

Trends in trade of Liquefied Natural Gas in the UK and Europe

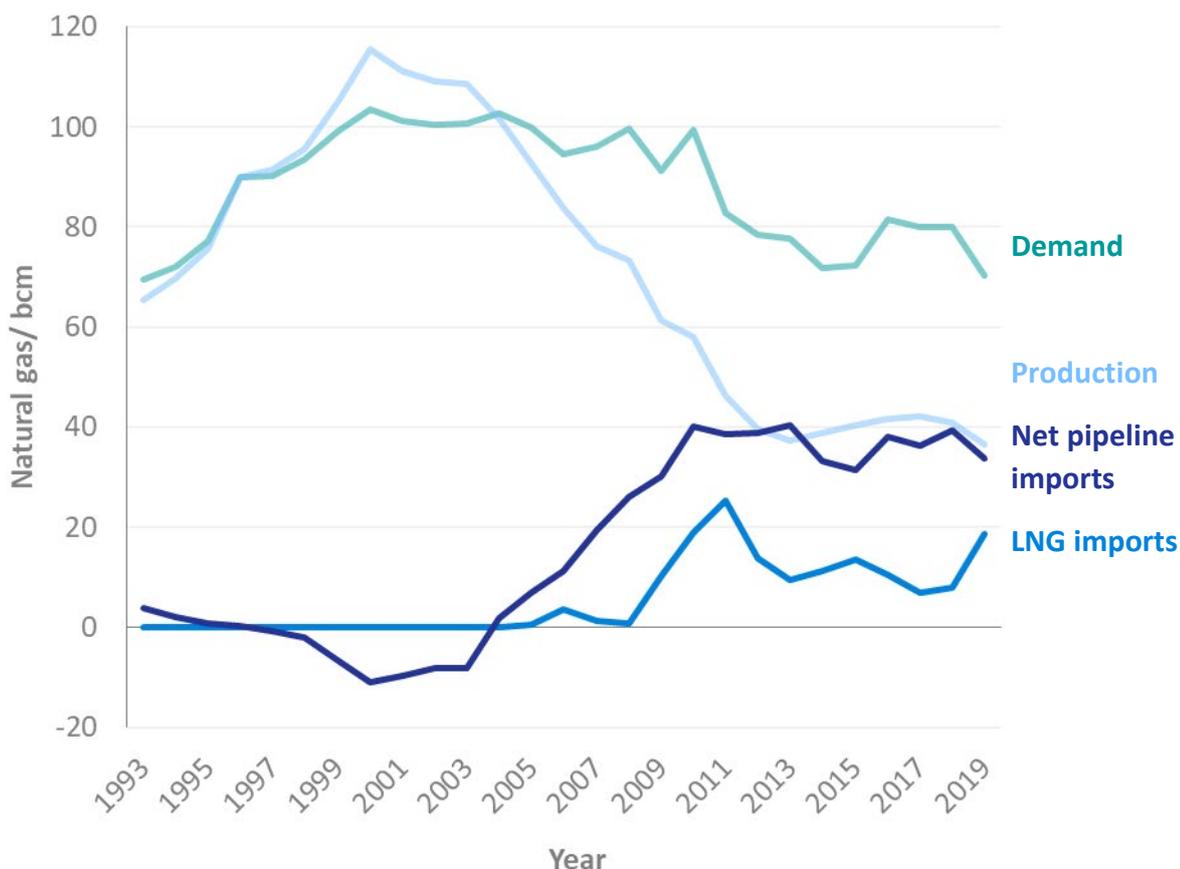
Introduction

Traditionally, natural gas has been moved from producing regions to markets via pipeline. Where pipeline infrastructure does not already exist, or is not viable, an alternative means of transportation is by ship. When natural gas is cooled to approximately $-160\text{ }^{\circ}\text{C}$, Liquefied Natural Gas (LNG) is produced. The volume of LNG is around 600 times smaller than that of gaseous natural gas meaning it can be shipped more easily. Once at its destination, LNG is regasified and used in the same way as natural gas which has not been liquefied.

Growing demand has seen global liquefaction capacity increase by five times in the last six years. There are several reasons for this. For example, as easily accessible natural gas reserves are depleted LNG has provided an alternative means of meeting supply to established pipeline infrastructure. The aim of this article is to provide analysis on UK LNG trends. For context, EU and global trends and trade are also considered.

