Annex G

Foreign trade

This annex provides an overview of published trade data by HM Revenue and Customs (HMRC) on energy products in the UK. 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. The data for this annex are presented in tables G1-G7 available at: www.gov.uk/government/statistics/dukes-foreign-trade-statistics

Main points for 2017

Provisional data from HMRC show that:

- There were a total of 147.8 million tonnes of oil equivalent (mtoe) imported to the UK in 2017 which was 3.8 per cent higher than in 2016 (**table G.1**).
- Exports rose in 2017 by 7.7 per cent to 90.6 mtoe, having been broadly level over the past four years (**table G.1**).
- The energy trade deficit stood at £13.3 billion, 29 per cent more than in 2016. The increase was largely due to increased deficit in all energy products (**table G.7**).

Imports by fuel type:

- Coal imports fell by 4.9 per cent to 8.8 million tonnes in 2017 (**table G.2**).
- Crude oil imports rose by 16 per cent to 50.8 million tonnes to satisfy demand at refineries processing as indigenous production fell (**table G.3**).
- HMRC data shows that the UK was a net importer of petroleum product in 2017 by 9.7 million tonnes (**table G.3**).
- Gas imports fell by 1.6 per cent to 524 TWh, within which LNG imports decreased 34 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.)*[1]. 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.

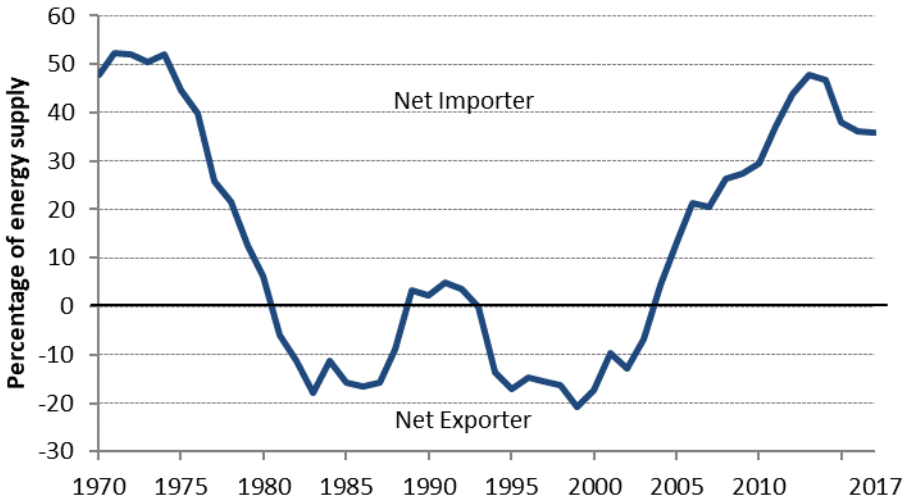
[1] www.uktradeinfo.com/Statistics/Pages/Statistics.aspx

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 (net imports compared to demand) from 1970 to 2017, based on BEIS data. Following the peak in 2013, net import dependency has continued to fall with a sharp fall in 2015. In 2017 net import dependency dropped slightly by 0.4 percentage points to 35.8 per cent as imports rose by 1.2 per cent while exports rose by 4.7 per cent.

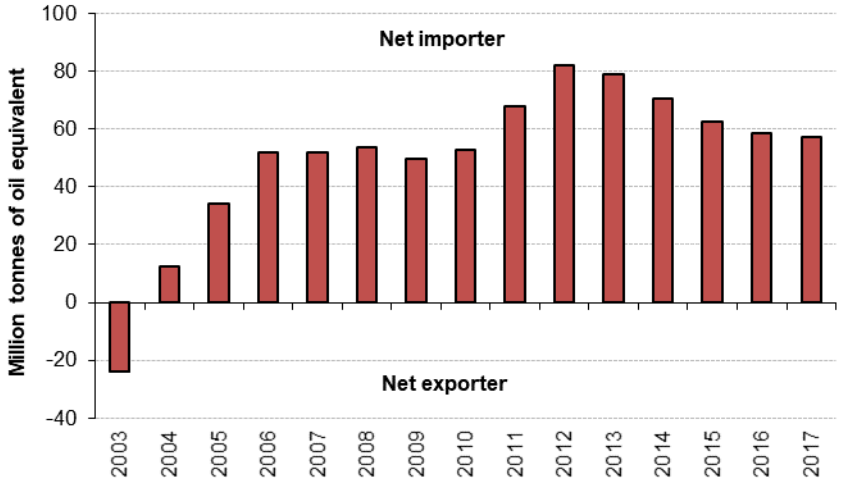
Chart G.1a: UK import dependency, 1970 to 2017



