

# Annex G

## Foreign trade

This annex provides an overview of published trade data by HM Revenue and Customs (HMRC) on energy products. There are some inconsistencies between the HMRC energy trade data and that presented in the main chapters of DUKES. In the main chapters, the trade data are produced from a combination of data from HMRC and from companies responding to BEIS statistical surveys. These data are presented for users who use energy trade data alongside trade data for other products. Tables G1-G7 are available at: [www.gov.uk/government/statistics/dukes-foreign-trade-statistics](http://www.gov.uk/government/statistics/dukes-foreign-trade-statistics)

### Main points for 2016

Provisional data from HMRC show that:

- There were a total of 142 million tonnes of oil equivalent (mtoe) imported to the UK in 2016 which was 3.5 per cent lower than in 2015 (**table G.1**).
- Exports fell slightly by 0.6 per cent to 84.4 mtoe, having been broadly levelled over the past three years (**table G.1**).
- The energy trade deficit stood at £10.5 billion, 16 per cent lower than in 2015. The fall was largely due to reduced deficit in all energy products except for natural gas, as UK production in 2016 increased (**table G.7**).

Imports by fuel type:

- Coal imports fell by 60 per cent to 9.3 million tonnes, with large fall in steam coal mainly used for electricity generation (**table G.2**).
- Crude oil imports fell by 1.6 per cent to 43.9 million tonnes as increased domestic production and refineries processing more indigenous crude reduced the need for imports (**table G.3**).
- HMRC data shows that the UK was a net importer of petroleum product in 2016 by 11.0 million tonnes (**table G.3**).
- Gas imports rose by 6.8 per cent to 432 TWh, within which LNG imports decreased 20 per cent (**table G.5**).

### Introduction

G.1 This annex provides an overview of the UK energy trade commodities which also corresponds with that published in the *Overseas Trade Statistics of the United Kingdom (O.T.S.)*<sup>1</sup>. Section I of this annex covers energy trade volumes while section II covers energy trade value.

G.2 The volume information in section I, focuses on the declaration made to HMRC on UK imports and exports in relation to countries outside the European Union (EU) as well as on arrivals and dispatches in relation to EU member states. In table G.1, BEIS has converted the HMRC data into million tonnes of oil equivalent (mtoe), so that energy sources can be combined to provide an overview of total trade. The value information, in section II, corresponds to that published by the Office for National Statistics energy trade value data.

G.3 In this annex, BEIS has used estimates based on its industry trade reports for some recent gas data to improve on the accuracy and quality of the data. Those estimates are indicated and footnoted in the tables.

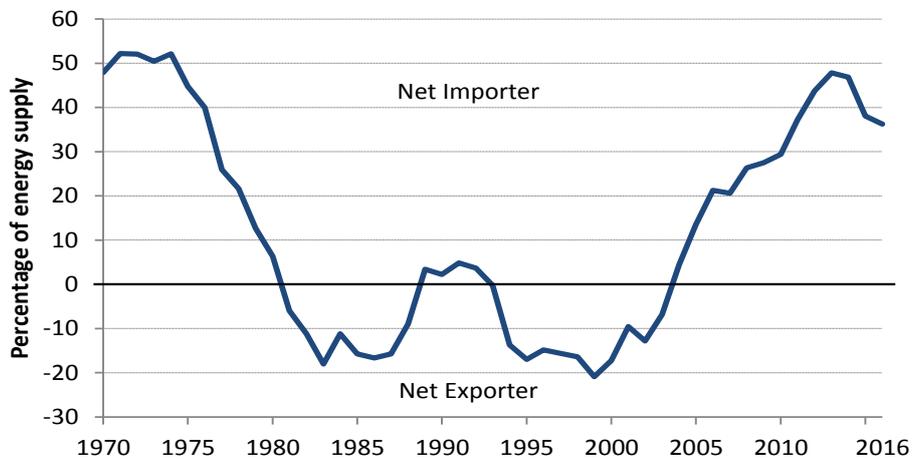
<sup>1</sup>[www.uktradeinfo.com/Statistics/Pages/Statistics.aspx](http://www.uktradeinfo.com/Statistics/Pages/Statistics.aspx)

## SECTION I - Volume

### 1.1 Overview - Import and export of fuels

G.4 In the 1970s the UK was a net importer of energy. Discoveries of oil and gas from the North Sea and the price spikes of 1973 led to a large rise in domestic UK crude oil production. In the early 1980s the UK became a net exporter of energy. However, as a result of the Piper Alpha disaster in 1988, oil production fell, leading to the UK reverting back to become a net importer of energy. The UK once again became a net exporter in the mid-1990s as a result of growth in the North Sea production, but after the peak in 1999, North Sea production slowed and since 2004 the UK once again became and has remained a net importer of fuels. **Chart G.1a** below shows the UK net import dependence level from 1970 to 2016, based on BEIS data. Since 2004, net import dependency has continued to rise but over the past three years, the dependency level (net imports compared to demand) has fallen. Following the sharp fall in the previous year, net import dependency dropped slightly to 36.0 per cent in 2016 as imports fell by 3.5 per cent while exports fell by 1.1 per cent.