UK LNG use

Chart 1: Summary of UK natural gas use, 1993 – 2019



The UK produces natural gas indigenously from the North Sea in the form of methane; this gas is transported via well-established pipeline infrastructure inland and to key trading partners. Chart 1 shows that indigenous production of natural gas exceeded demand in the late 1990s, but since then has been on a general trend of decline before stabilising at around a third of the peak in 2013. Demand has also followed a general downward path since 2005, but in 2019 production could have met only around half of demand.

Special feature – Trends in trade of LNG

As expected, imports have increased to meet demand as indigenous production decreased. The UK began importing LNG for commercial use in 2005. Imports of LNG were minimal until 2008 when they increased rapidly and peaked in 2011 since then LNG imports have fluctuated. From 2010 natural gas imports by pipeline and of LNG are negatively correlated, meaning that LNG is used to make up shortfalls in supply when pipeline flows are disrupted. The UK exports a small amount of natural gas, the majority of this by pipeline. The UK does not produce LNG, so any exports of LNG were previously imported - this is called a reload.

UK LNG imports

Chart 2: UK LNG imports, 2005 – 2019

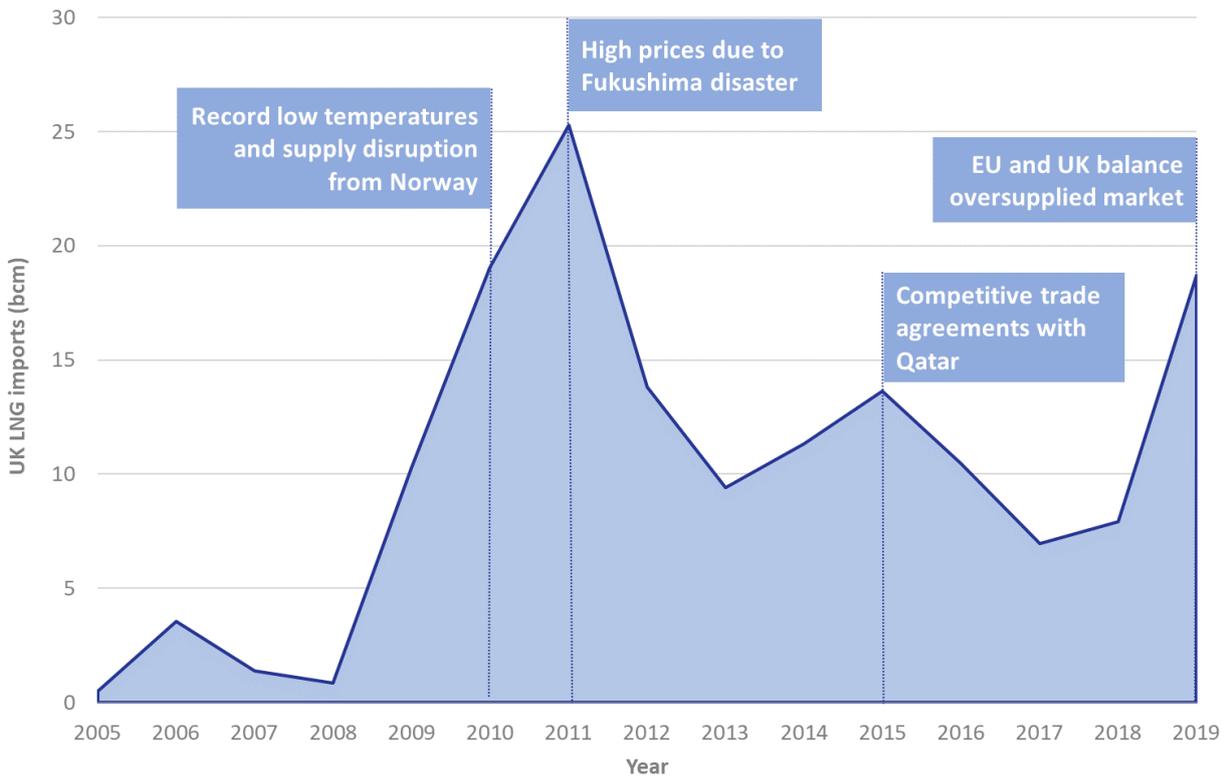


Chart 2 shows that UK imports of LNG increased rapidly from 2008 peaking at 25.3 billion cubic metres (bcm) in 2011, accounting for 46 per cent of natural gas imports and 31 per cent of consumption in that year. Record low temperatures and pipeline supply disruption due to industrial action in Norway contributed to this peak. During the winter of 2010/11, on peak demand days, LNG was the second most relied upon source of natural gas behind drawdowns of gas in storage, making it more important than pipeline imports to meet demand.