Source: BEIS

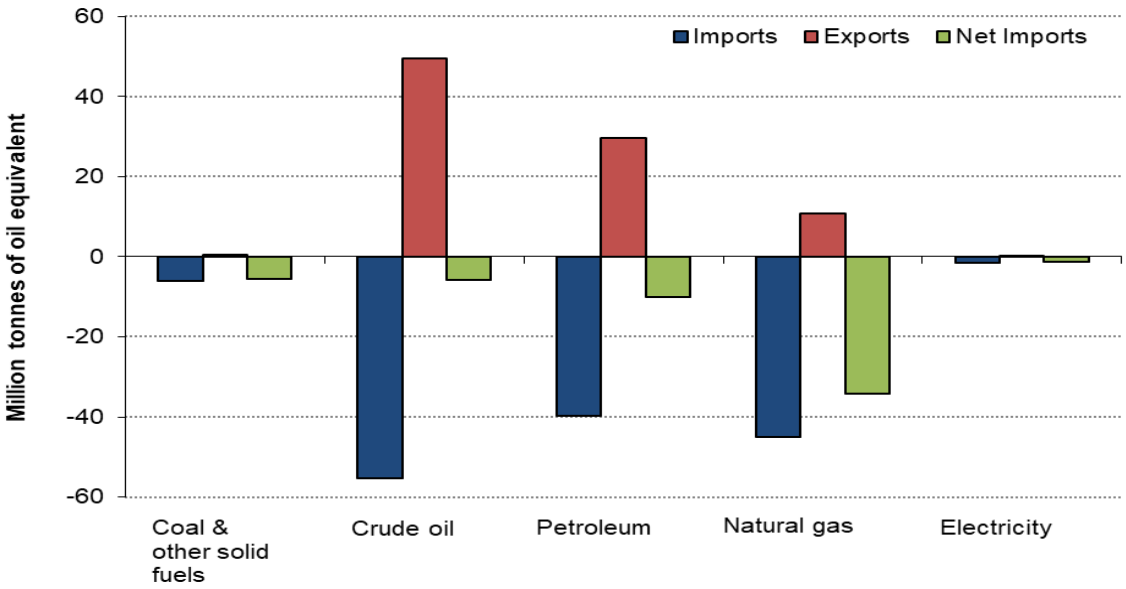
G.5 HMRC data shows that since the switch from being a net exporter in 2003 to a net importer in 2004, the UK has continued to remain a net importer of energy. Net imports have since grown considerably as the falls in UK energy consumption have been outweighed by the continuing decline in production. Since the peak in 2012, net imports have been on the decline and in 2017, total net imports of fuels fell by 1.9 per cent on the previous year to 57.3 million tonnes of oil equivalent (mtoe); as imports rose by 3.8 per cent while exports rose by 7.7 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, 2003 to 2017



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 2017 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 declined. In 2017 with fall in indigenous production and increase in crude prices, activities at refineries fell slightly. The UK was again a net importer of petroleum products in 2017 as demand increased slightly by 0.5 per cent while production fell by 0.1 per cent. BEIS petroleum products volume data shows the switch from net exports to net imports occurred in 2013, a year earlier to the HMRC data.

