Energy Insight:
The economic contribution of the UK energy sector

The paper presents information on the economic importance of the UK energy sector considering the following factors:

- a number of jobs supported
- contribution to GDP
- investment level
- tax contribution
- exporting capabilities, prices and destinations
- subsidies

Number of jobs supported

The data on the UK energy sector workforce varies from 178,000 directly employed in the energy sector[1] (BEIS, 2017) through 538,000 employed in the broader mining, energy and water supply sector (ONS, 2017) to 730,000 employed directly and indirectly in the sector (Energy UK, 2017).

Taking into account the ONS data, the broad energy sector employs around 1.7% of the total UK workforce.

The oil and gas sector itself employed 330,000 in the oil and gas sub-sector (Oil & Gas UK, 2017)

The number of employees working directly in the low carbon and renewable energy economy in the UK, grew by 3.3% to 208,000 in 2016, from 201,500 in 2015. The energy efficient product group accounted for almost over two-thirds of this employment.

UK nationals are after Americans, the second biggest nationality in the global renewable sector, accounting for 15% of the total global renewable workforce.

The UK energy workforce is predominantly male. On average, only 12.8% of jobs in the UK energy sector are held by women. Additionally, the age profile is higher than the national average.

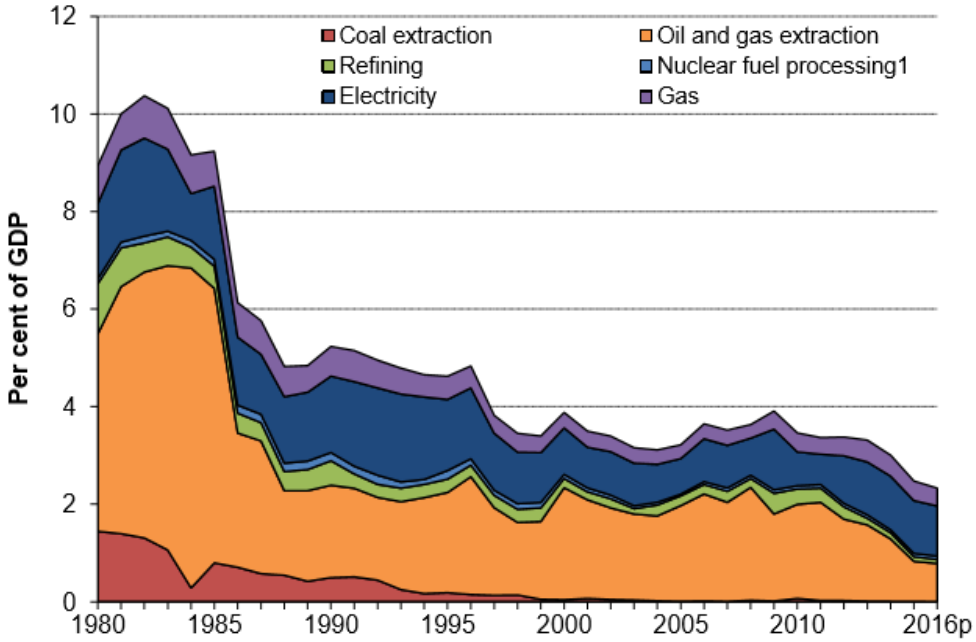
According to the ONS figures for 2016, approximately 92% of people employed in UK energy and utilities are UK nationals. However, the sector is heavily reliant on foreign labour to fill a number of skilled engineering roles, as identified on the Home Office occupation shortage list. Approximately 40-50% of the occupations from the current occupation shortage list are related to the energy and utilities sector.

[1] The figure corresponds to the Standard Industrial Classification (SIC) codes defining the Energy Sector: Mining of coal and lignite (05), Extraction of crude petroleum and natural gas (06), Mining natural ores (07), Other mining and quarrying (08), Mining support activities (09), Electricity, gas, steam and air conditioning supply (35), Water collection treatment and supply (36), Sewerage (37), Waste collection, treatment and disposal (38), Remediation activities and other waste management services (39)

Due to the recent financial downturn and post-2015 falling oil prices, more than 150,000 people were made redundant in the UK oil and gas sector. Global job reductions stand at more than 400,000 (PwC, Accenture).

Contribution to GDP

The energy sector, excluding renewables, provided 2.3% of GDP, i.e. nearly £45bn[2] to the economy in 2016, decreasing from its peak of 10.4% of GDP in 1982 and of 4.5% of GDP on average between 1994 and 2009.



Source: Contribution to GDP by the energy industries, 1980 to 2016, UK Energy in Brief 2017, BEIS

Although the oil production increased in the past two years, a large fall in prices led to the contribution from the oil and gas sector falling below that of the electricity sector.