The 2011 peak was followed by a rapid decline until 2013. The decline is associated with an increase in the price of LNG, which was affected by the 2011 Tōhoku earthquake and tsunami that caused the Fukushima disaster. LNG was used as an emergency fuel to meet demand. This led to the creation of an LNG spot market in Asia and subsequent changes to the global market structure.

Following this, peaks in UK LNG imports have been heavily related to market pressures. The UK has several supply and purchase agreements (SPAs) with Qatar, which are binding legal contracts that obligate the UK to buy and Qatar to sell LNG. These are based on oil indexed pricing and were competitively priced in the mid-2010s, resulting in a 'bump' in supply to the UK in 2014-15. Given the strong trading relationship the UK has for Qatari LNG, supply of LNG to the UK has historically primarily been from Qatar.

In 2019, the UK played a role in the EU ‘LNG sink’, which saw a steep increase in supply of LNG to the UK and Europe (and is discussed later). The UK imported 18.7 bcm of LNG in 2019, accounting for 39 per cent of natural gas imports and one-fifth of total supply – record high levels since the peak in 2011 with volumes more than doubling compared to 2018. UK sources of supply diversified during this period.

UK LNG import sources

Chart 3: top 5 2019 import sources as a percentage of total LNG imports, 2005 – 2019

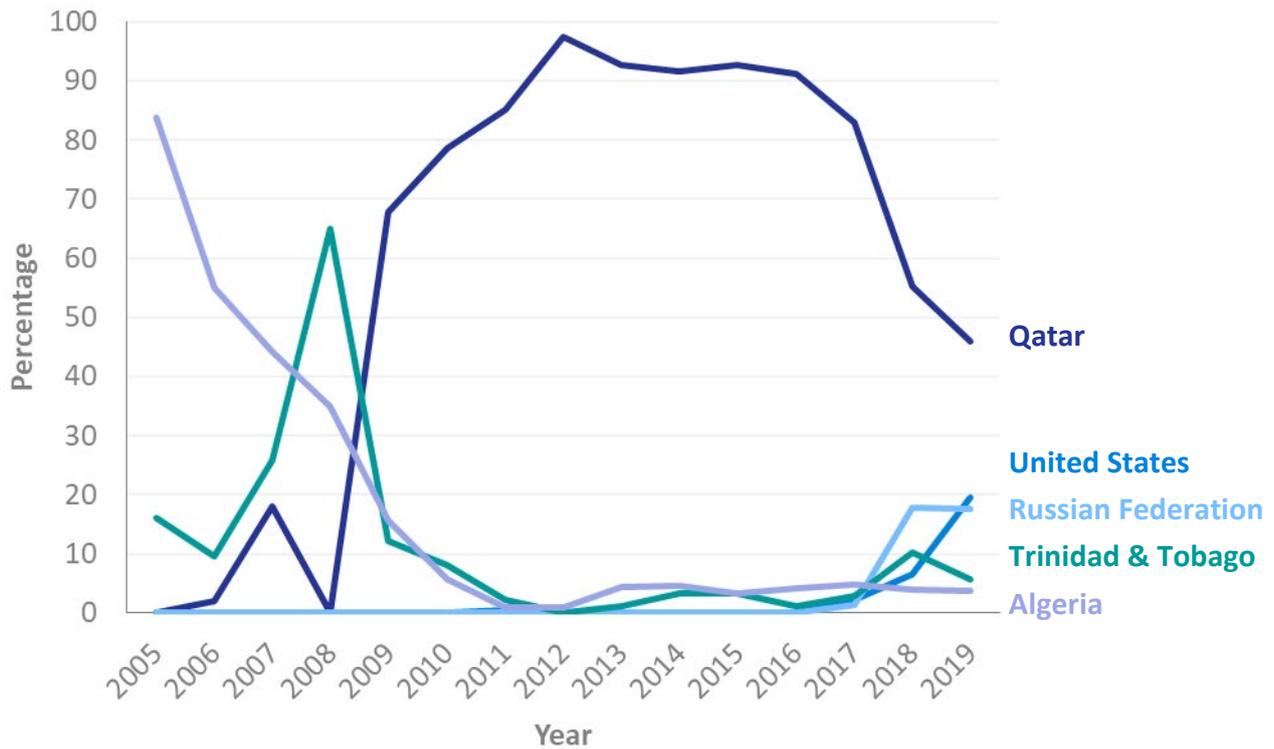
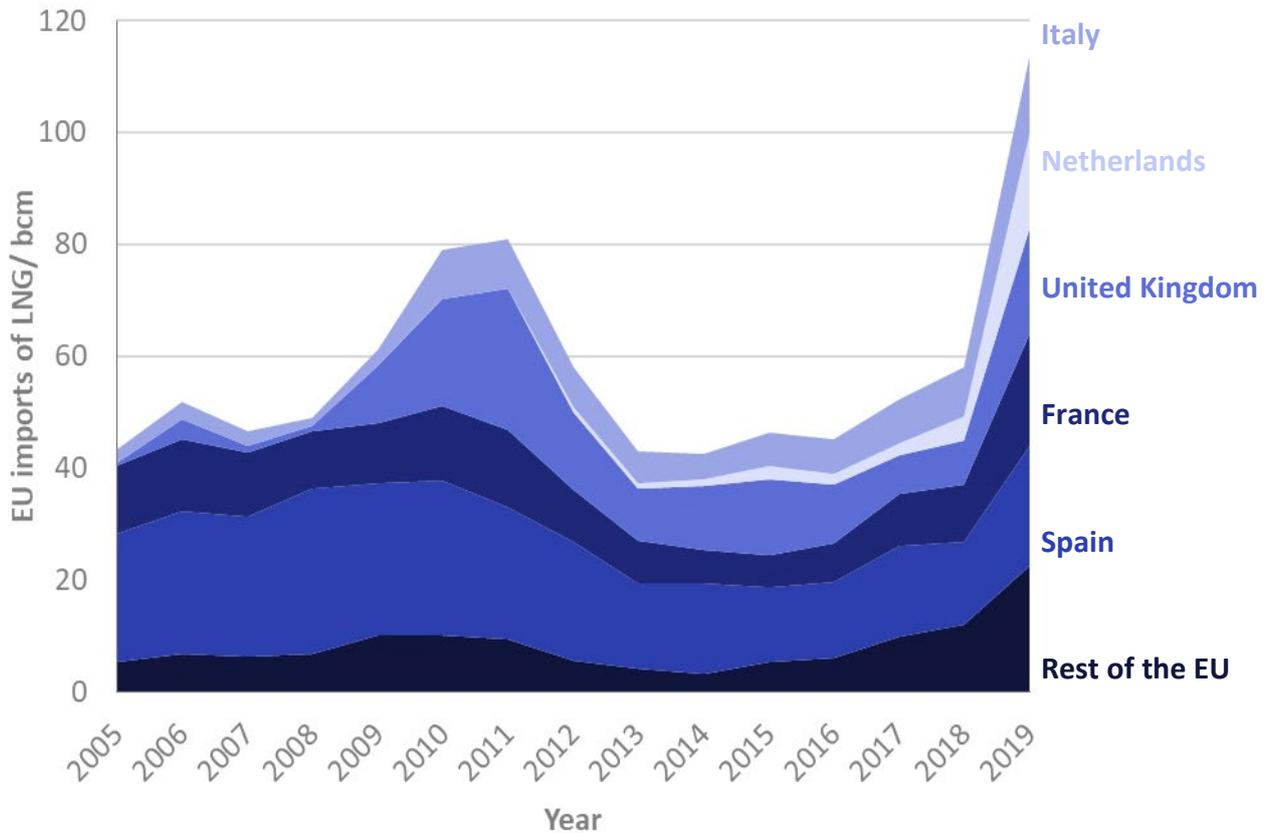


Chart 3 shows the top five sources of LNG to the UK as a percentage of total LNG imports between 2005 and 2019. Historically, Qatar has been the dominant import source, reaching 98 per cent in 2012. However, its share has been declining in recent years so that Qatari LNG met half of UK LNG imports in 2019. Imports from Algeria have also declined because of declining indigenous production and non-UK European contractual commitments.

In 2005 the UK imported LNG from just two sources, climbing to eight in 2011 and 12 in 2019. The number of import sources has increased in line with the increases in global production capacity. The UK received cargoes from Angola, Cameroon and the Netherlands for the first time in 2019 and there was sustained growth in volumes from other more recent sources to the UK such as the US, Russia and Peru.