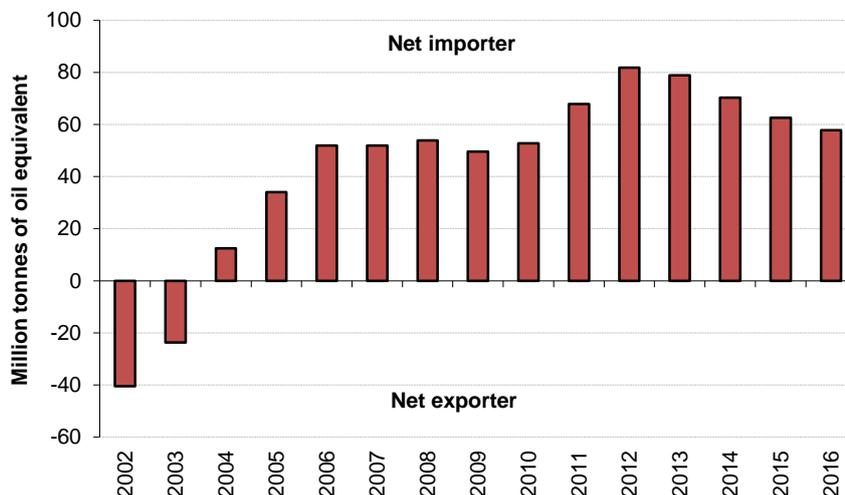
**Chart G.1a: UK import dependency, 1970 to 2016**



Source: BEIS

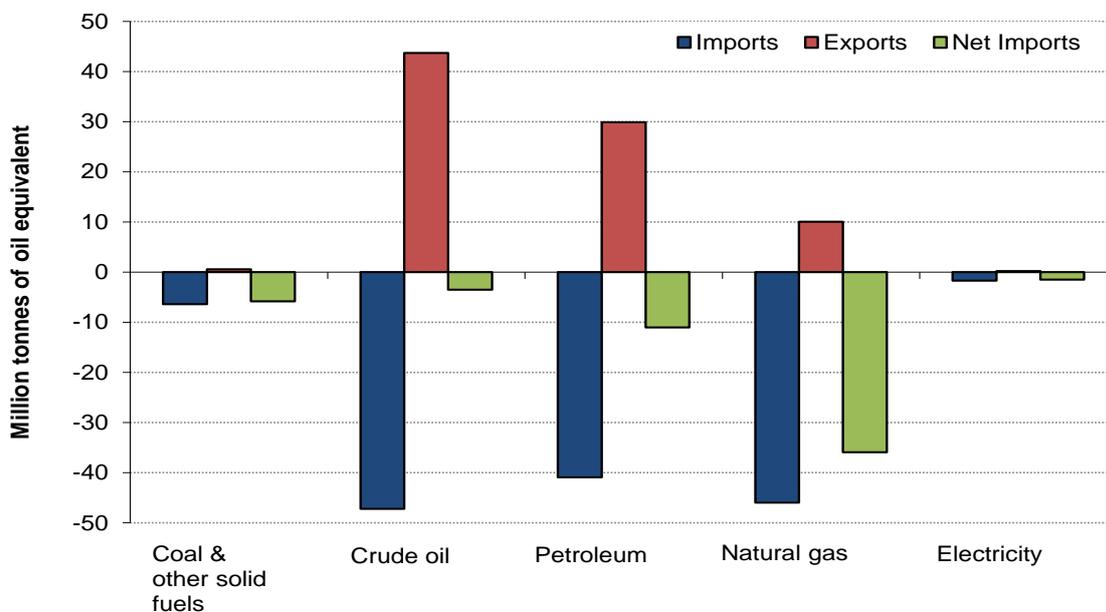
G.5 HMRC data shows that since the switch from being a net exporter in 2003 to a net importer in 2004, the UK has continued to remain a net importer of energy. Net imports have since grown considerably as the falls in UK energy consumption have been outweighed by the continuing decline in production. Since the peak in 2012, net imports have been on the decline and in 2016, due to an increase in production, total net imports of fuels fell by 7.6 per cent on the previous year to 57.8 million tonnes of oil equivalent (mtoe); as imports fell by 3.5 per cent while exports fell by only 0.6 per cent (**Chart G.1b**). **Table G.1**, at the end of this annex, shows the HMRC UK import and export quantities for all fuel types since 2002.

**Chart G.1b: UK net imports of fuel, 2002 to 2016**



G.6 **Chart G.2** illustrates trade by fuel type based on HMRC volume data together with average BEIS data on the energy content of the fuels for 2016 and in which the UK was a net importer of all fuels. The UK has for a long time been a net exporter of petroleum products but over the past few years exports levels have rapidly declined. In 2016, despite the low crude price for more than ten years and an increase in crude production, activities at refineries fell slightly. Demand for petroleum product however were met by an increase in import of 5.1 per cent and despite an increase of 1.1 per cent in its export, the UK remained a net importer of petroleum products. BEIS volume data shows the switch from net exports to net imports occurred in 2013, a year earlier to the HMRC data.