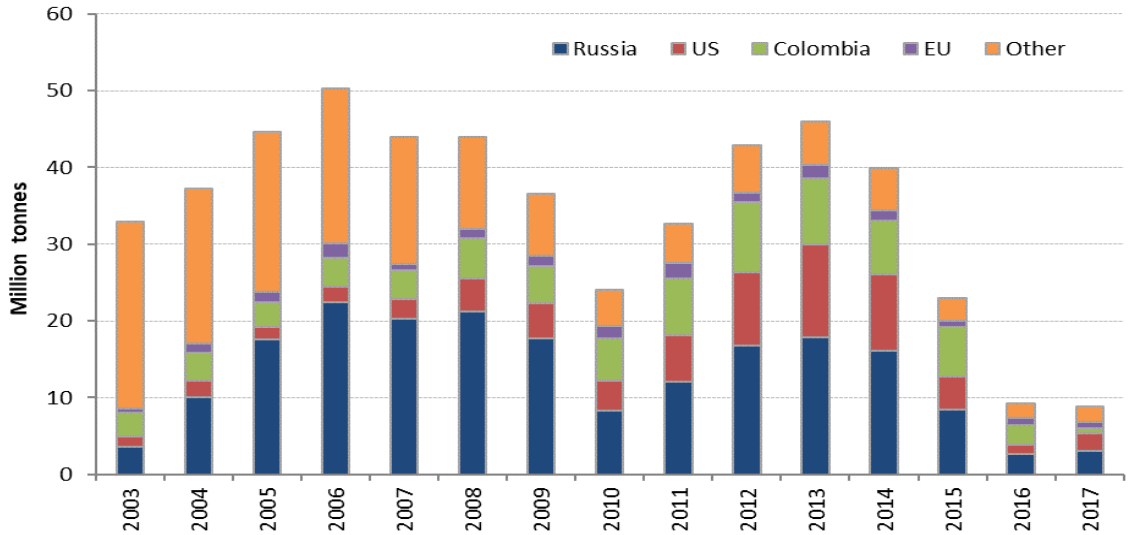
Chart G.2: Imports and exports by fuel type, 2017



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 to their lowest level for more than 10 years. In 2017, the UK imported 8.8 million tonnes of coal and other solid fuels, 4.9 per cent (0.5 million tonnes) lower than in the previous year. ***Chart G.3*** illustrates the trends in the imports of coal by country for the years 2002-2017.

Chart G.3: Imports of coal by country of origin 2003 to 2017



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. In 2017 coal imports from Russia increased by 17 per cent and by 84 per cent from the USA whilst imports from Colombia fell by 75 per cent. In 2017 of the UK's coal imports 35 per cent were from Russia, 26 per cent were from the US and only 7.4 per cent were from Colombia (down from a share of 28 per cent in the previous year)

G.10 Of the total coal imported in 2017, 53 per cent was steam coal, 40 per cent was coking coal and the rest anthracite and other solid fuels. In 2017, steam coal imports were broadly level with imports from Russia up 32 per cent to 2.2 million tonnes, from the US imports were up five-fold to 1.4 million tonnes but from Colombia steam coal imports were down by 74 per cent to 0.6 million tonnes.

G.11 In 2017, 26 per cent of the UK coking coal imports came from the US followed by another 26 per cent from Australia and 25 per cent from Russia. The bulk of anthracite and other solid fuels imports were from EU countries.

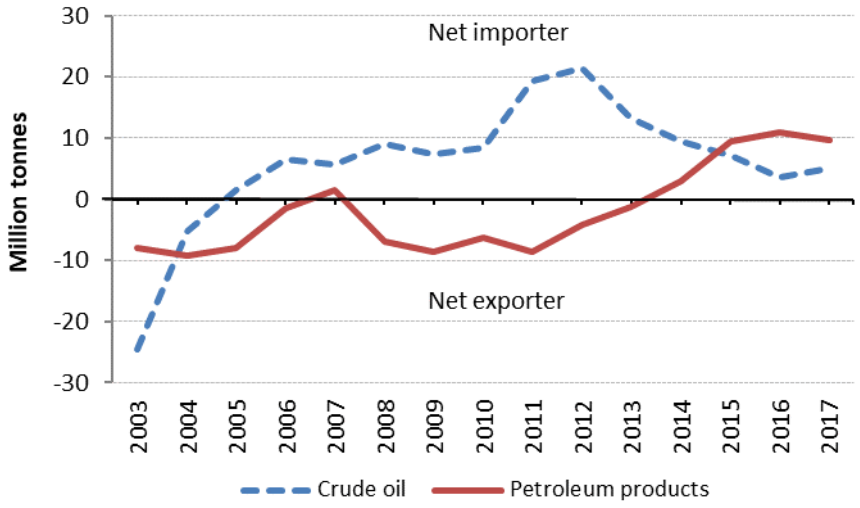
G.12 Exports of coal and other solid fuels fell by 25 per cent to 0.6 million tonnes in 2017 of which 46 per cent were to the Irish Republic, up 6 percentage points.