EU LNG imports

Chart 4: EU LNG imports, 2005-2019

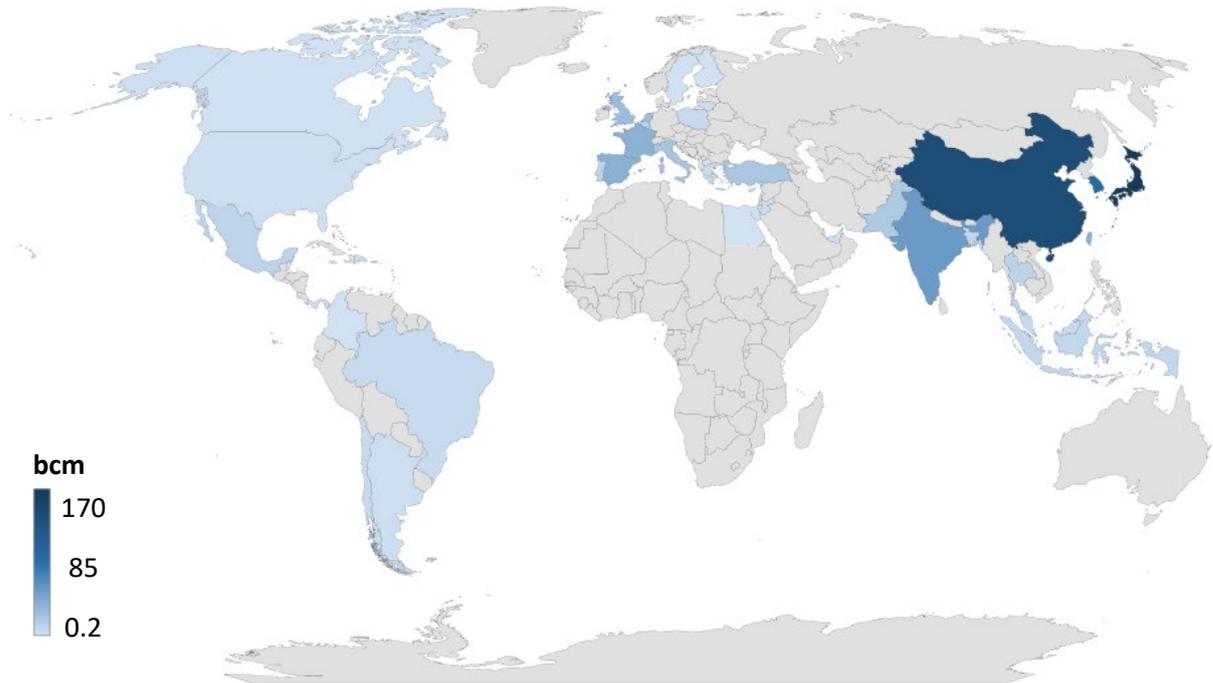


Between 2005 and 2019, 13 of the 28 EU member states imported LNG (including the UK). In 2019, EU imports of LNG increased by 1.96 times compared to 2018. In addition to increases from the top 5 EU importers, other EU countries’ imports increased by 89 per cent compared to 2018. This boom in EU imports was the result of an oversupplied market. Warm weather in Asia reduced demand whilst new projects in Qatar, the US and Russia increased supply. LNG spot price reached a record low and the EU played the role of the balancing market.

In 2019, the top five EU LNG importers accounted for 80 per cent of total EU imports (Chart 4). Between 2005 and 2019 Spain almost consistently imported the greatest amount of LNG. Only the UK imported more in 2011 and 2015. Malta only imports natural gas as LNG, however as the least populous of all EU countries, it has the lowest demand (except for Cyprus which does not have any natural gas demand).