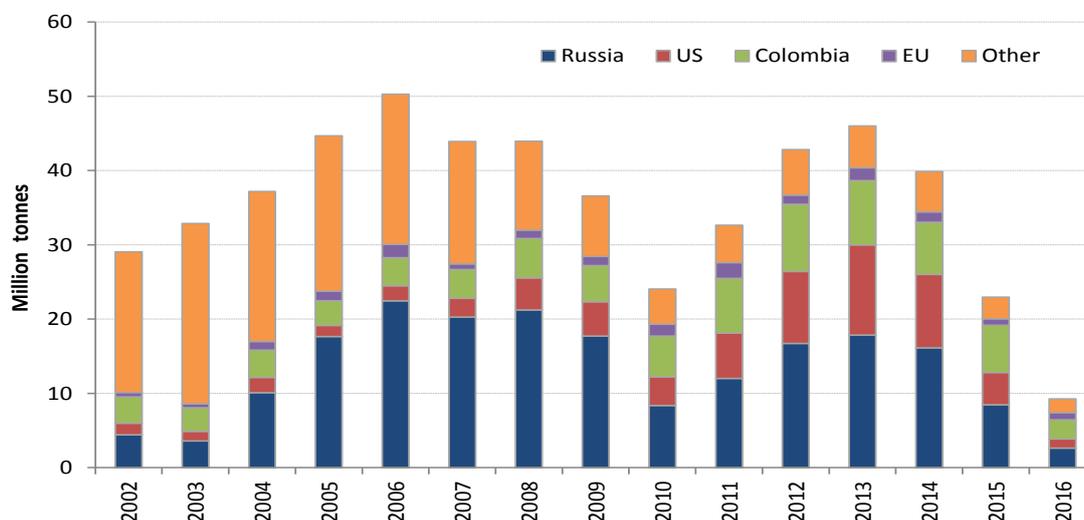
**Chart G.2: Imports and exports by fuel type, 2016**



## 1.2 Coal and manufactured solid fuels

G.7 Imports of coal peaked in 2006. Since then there has been a gradual decrease, as coal demand for electricity generation has fallen. Generation from coal became more attractive between 2012 and 2013 as gas prices peaked, resulting in increased imports. Coal imports have since fallen steeply and in 2016 were at the lowest level for more than 10 years. In 2016, the UK imported 9.3 million tonnes of coal and other solid fuels, 60 per cent (13.7 million tonnes) lower than in the previous year. The fall in 2016 was due to reduced coal-fired capacity as two coal power plants closed down and an increase in the relative price of coal compared to other sources. **Chart G.3** illustrates the trends in the imports of coal by country for the years 2002-2016.

**Chart G.3: Imports of coal by country of origin 2002 to 2016**



G.8 **Table G.2**, provides a breakdown of HMRC imports and exports of steam coal, coking coal, anthracite and other solid fuels by country of origin and destination.

G.9 Coal imports from Russia have been steadily increasing and in 2005, Russia overtook South Africa to become the UK's largest coal provider. Though it has since continued to be so; over the recent years imports of coal from Russia have declined sharply and in 2016 it was just under a third the amount in the previous year. In 2016 of the UK's coal imports 28 per cent were from Russia and similarly 28 per cent were from Colombia and a further 13 per cent from the US.

G.10 Of the total coal imported in 2016, 50 per cent was steam coal, 44 per cent was coking coal and the rest anthracite and other solid fuels. In 2016, import of steam coal fell by 73 per cent with imports from Russia down 77 per cent to 1.6 million tonnes, from the US down 88 per cent to 0.3 million tonnes and from Colombia down by 62 per cent to 2.4 million tonnes.

G.11 In 2016, 24 per cent of the UK coking coal imports came from the US followed by another 24 per cent from Russia and 22 per cent from Australia. The bulk of anthracite and other solid fuels imports were from EU countries.

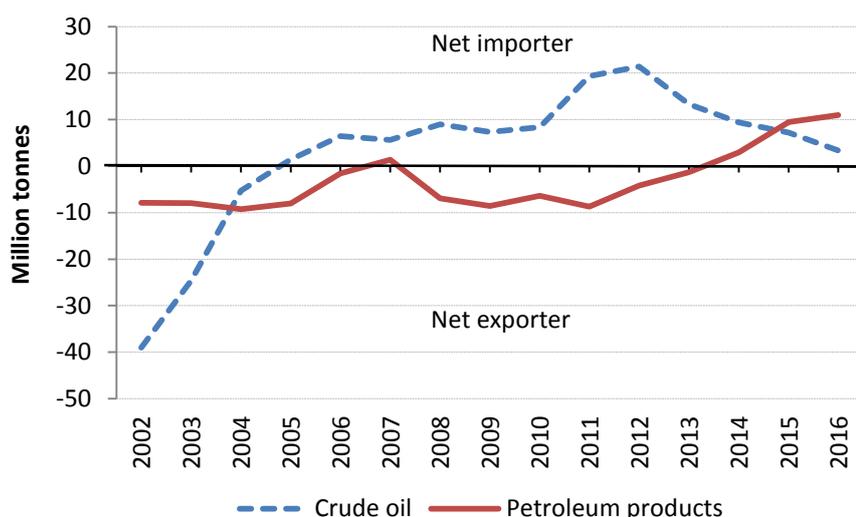
G.12 Exports of coal and other solid fuels rose by 30 per cent to 0.8 million tonnes in 2016 with 40 per cent of coal exports to the Irish Republic.