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 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 but in 2017 it rose by 40 per cent to 5.0 million tonnes (***chart G.4)*** due to fall in indigenous production and processing of indigenous crude at refineries.

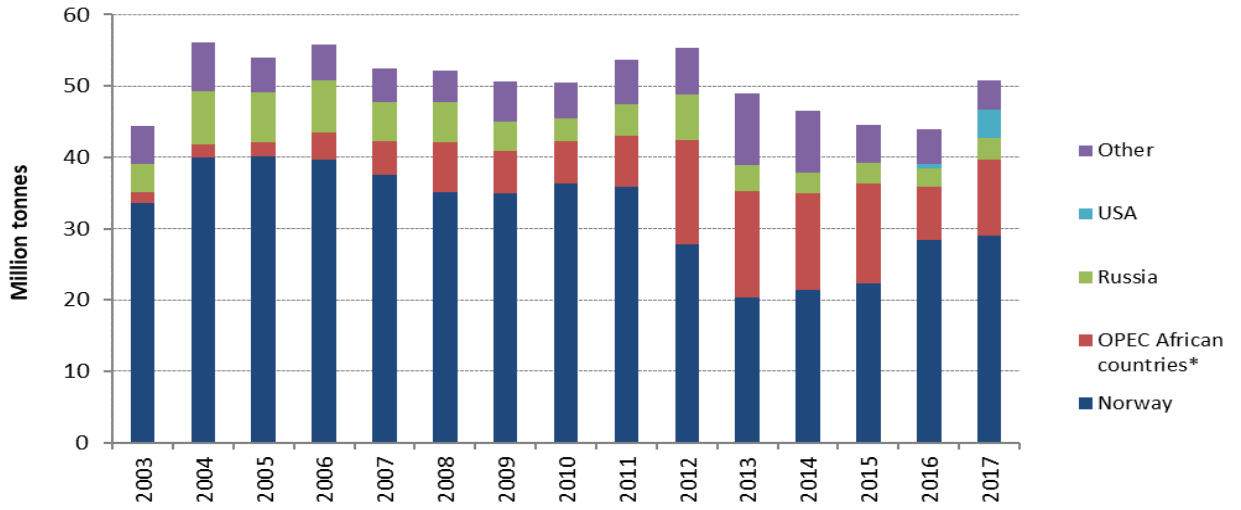
Chart G.4: Net trade of crude oil and petroleum products 2003 to 2017



G.15 Norway remains the major crude oil supplier to the UK and since the low in 2013, imports from this country have grown again (***chart G.5***). In 2017, Norway supplied 57 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 21 per cent of the total crude imports. In 2017 imports from USA grew to 8 per cent of the total while imports from Russia

were 6 per cent and from Saudi Arabia, 3 per cent of the total. In 2017, exports of crude oil increased by 14 per cent with exports to EU countries remaining broadly the same as in the previous year and accounted for 63 per cent of the UK's total exports of crude oil. The UK's two largest markets in the EU are The Netherlands and Germany; 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 in 2017 were China, up 50 per cent on the previous year and accounted for 51 per cent of the total Non-EU exports followed by South Korea where exports have almost doubled and accounted for 35 per cent of the total non-EU exports.

Chart G.5: Imports of crude oil by country of origin, 2003 to 2017



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

G.16 The main refined petroleum products imported into the United Kingdom in 2017 were gas & diesel oil which together accounted for 42 per cent of the total; followed by aviation turbine fuel (kerosene) 25 per cent. The main refined petroleum products exported in 2017 were motor & aviation spirits; gas & diesel oil and fuel oils which together accounted for 66 per cent of the total.