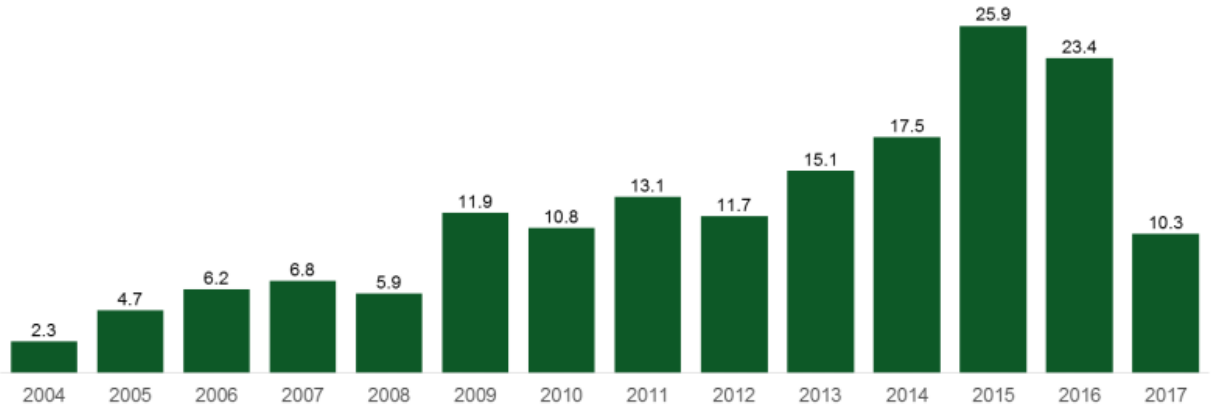
The UK low carbon and renewable energy economy grew by 5.0% to £42.6 billion in 2016, from £40.5 billion in 2015; it continued to account for around 1% of total UK non-financial turnover. The energy efficient product group accounted for almost half of total low carbon and renewable energy turnover (£20.7 billion).

Investment level

The energy sector is Britain's largest industrial investor accounting for 34.3% of industrial investment in 2016 and 10.3% of total investment. Nevertheless, in 2016 investment in the energy industry fell 13%, or £18.6 billion, in comparison to the previous year, of which 34% was the fall in investment in oil and gas extraction, 54% in electricity and 11% in gas.

[2] However, a calculation by Energy UK estimates the contribution of the UK energy industry to the economy at £83 billion (Written evidence from Energy UK to the House of Lords' consultation 'Brexit: energy security', 2017).

According to Bloomberg New Energy Finance, the UK investment value in clean energy has peaked in 2015, reaching $25.9 billion. However, investment in green energy fell 56% in UK in 2017 – biggest fall of any country – after 'stop-start' support from government.



New Investment in Clean Energy, United Kingdom 2004-2017, in $bn
Source: Clean Energy Investment Trends, 2017, Bloomberg New Energy Finance

Tax contribution

According to calculations based on detailed government statistics, the total tax revenue from the UK offshore oil and gas sector added to £190bn since 1968[3]. This number is not adjusted for inflation. Tax revenue from the oil and gas production made an average annual contribution over the 10 years 2004/5 to 2013/14 of £7.4 billion, but declined rapidly in 2014/15 to £2.2 billion and almost zero in 2015/16.

Summary statistics for UK oil and gas production

	Industry income £million	Tax revenue (Financial years) £million	Oil production million tonnes	Gas production Twh	Brent oil price $/barrel
2000	25,486	4,454	126.2	1,260.2	28.50
2001	24,185	5,432	116.7	1,230.5	24.44
2002	24,118	5,117	115.9	1,204.7	25.02
2003	23,562	4,281	106.1	1,196.9	28.83
2004	23,397	5,171	95.4	1,120.4	38.27
2005	28,707	9,381	84.7	1,025.2	54.52
2006	32,689	8,927	76.6	929.8	65.14
2007	30,865	7,465	76.6	838.1	72.39
2008	39,733	12,456	71.8	809.6	97.26
2009	25,665	5,989	68.2	694.0	61.67
2010	32,165	8,391	63.0	664.4	79.50
2011	36,215	10,939	52.0	526.0	111.26
2012	32,860	6,218	44.6	452.1	111.67
2013	30,280	4,742	40.6	424.2	108.66
2014	26,640	2,217	39.9	427.8	98.95
2015	19,875	43	45.3	460.3	52.39

Sources: DECC, DBEIS, Energy Trends, Oil and Gas Authority, BP Statistical Review 2015
Notes:
Income includes oil, gas and natural gas liquids (DECC)
Oil production includes natural gas liquids (DBEIS)
Crude oil price in nominal prices (BP)
Tax revenue includes all taxes collected from UK oil and gas production (OGA)