### 1.3 Crude oil and petroleum products

G.13 Trade quantities, in thousands of tonnes, of crude oil and refined petroleum products are shown in **Table G.3**. In the table, the import values per tonne are expressed on a cost, insurance and freight (c.i.f) basis while the export values are on a free on board (f.o.b) basis (e.g costs of goods to the purchaser abroad) – see section II for more details.

G.14 **Table G.4** provides trade data in crude oil by country where the import data, as far as possible, are on a 'country of origin' (or production) basis. Since becoming a net importer of crude oil in 2005, the UK's net imports of crude oil have steadily increased, rising significantly between 2010 and 2012. Net imports of crude oil as reported by HMRC have since been on the decline and in 2016 it fell further by 53 per cent to 3.4 million tonnes (**chart G.4**) due to increase in indigenous production and processing of indigenous crude at refineries.

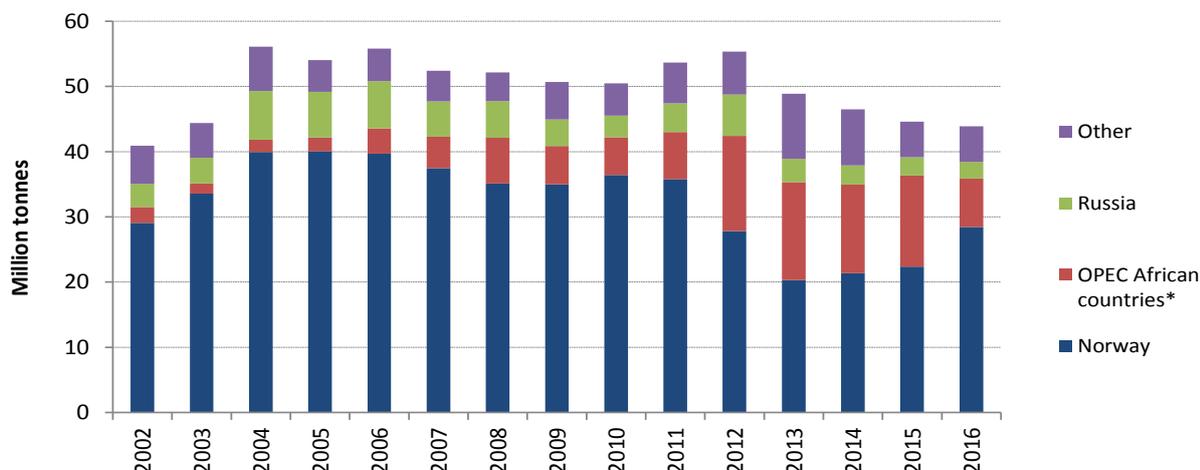
**Chart G.4: Net trade of crude oil and petroleum products 2002 to 2016**



G.15 Norway remains the major crude oil supplier to the UK despite the fall in imports from that country in the past few years (**chart G.5**). In 2016, Norway supplied around 65 per cent of the UK's total crude oil imports compared to 76 per cent in 2003. The majority of the remaining imports came from the OPEC African countries such as Algeria, Angola, Libya and Nigeria which together accounted for 17 per cent of the total crude imports. Imports from Russia were 6 per cent of the total and from the Middle East, mainly from Saudi Arabia, 3 per cent. In 2016, exports of crude oil to EU countries rose 3 per cent and accounted for 71 per cent of the UK's total exports of crude oil. The UK's two largest markets in the EU are Germany and the Netherlands; the bulk of the exports to Germany are for refining and consumption, whilst exports to the Netherlands include oil destined for onward trade to other countries. The largest non EU markets for

crude oil were China and South Korea, which accounted for 50 per cent and 27 per cent of such exports respectively.

**Chart G.5: Imports of crude oil by country of origin, 2002 to 2016**



\* The OPEC African members are Algeria, Angola, Nigeria and Libya

G.16 The main refined petroleum products imported into the United Kingdom in 2016 were gas & diesel oil which together accounted for 42 per cent of the total; followed by aviation turbine fuel (kerosene) 24 per cent. The main refined petroleum products exported in 2016 were motor & aviation spirits; gas & diesel oil and fuel oils which together accounted for 65 per cent of the total.

G.17 On a net trade basis, in 2016 HMRC data show that the UK was again a net importer of petroleum products with net imports of 11.0 million tonnes (**chart G.4**), which was 1.5 million tonnes more than in the previous year. In 2016 the UK net imports of aviation turbine fuel were 8.8 million tonnes and of diesel 11.8 million tonnes. However, the UK was a net exporter of petrol (5.2 million tonnes) and fuel oil (0.8 million tonnes).