G.17 On a net trade basis, in 2017 HMRC data show that the UK was again a net importer of petroleum products with net imports of 9.7 million tonnes (***chart G.4),*** which was 1.3 million tonnes less than in the previous year. In 2017 the UK net imports of aviation turbine fuel were 8.8 million tonnes and of gas/diesel oils 11.0 million tonnes. However, the UK was a net exporter of some petroleum products of which petrol (6.9 million tonnes) and fuel oils (0.8 million tonnes).

1.4 Imports and exports of natural gas

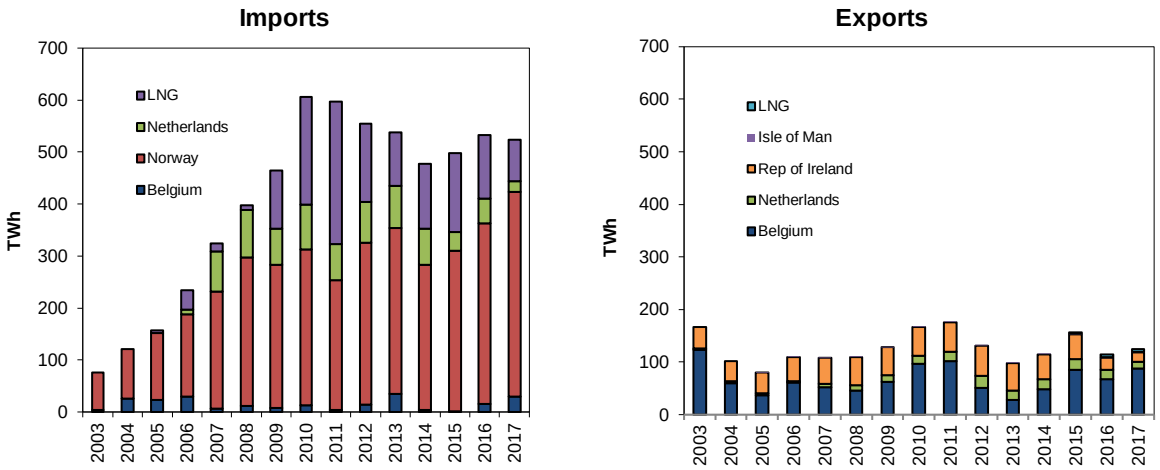
G.18 Between 1997 and 2003 the UK was a net exporter of gas. UK gas production peaked in 2000 and has since been in general decline. As a result the UK has sought to access additional supplies of gas from a range of sources to bridge the gap between indigenous production and demand as reserves on the 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. In 2017 gas imports fell by 1.6 per cent as demand fell by 3.0 per cent. Whilst below the peak reached in 2015, natural gas exports in 2017 rose by 8.9 per cent as exports to Belgium rose by 31 per cent. ***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 which in 2017 accounted for 3.6 per cent of the total gas exports and were 18 per cent lower than in the previous year.

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 2017 the UK exported 124 TWh of gas which was 8.9 per cent higher than in 2016. 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 2017 whilst gas exports to Belgium rose 31 per cent, exports to The Republic of Ireland fell by 17 per cent. 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.

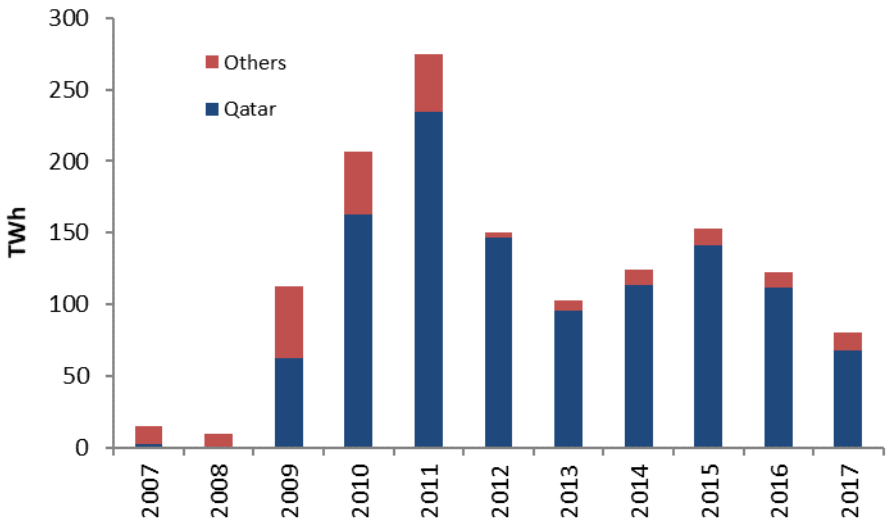
Chart G.6: Imports and exports of natural gas by country, 2003 to 2017



