475	4,526	3,321	
2001/02	17,270	12,877	4,393	1,072	3,437	3,325	22,569	14,118	8,451	1,426	4,339	3,990	
2002/03	18,668	14,305	4,363	1,104	3,799	3,118	23,364	15,541	7,822	1,432	4,695	3,928	
2003/04	16,375	12,396	3,979	1,095	3,323	2,997	20,714	13,531	7,183	1,448	4,291	3,734	
2004/05	18,556	14,402	4,154	935	3,549	3,430	22,906	15,585	7,321	1,246	4,510	3,981	
2005/06	24,657	18,081	6,576	1,122	4,203	4,262	31,074	19,396	11,678	1,503	5,373	5,231	
2006/07	23,300	17,679	5,621	1,272	4,149	5,186	27,772	18,883	8,889	1,697	5,146	6,420	
2007/08	27,004	21,967	5,037	1,376	4,887	4,994	31,837	23,075	8,762	1,815	6,064	6,308	
2008/09	29,554	23,289	6,265	1,415	5,650	4,900	34,828	24,475	10,353	1,812	7,090	6,026	
2009/10	21,894	18,853	3,041	1,402	5,683	5,273	24,955	19,881	5,074	1,800	6,932	6,305	
2010/11	27,249	22,459	4,791	1,394	5,817	7,285	31,722	23,669	8,053	1,800	7,095	8,225	
2011/12	29,436	25,277	4,159	1,402	6,201	9,530	34,637	26,887	7,750	1,800	7,566	11,350	
2012/13	24,397	20,868	3,529	1,472	6,457	11,440	29,753	22,376	7,377	1,800	8,046	13,975	
2013/14	23,812	19,988	3,824	1,440	7,393	13,189	28,796	21,339	7,457	1,800	9,278	15,700	
2014/15	17,516	14,339	3,177	1,506	7,243	12,346	21,237	15,277	5,960	1,800	8,916	14,000	
2015/16 µ	13,395	10,130	3,265	1,522	6,755	10,168	16,082	10,639	5,443	1,800	8,168	10,975	

Notes:

p: provisional estimate

- 1: Sociation includes Scottish Adjacent waters
 2: United Kingdom Continental Shelf totals include offshore and onshore production
 3: Calendar year annual production consistent with Digest of UK Energy Statistics (DUKES), published 28 July 2016
 4: Financial year production consistent with Quarterly Energy Trends to Quarter 1 2016, published 30 June 2016
 5: Approximate Sales Income reflects market value at the time of production. It is not a direct estimate of the actual sales revenue of operating companies. The figures exclude change in stocks and book value of stocks
- 6: Revenues from pipelines and terminals, and other revenues of operators and production licensees.
- Coperating costs excluding decommissioning
 Capital Expenditure includes Exploration and the cost of Appraisal wells drilled prior to development approval.

UK results for 1999-2013 are taken from BEIS Income & Expenditure on UK Continental Shelf Activities

Expenditure Figures for 2009-2015 are based on BEIS / Oil & Gas UK Activity Survey results

^{1:} Scotland includes Scottish Adjacent Waters

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Correspondence and enquiries

For enquiries about this publication please contact: John Dowens

Economic Analysis, Energy and National Accounts Statistics e-mail: john.dowens@gov.scot or economic.statistics@gov.scot

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