## 1.4 Imports and exports of natural gas

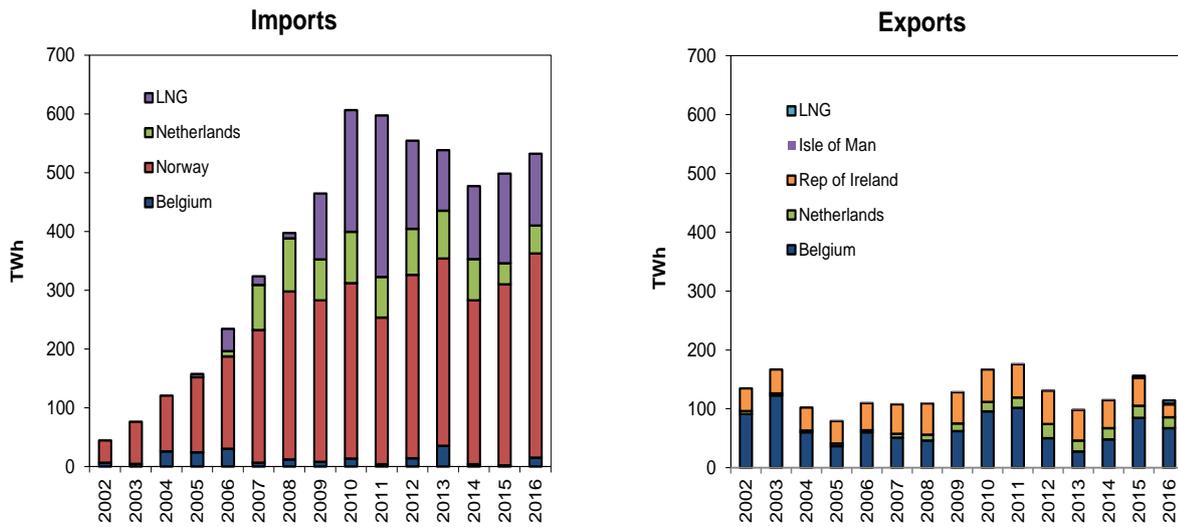
G.18 Between 1997 and 2003 the UK was a net exporter of gas. UK gas production peaked in 2000 and has since been in general decline. As a result the UK has sought to access additional supplies of gas from a range of sources to bridge the gap between indigenous production and demand as reserves on the UK Continental Shelf deplete.

G.19 Since 1999 natural gas imports have been increasing sharply, but since the peak in 2010 imports levels have declined. However in the last two years gas imports have increased due to increase in demand and in 2016 gas imports was up by 6.8 per cent. Natural gas exports increased sharply between 2005 and 2011, but then fell back for two years, before rising once again. Following the rise in the previous year, gas exports in 2016 fell by 27 per cent as exports to Belgium and Ireland fell. The fall in the UK export to Ireland was due to the Corrib gas field off the Irish coast supplying Ireland. **Chart G.6** depicts the trends in natural gas imports and exports by country. It also includes trends in the volume of Liquefied Natural Gas (LNG) imports (see **Chart G.7** for country breakdown of LNG imports). The UK has one of the world's largest LNG importation terminals by capacity and the largest in Europe at South Hook near Milford Haven, and the UK also has the pipeline structure to then export natural gas to the continent. Since 2015 the UK began to re-export imported LNG from storage and in 2016 the volume was almost twice that in 2015 and accounted for 5 per cent of the total exports.

G.20 **Table G.5** gives a breakdown of imports and exports of natural gas by country of origin and destination. The data in the table are physical flows as reported by the pipeline or terminal operators to BEIS. Whilst the data presented in the table differ from the nominated flows reported in Chapter 4, the overall net flows (e.g net imports or net exports) are the same.

G.21 In 2016 the UK exported 114 TWh of gas which was 27 per cent lower than in 2014. Belgium was the main destination of UK gas exports (from where it could be shipped elsewhere in mainland Europe) followed by The Republic of Ireland. In 2016, exports to these countries fell by 20 per cent and 53 per cent respectively. The other main destination of UK gas exports was the Netherlands via the UK share gas fields using the Dutch WGT pipeline system to Den Helder and Uithuizen.

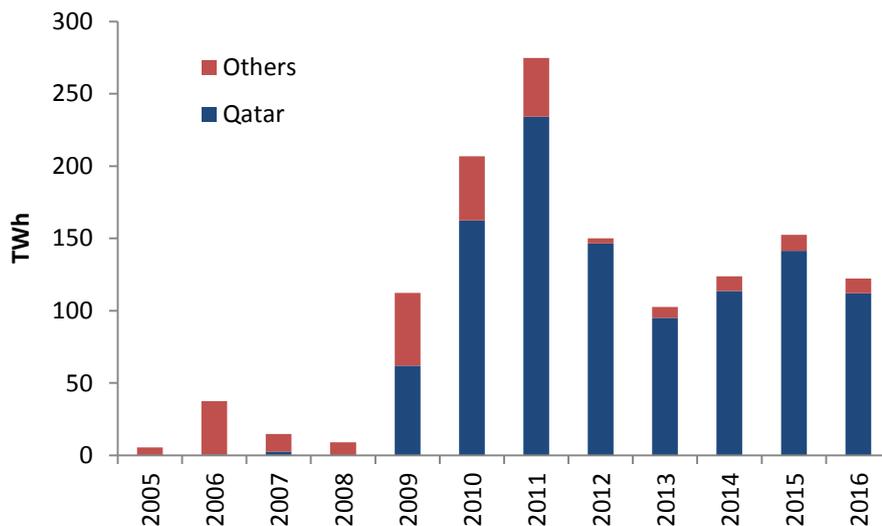
**Chart G.6: Imports and exports of natural gas by country, 2002 to 2016**