Global LNG imports

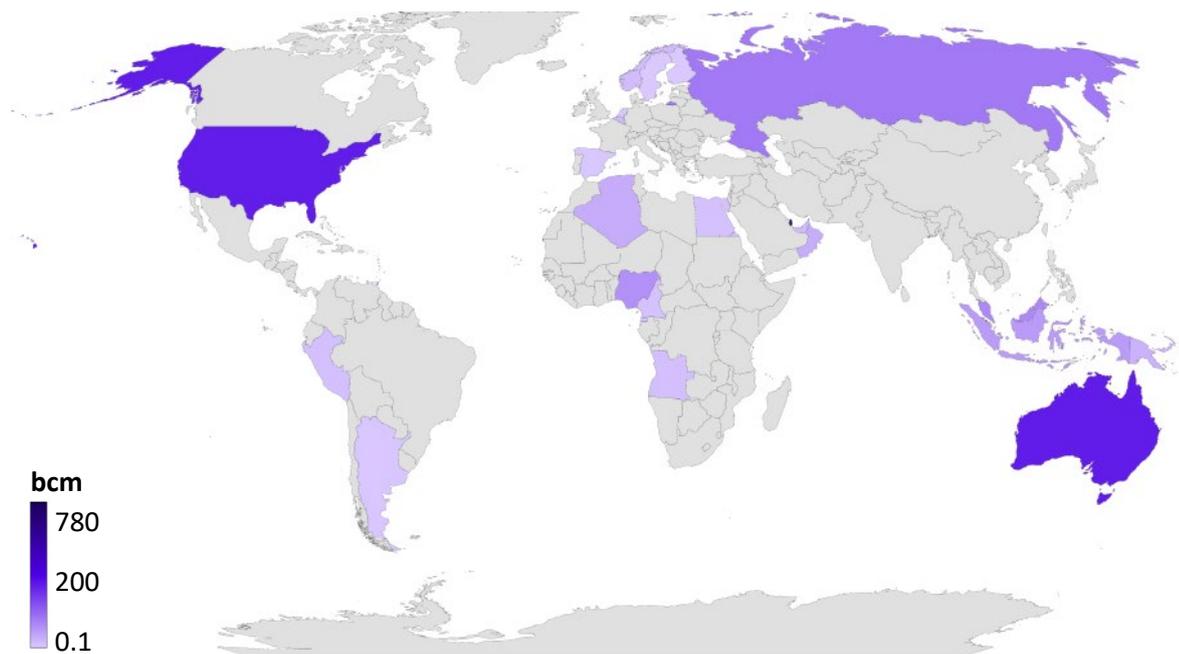
Map 1: Global importers of LNG by volume, 2019



Map 1 shows global demand for LNG by volume. Globally, Japan is the greatest importer, only importing natural gas as LNG. The top 5 global importers of LNG are in Asia. The next 5 greatest importers are the European countries shown in Chart 3. For perspective, in 2019, the sum of the top 5 European importers is equivalent to 30 per cent of the top 5 Asian importers.

Global LNG supply

Map 2: Global suppliers of LNG by volume, 2019



Special feature – Trends in trade of LNG

Map 2 shows global supply sources of LNG. In 2019, Qatar and Australia were the greatest exporters of LNG globally. The US followed in third place but exported volumes less than half of those of each of the top 2. Other exporters of LNG tend to be those with large natural gas reserves including Russia, Malaysia and Nigeria. The largest European exporter of LNG is Norway. Whilst LNG can be traded flexibly outside of existing pipeline supply routes, factors such as shipping costs and boil-off¹ mean that proximity of the market to the supply source plays some role in trade. A good example of this is Australia, which supplied 39 per cent of Japanese imports in 2019 whereas the UK has only ever received one cargo from Australia.

Europe is not a major exporter of LNG. Spain and the Netherlands have been the only regular exporters of LNG from within the EU since 2010. The UK does not produce LNG meaning that any LNG exports are reloads; the UK only reloaded LNG between 2005 and 2018. During this time SPAs with Qatar were competitively priced meaning the UK could take advantage of reselling imported volumes on an inflated spot market.

Summary

The UK uses natural gas from indigenous production as well as imports. Some of these imports arrive as LNG. The UK began importing LNG in 2005 with the peak in 2011 when LNG comprised more than one-quarter of total supply. Since 2011, import volumes have been related to economic factors. Asia is a major consumer of LNG hence Asian markets tend to influence UK and EU imports. Asian markets continue to grow despite fluctuations relating to natural disasters and weather. Growth of established importers as well as increasing demand from emerging economies is likely to continue into the 2020s.

Global capacity has met investment to meet growing demand, particularly in the US, Qatar and Russia. These increases in capacity, combined with a warm Asian summer, created an oversupply of LNG in 2019. The EU balanced the market meaning that we saw notable increases in LNG imports. UK imports subsequently reached the highest volume since peaking in 2011 as LNG comprised one-fifth of total supply. This trend was already set to continue into 2020 and with the Covid-19 pandemic, which heavily impacted demand in Asia in the first quarter, we will continue to see changes in trade patterns as the LNG markets are impacted once again.

Azin Azarbarzin
Oil and Gas Statistics
Tel: 020 7215 5616

Zoe Clark
Upstream Oil and Gas Statistics
Tel: 020 7215 8170

E-mail: Oil&Gas.Statistics@beis.gov.uk

¹ The vapours created due to the ambient heat input while maintaining constant pressure in the cryogenic storage vessel, which must be either re-liquefied, used as fuel or burned in a gasification unit.