G.22 In 2017 the UK imported 524 TWh of gas which was 1.6 per cent lower than in 2016. Around 75 per cent of gas imports were from the Norwegian Continental Shelf while only 5.6 per cent were from Belgium, twice the volume on the previous year. LNG imports from various sources (***Chart G.7***) decreased by 34 per cent and accounted for 15 per cent of total gas imports in 2017. LNG imports from Qatar fell by 40 per cent and accounted for 84 per cent of total LNG imports in 2017. 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 from Russia but in December 2017 there were a shipment of 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, 2007 to 2017



1.5 Imports and exports of electricity

G.24 For over a decade, the UK has been a net importer of electricity. In 2017, imports of electricity came mainly from France (9.4 TWh) and the Netherlands (7.1 TWh); whilst exports were mainly to France due to nuclear outages. In 2017, imports of electricity fell 9.2 per cent to 18.2 TWh due to a fall in imports from France via the interconnector due to repair works. However, exports of electricity rose by 50 per cent to 3.4 TWh driven by demand from France. As a result, net imports fell by 17 per cent from 17.7 TWh to 14.8 TWh.

1.6 Imports and exports of renewables

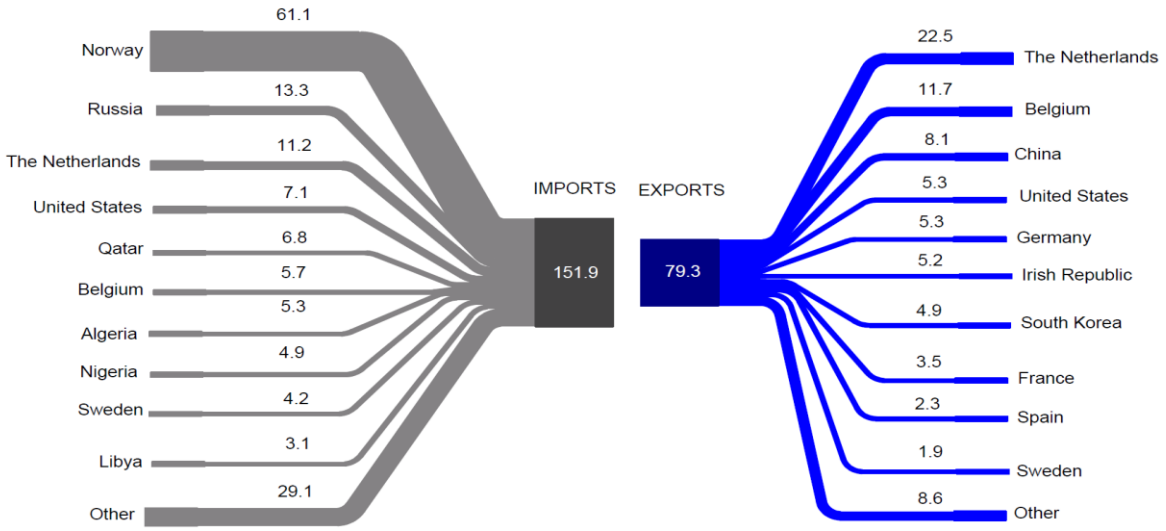
G.25 Apart from wood pellets and biodiesel, HMRC do not collect any other specific data on the imports of renewables intended to be used for energy purposes. In 2017, wood pellets imports to the UK, mainly from the United States, were 7.0 million tonnes, a decrease of 4.7 per cent on the previous year (**table G.6**) while imports of biodiesel were 6.2 million tonnes, a decrease of 38 per cent. In 2017 BEIS estimates of total renewables imports to the UK which include wood, wood waste, biomass and liquid biofuels were 3.5 mtoe, down 7.1 per cent on the previous year.