G.22 In 2016 the UK imported 532 TWh of gas which was up by 6.8 per cent on 2015. Around 65 per cent of gas imports were from the Norwegian Continental Shelf and imports from Belgium were up 7 fold. LNG imports from various sources (**Chart G.7**) decreased by 20 per cent and accounted for 23 per cent of total gas imports in 2016. LNG imports from Qatar decreased by 21 per cent and accounted for 92 per cent of total LNG imports. Supplies were also delivered to the UK from the European mainland via the Balgzand (Netherlands)-Bacton interconnector and from Zeebrugge (Belgium) via the interconnector with Belgium. The origin of the gas molecules from mainland Europe is not known hence are assigned to the Netherlands and Belgium.

G.23 The UK does not import natural gas and LNG from Russia. The physical origins of the gas through the pipelines are not available. It is possible that a very small amount of gas from Russia finds its way across continental Europe to the UK, but given the gas pipeline infrastructure it is believed that most of the gas from the Netherlands is sourced from the Dutch sector of the North Sea, and that most of the gas from Belgium is sourced from Norway via Zeepipe (which terminates at Zeebrugge). Thus any UK gas sourced from Russia is negligible.

**Chart G.7: Imports of LNG by country, 2006 to 2016**



## 1.5 Imports and exports of electricity

G.24 For over a decade, the UK has been a net importer of electricity. In 2016, imports of electricity came mainly from France (11 TWh) and the Netherlands (7.4 TWh); whilst exports were mainly to France due to nuclear outages. In 2016, imports of electricity fell 13 per cent to 19.7 TWh due to a fall in imports from France via the interconnector. However exports of electricity rose by 21 per cent to 2.2 TWh as a result of demand from France. As a result net imports fell by 16 per cent from 20.9 TWh to 17.5 TWh.

## 1.6 Imports and exports of renewables

G.25 Apart from wood pellets and biodiesel, HMRC do not collect any other specific data on the imports of renewables intended to be used for energy purposes. In 2016, wood pellets imports to the UK, mainly from the United States, were 7.1 million tonnes, an increase of 8.4 per cent on the previous year (**table G.6**) while imports of biodiesel were 0.6 million tonnes of oil equivalent, an increase of 5.8 per cent. In 2016 BEIS estimates of total renewables imports to the UK which include wood, wood waste, biomass and liquid biofuels were 3.7 mtoe, broadly similar to the previous year.

