Chapter 4: Natural Gas

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Key headlines

In 2021, natural gas demand increased by 5.9 per cent on 2020 to 861 TWh, as restrictions to curb the spread of Covid-19 were eased.

Gas demand increased for electricity generation and across domestic, industrial and service sectors. Gas used for electricity generation increased by 9.3 per cent, largely due to reduced renewable output. Domestic demand increased by 7.4 per cent, as colder temperatures in the beginning of the year coincided with increased time spent at home due to restrictions. Consumption by industry and other final users (including commercial and public administration use) increased by 7.2 and 7.3 per cent respectively.

Gross gas production reached a record low of 364 TWh. This was due to an extensive planned maintenance schedule, as well as some delays to maintenance in 2020 which were carried into 2021. Several major terminals were shutdown including the Forties Pipeline System (FPS) which serves a significant proportion of UK oil and gas production.

Net imports increased by 30 per cent in 2021, to meet demand amid low production. Imports increased by 17 per cent, with large increases in pipeline imports from Norway, Belgium and the Netherlands. Additionally, exports of natural gas fell 29 per cent reaching the lowest level since 1998.

Liquefied Natural Gas (LNG) imports fell by one fifth compared with high levels in 2020. The reduction reflected constrained global availability due to elevated demand in Asia at the beginning of 2021. This led the UK to source LNG cargoes from further afield, such as Peru, Algeria and Russia.

The flow chart on the following page shows the flows of natural gas from production and imports through to consumption. It illustrates the flow of gas from the point at which it becomes available from indigenous production or imports (on the left) to the final use of gas (on the right), as well as that transformed into other forms of energy or exported. The widths of the bands are proportional to the size of the flow they represent.
Note:

This flow chart is based on data that appear in Table 4.1, excluding colliery methane.
Natural Gas is an important part of the UK energy mix, accounting for nearly 29 per cent of production and 42 per cent of demand in 2021.

**UK gas demand increased by 5.9 per cent in 2021** compared with 2020, largely due to the easing of restrictions in place to curb the Covid-19 pandemic, coupled with weaker performance from renewable generation and colder temperatures. Despite the overall increase, demand remained slightly below pre-pandemic levels and varied by sector.

**In 2021, UK gas production reached a record low due to maintenance.** Production fell to 364 TWh, which was 47 TWh below the previous record low in 2013 and over 70 per cent lower than the peak in 2000. Gas production had been broadly stable for close to a decade following several years of decline since 2000. However, in 2021 an extensive summer maintenance schedule across North Sea infrastructure saw a 17 per cent fall in production compared with the previous year. Several major terminals were shutdown, including the Forties Pipeline System (FPS) which serves a significant proportion of UK oil and gas production. Low production was furthered by delayed maintenance in 2020.

The North Sea Transition Authority (NSTA, previously the Oil and Gas Authority (OGA)) produces analysis on oil and gas reserves which can be found in the Oil and Gas reserves publication.

Indigenous production met 42 per cent of demand in 2021, with the remainder supplied via imports. This was only the second time on record (the first being in 2013), that indigenous production met less than half of demand. Net imports of natural gas increased by 30 per cent in 2021 compared with the previous year. Imports increased 17 per cent, whilst exports fell 29 per cent reaching the lowest level since 1998.
Domestic demand increased by 7.4 per cent in 2021, compared with 2020. Domestic gas consumption is used for space and water heating as well as for appliances such as ovens and hobs. This increase was due to colder temperatures coinciding with lockdown restrictions early in the year resulting in more time spent at home. Overall, natural gas met two-thirds of total domestic energy demand in 2021.

Gas used for electricity generation increased 9.3 per cent due to a fall in renewable output. This was due to less windy conditions and a reduction in nuclear output, and amplified by an increase in electricity demand as lockdown restrictions eased (see Chapter 5 for more information).

Industrial demand increased by 7.2 per cent, compared with 2020. This follows a return to pre-pandemic levels of gas consumption by industry, reflecting substantially fewer restrictions on operations in 2021 compared with 2020. However, this trend was not uniform across industrial sectors with falls in consumption in the chemicals sector due to several plant closures, and the paper and printing sector.

Gas demand by other final users increased by 7.3 per cent as lockdown restrictions eased. This included gas demand by the commercial sector, which increased by 6.5 per cent on 2020 as non-essential retail and hospitality venues reopened. Demand by public administration increased by 5.4 per cent. Despite increased demand in comparison with 2020, lockdown restrictions at the beginning of the year meant both remained slightly below 2019 levels.
In 2021, natural gas imports increased by 17 per cent compared with 2020. This was due to reduced indigenous production and increased demand compared with the previous year. Imports arrive via pipeline; the UK imports natural gas via pipeline from Norway, Belgium and the Netherlands, or as Liquefied Natural Gas (LNG) via ship.

Norway remained the largest import source, accounting for 38 per cent of net supply. Net supply is calculated as gross production plus imports. Norway has historically been a large import source to the UK, due to the close geographical proximity and shared infrastructure in the North Sea. At 355 TWh, the amount of gas imported from Norway was greater than net production in 2021 for the first time. Norwegian natural gas imports accounted for 63 per cent of total imports and increased by around a third in comparison with 2020.

LNG imports fell by one fifth compared with high levels in 2020. LNG imports are largely linked to economic factors, with UK imports being influenced by major consumers of LNG, such as Asia. In 2021, a cold winter in Asia significantly increased the region's demand consequently reducing availability elsewhere, including the UK. This meant the share of LNG imports fell from 22 per cent of net supply in 2020, to 17 per cent in 2021. For more information on the supply of LNG see the special feature article.
**LNG import sources diversified, as the UK sourced cargoes from further afield.** Historically, a large proportion of LNG imports have come from Qatar, peaking at 98 per cent of total LNG imports in 2011. However, Qatari imports accounted for just under two fifths of total LNG imports in 2021, the lowest in over a decade, and almost 75 per cent lower than in the 2011 peak. This reflects increasing diversification of LNG import sources to bolster the UK’s security of supply. The UK imported LNG from nine countries in 2021, with increased imports from further afield including Peru and Algeria.

Imports from the USA and Russia have increased considerably since 2018, accounting for 26 and 21 per cent of total LNG imports respectively in 2021. However, following Russia’s invasion of Ukraine the UK will end all dependency on Russian coal and oil by the end of 2022, and end imports of gas as soon as possible thereafter. Recent data shows a notable decline in Russian LNG imports in recent months (see Energy Trends Table 4.4 for further information).

**Chart 4.5 Exports of natural gas, 2000-2021 (DUKES Table 4.5)**

![Chart 4.5 Exports of natural gas, 2000-2021](image)

**Exports fell by almost 30 per cent in 2021 reflecting low production.** At 76 TWh, exports reached the lowest level recorded since 1998. This was largely due to low indigenous production following maintenance. Particularly large reductions were seen in exports to the Netherlands, down 55 per cent on 2020, and to Belgium, down 46 per cent. Only exports to the Republic of Ireland showed an increase, continuing growth seen over the past 5 years.