UK markets in 2017

G.26 **Chart G.8** below shows the UK's ten largest markets in volume trade of coal, primary oils and oil products, gas, electricity and renewables, in million tonnes of oil equivalent, in 2017.

In 2017, 40 per cent of the total imports to the UK were from Norway followed by 9 per cent from Russia while 28 per cent of the total UK exports were to The Netherlands and to Belgium 15 per cent.

Chart G.8 UK trade by country of imports and exports



Source DUKES 2017

SECTION II – Value

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

G.27 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.28 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.9*). 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 but in 2017 the deficit rose by 29 per cent to £13.3 billion with increases in crude oil and gas prices. The deficit of crude oil and petroleum products, on the same basis, in 2017 was £4.8 billion (20 per cent more than in 2016) compared to a £2.2 billion surplus in 2004 (*Chart G.10*).

Chart G.9: Value of net exports of fuel, 2003 to 2017

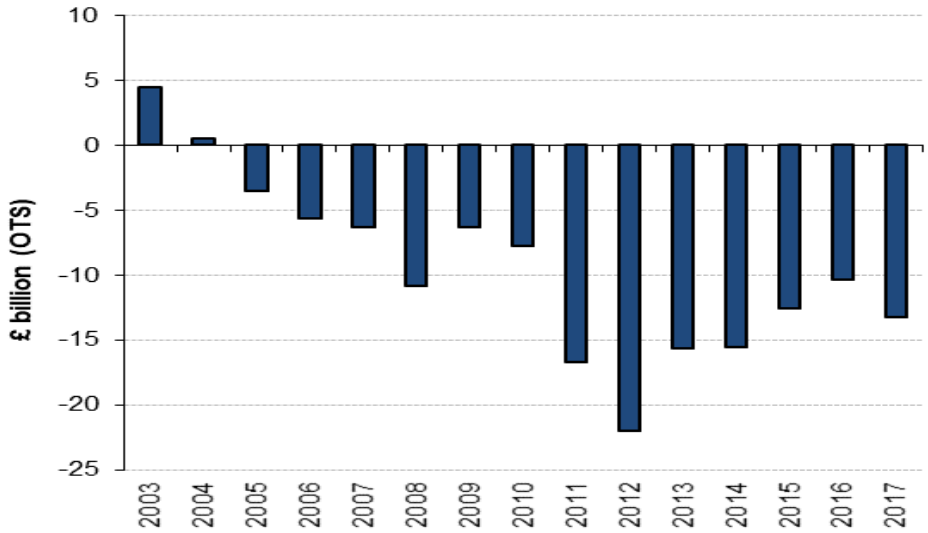
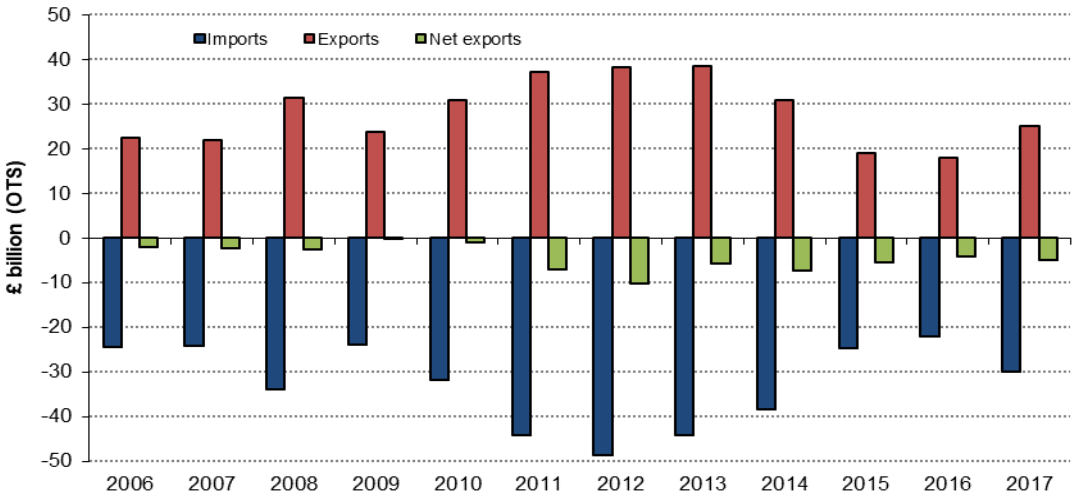