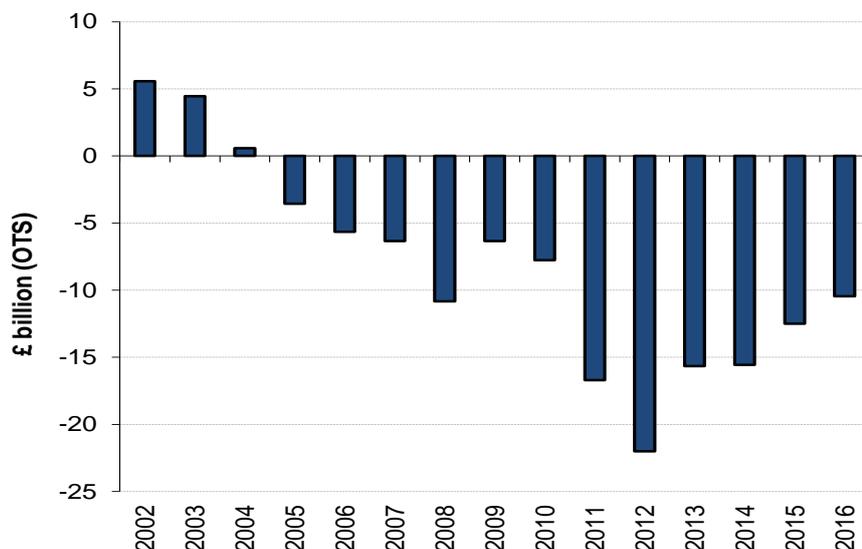
## SECTION II – Value

### 2.1 Imports and exports of fuels (Overseas Trade Statistics basis)

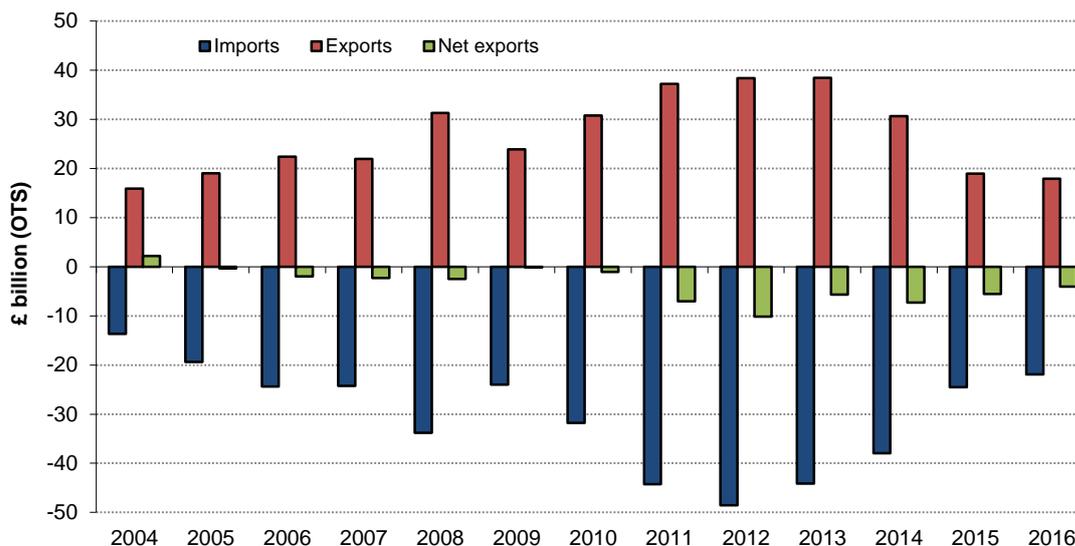
G.26 For statistical purposes, the UK adopts the valuation basis for overseas trade statistics (OTS) as recommended in the International Merchandise Trade Statistics Concepts & Definitions published by the United Nations. This means that the valuation of exports and dispatches is on a free on board (fob) basis (eg costs of goods to the purchaser abroad) while the valuation of imports and arrivals is on a cost, insurance and freight (cif) basis which includes all the incurred expenses in moving the goods to the point of entry into the UK, but excludes any duty or tax chargeable in the UK.

G.27 On an OTS basis, following the switch from the energy trade surplus of £0.6 billion in 2004, the UK has remained in deficit (*Chart G.8*). Between 2005 and 2008, the energy trade deficit grew steadily but fell back in 2009 reflecting lower oil prices. It has since continued to grow significantly reaching £22 billion in 2012 but in 2013 it fell back again driven by a fall in the deficit of crude oil and petroleum products. Deficit has continued to fall since and in 2016 there was a further reduction of 16 per cent to £10.5 billion due to substantial reduction in crude oil and gas prices and in crude oil and coal volumes. The deficit of crude oil and petroleum products, on the same basis, in 2016 was £4.0 billion (27 per cent less than in 2015) compared to a £2.2 billion surplus in 2004 (*Chart G.9*).

**Chart G.8: Value of net exports of fuel, 2002 to 2016**



**Chart G.9: Value in trade of oils<sup>(1)</sup>, 2005 to 2016**



(1) Crude oil and petroleum products

Imports on CIF, exports on FOB basis

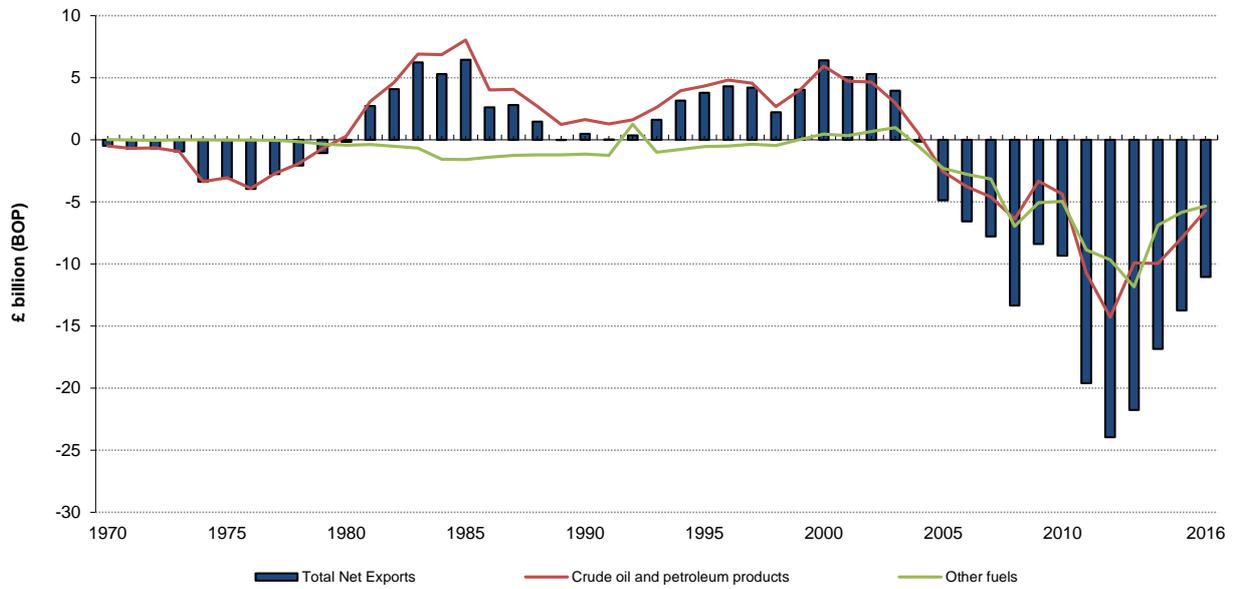
## 2.2 Imports and exports of fuels (Balance of Payment basis)

G.28 In order to conform with the International Monetary Fund (IMF), the Office for National Statistics (ONS) compiles their energy trade data on a balance of payment basis (BOP) in which the value of goods is the value at the point of the exporting country, e.g the freight and insurance costs to the UK is excluded from the value recorded by HMRC.