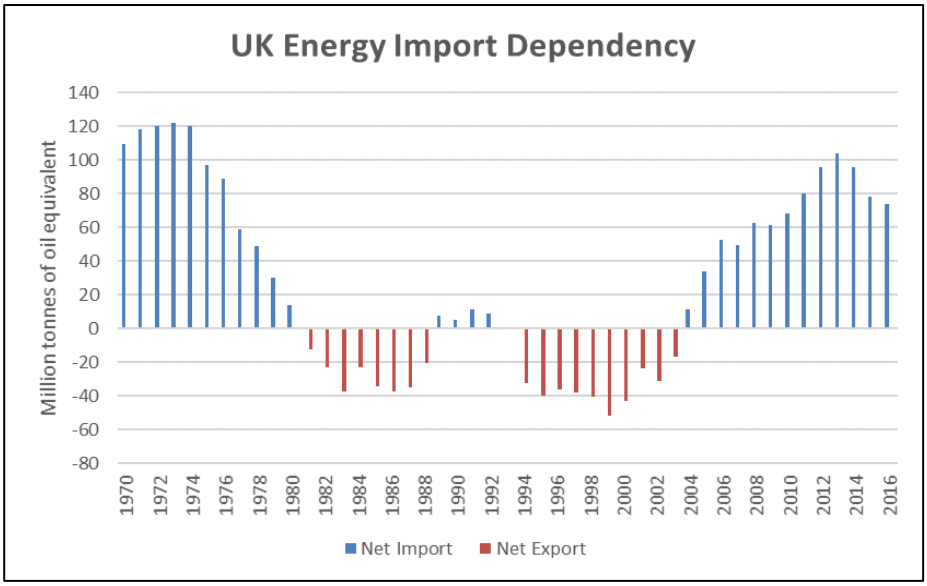
[3] According to a calculation by Oil & Gas UK, the oil and gas industry has paid over £330 billion in taxes to HM Treasury since the 1970s. The industry continues to pay around £2.5 billion per year in corporation tax and employment taxes right across the supply chain.

Source: UK offshore oil and gas industry, Briefing Paper, House of Commons, March 2017

Nevertheless, according to Energy UK, the tax contribution from the broad energy sector, including nuclear and renewables, added to £5.9bn in 2015/16.

Exporting capabilities, prices and destinations

In 2017, exports were expected to account for 43% (£11.8 billion) of the oil & gas supply chain turnover. Overall, the UK has been a net energy (oil, gas, coal, primary electricity) importer since 2004. Recently, the net import dependency has fallen from its 2013 peak.



Source: Digest of UK Energy Statistics (DUKES) 2017, BEIS

The UK had the eighth lowest level of import dependency in the EU, as all EU countries are now net importers of energy.
The energy industries are major contributors to the UK's Balance of Payment through the exports of crude oil and oil products. Despite the decrease in export quantity, the total value of UK oil exports rose until 2013, mainly due to a decade-long surge (temporarily disrupted in 2008 and 2009) in oil prices, driven by the rise in global demand as well as due to instability of oil supply from the Middle East.
However, the recent collapse of oil prices led to a fall in export value by 50% (£ 9.8bn) in 2016, compared to the peak year of £18.7bn in 2013. The top UK crude oil export destinations in 2016 were the Netherlands, Germany, China, South Korea, France and USA.

Businesses active in the low carbon and renewable energy economy exported an estimated £3.7 billion in 2016 and imported an estimated £6.0 billion, compared with £4.3 billion in 2015.

Subsidies

The United Kingdom spent 1.37% of its GDP on subsidies for fossil fuels in 2015. This places the UK among the 6 bigger spenders (in dollar terms) on fossil fuel subsidies among the advanced countries, following the US, Japan, Korea, Germany and Canada.

	Petroleum	Coal	Natural Gas	Electricity	Total
Post-tax subsidies in US$ billions (nominal)	0.28	28.62	12.34		**41.23**
Post-tax subsidies in US$ per capita (nominal)	4.25	440.71	190.01		**634.97**
Post-tax subsidies as a percent of GDP	0.01	0.95	0.41		**1.37**

Source: IMF Survey: Counting the Cost of Energy Subsidies, July 2015

According to the Renewable Energy Foundation's calculation based on Ofgem data, the total cost of subsidies to renewable electricity in the United Kingdom in 2002–2016 was £23.1bn.

Year	RO (£m)	FiT (£m)	Total (£m)
2002-2003	278		278
2003-2004	416		416
2004-2005	495		495
2005-2006	583		583
2006-2007	719		719
2007-2008	876		876
2008-2009	1,036		1,036
2009-2010	1,119		1,119
2010-2011	1,285	14	1,300
2011-2012	1,458	151	1,608
2012-2013	1,991	506	2,498
2013-2014	2,599	691	3,290
2014-2015	3,114	866	3,980
2015-2016	3,743	1,110	4,853
Total (£m)	**19,818**	**3,338**	**23,156**

Source: Renewable Energy Foundation, The Total Cost of Subsidies to Renewable Electricity in the United Kingdom: 2002–2016, March 2017