Chart G.10: Value in trade of oils[(1)], 2006 to 2017



(1) Crude oil and petroleum products

Imports on CIF, exports on FOB basis

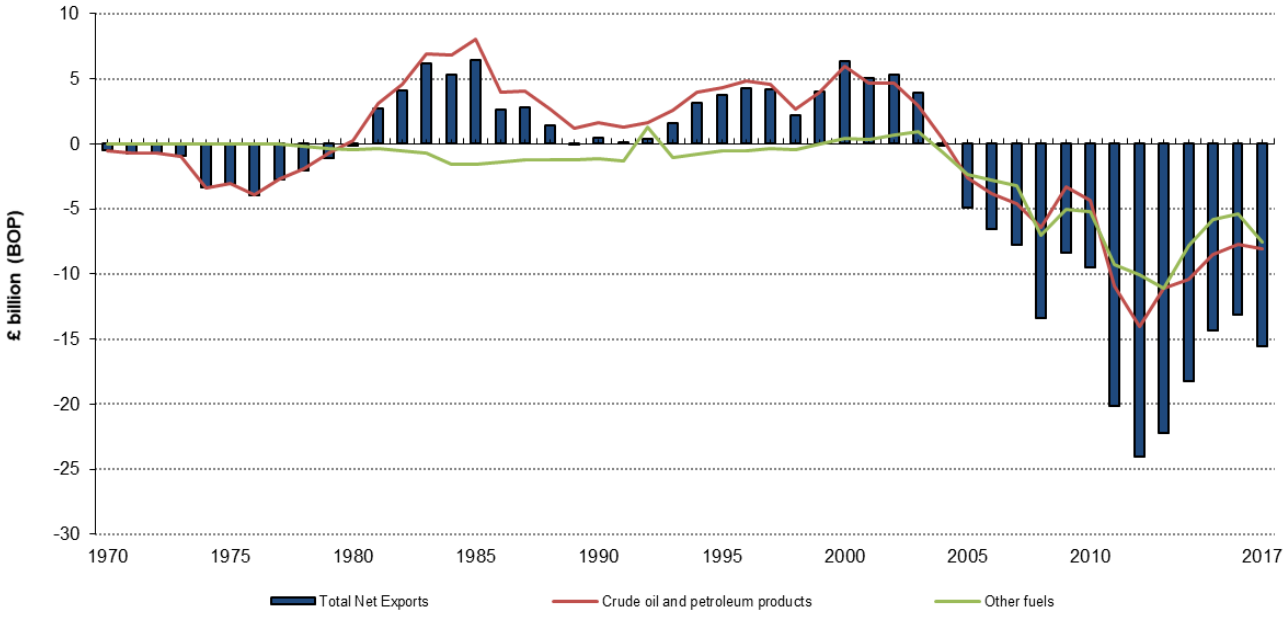
2.2 Imports and exports of fuels (Balance of Payment basis)

G.29 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.30 ***Chart G.11*** 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.31 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 $62 per barrel in 2009. In 2011 there was another sharp increase in the size of the energy trade deficit, which more than doubled that in 2010, from £9.5 billion to £20.2 billion; this was mainly due to the oil deficit increasing from £4.3 billion to £10.9 billion, as oil prices rose sharply from an average of $80 per barrel in 2010 to $111 per barrel in 2011. In 2017, on a BOP basis, the total deficit was £15.6 billion, £2.4 billion more than in the previous year driven by deficit in crude oil increasing by £0.3 billion, as more crude oil were imported at higher prices and deficit in other fuels increasing by £2.1 billion. Crude oil price rose by around $10 per barrel to stand at $54 per barrel in 2017.

Chart G.11: Value of net exports of fuels on a balance of payment basis, 1970 to 2017



G.32 **Table G.7** shows the trends in the UK trade values from 1970 to 2017 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.33 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.34 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.35 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.36 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.37 Figures correspond to the following items of SITC (Rev 3) at
http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=14&Lg=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.38 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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