G.29 **Chart G.10** shows the net exports of fuels in value terms on a BOP basis since 1970. The United Kingdom's trade in fuels was dominated by imports until exports started to grow substantially in the mid-1970s, when production from the North Sea started, resulting in a trade surplus in 1981. This surplus was sustained between 1981 and 2003, except for a small deficit in 1989, and amounted to just under £80 billion over that period. However, these surpluses were reduced by the fall in oil prices in 1986, and then by the fall in North Sea production following the Piper Alpha accident in 1988 and the resulting safety works. Although the trade surplus increased steadily from 1992 to 1996, there were falls in 1997 and 1998 due to the drop in the price of crude oil. Prices of crude oil and petroleum products increased in 1999 and again in 2000 giving it, in current price terms, the highest net surplus. In 2001 the value of the trade surplus fell, reflecting falls in the price of crude oil and petroleum products; however, this was partly reversed by a 5 per cent increase in the net trade surplus during 2002.

G.30 Since 2004 the UK has been a net importer of fuels with deficits recorded both for oil and the other fuels series. The deficit increased sharply in 2008 due to a sharp rise in the price of crude oil with Brent prices increasing by \$25 per barrel to \$98 per barrel, before falling back to \$63 per barrel in 2009. In 2011 there was another sharp increase in the size of the energy trade deficit, which nearly doubled that in 2010, from £9.3 billion to £19.6 billion; this was mainly due to the oil deficit increasing from £4.4 billion to £10.7 billion, as oil prices rose sharply from an average of \$80 per barrel in 2010 to \$111 per barrel in 2011. In 2016, on a BOP basis, the total deficit was £11.1 billion, £2.7 billion less than in the previous year driven by deficit in crude oil falling by £2.2 billion, as less crude oil were imported as well as large fall in crude oil prices and deficit in other fuels falling by £0.5 billion. Crude oil price fell by around \$8 per barrel to stand at \$45 per barrel in 2016.

**Chart G.10: Value of net exports of fuels on a balance of payment basis, 1970 to 2016**



G.31 **Table G.7** shows the trends in the UK trade values from 1970 to 2015 both on an OTS and BOP basis. Import values on a f.o.b. basis are also included in the table, to allow net exports to be presented on a comparable f.o.b. basis over the same period.

## Technical notes and definitions

G.32 The figures of imports and exports quoted in this annex are derived from notifications to HM Revenue and Customs, and may differ from those for actual arrivals and shipments, derived from alternative and/or additional sources, in the sections of the Digest dealing with individual fuels. Data in Table G.1 also include unpublished revisions to Customs data, which cannot be introduced into Tables G.3 to G.5.

G.33 All quantity figures in Table G.1 have been converted to million tonnes of oil equivalent to allow data to be compared and combined. This unit is a measure of the energy content of the individual fuels; it is also used in the Energy section of this Digest and is explained in Annex A, paragraphs A.45 to A.46. The quantities of imports and exports recorded in the Overseas Trade Statistics, in their original units of measurement, are converted to tonnes of oil equivalent using weighted gross calorific values and standard conversion factors appropriate to each division of the Standard International Trade Classification (SITC). The electricity figures are expressed in terms of the energy content of the electricity traded.

G.34 Except as noted in Table G.7, values of imports are quoted "c.i.f." (cost, insurance and freight). Briefly this value is the price that the goods would fetch at that time, on sale in the open market between buyer and seller independent of each other, with delivery to the buyer at the port of importation, the seller bearing freight, insurance, commission and all other costs, etc, incidental to the sale and delivery of the goods with the exception of any duty or tax chargeable in the United Kingdom. Values of exports are "f.o.b." (free on board), which is the cost of the goods to the purchaser abroad, including packing, inland and coastal transport in the United Kingdom, dock dues, loading charges and all other costs, charges and expenses accruing up to the point where the goods are deposited on board the exporting vessel or at the land boundary of Northern Ireland.

G.35 Figures of the value of net exports in Tables G.7 are derived from exports and imports measured on a Balance of Payments (B.O.P) basis. The figures are consistent with the European System of Accounts 1995, the basis on which they are published by the Office for National Statistics. This means exports as recorded by HM Revenue and Customs, will differ from those recorded by the Office for National Statistics on a B.O.P basis.

G.36 Figures correspond to the following items of SITC (Rev 3) at <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=14&Lq=1>

Coal	321.1 and 321.2
Other solid fuels	322 and 325 (part)
Crude oil	333
Petroleum products	334, 335, 342 and 344 (plus Orimulsion reclassified to division 278 during 1994)
Natural gas	343
Electricity	351

G.37 In 1993, the Single European Market was created. At that time, a new system for recording the trade in goods between member states, called INTRASTAT, was introduced. As part of this system only obliges small traders to report their annual trade and as some trading supply returns are late, it is necessary to include adjustments for unrecorded trade. This is particularly true of 1993, the first year of the system and of coal imports in that year.

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