Supply of Liquefied Natural Gas in the UK in 2020

Key headlines

This article provides an analysis of UK trends in trade of Liquefied Natural Gas (LNG) within the context of global markets. This is one of the fastest growing commodity markets globally. In 2020 the US grew to be the third largest global exporter of LNG, after Qatar and Australia, as it continued to expand capacity.

The UK is the second largest European importer behind only Spain. European countries, including the UK, have played an important role in balancing LNG markets since 2019. Substantial imports to the UK were seen in 2020, and these were stable compared to 2019 when imports had doubled compared to the year before. However, month to month the picture was more variable with low prices contributing to high imports early in the year.

Nearly half of UK LNG imports in 2020 were from Qatar, with a further quarter from the US. Total LNG imports made up 22 per cent of gas supply to the UK in 2020, compared to 21 per cent in 2019.

Introduction

Traditionally, natural gas has been moved to markets via pipeline. Cooling natural gas to approximately -160°C changes its state from gas to liquid, producing Liquefied Natural Gas (LNG). The volume of LNG is around 600 times smaller than in its gaseous state, meaning it can be shipped easily. This provides an alternative means of transportation where pipeline infrastructure does not already exist or is not viable. Once at its destination, LNG is regasified and used in the same way as natural gas which has not been liquefied.

Global liquefaction capacity has increased consecutively for the last six years. One of the reasons for this is that easily accessible natural gas reserves are being depleted. LNG has provided an alternative to established pipeline infrastructure. As the UK has become more reliant on imports of natural gas, due to a decline in indigenous production, LNG imports have gained importance in ensuring that the UK supply portfolio remains secure and diverse.

The aim of this article is to provide analysis of LNG supply to the UK (1) within the context of global LNG markets (2).

(1) UK and Europe data was sourced from the International Energy Agency (IEA) and Energy Trends: https://www.gov.uk/government/statistics/gas-section-4-energy-trends

(2) Global data was sourced from the Independent Commodity Intelligence Services (ICIS)

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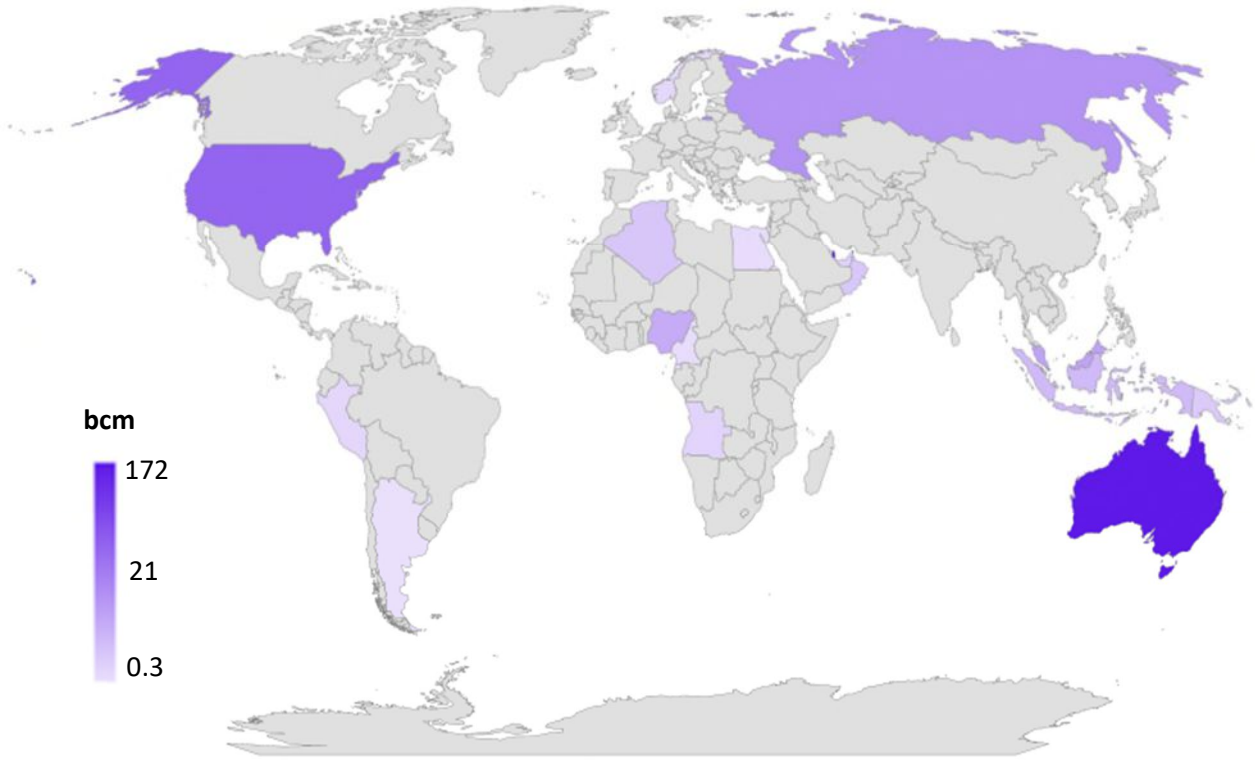
Global LNG Trade

Map 1: Global exporters of LNG by volume, 2020

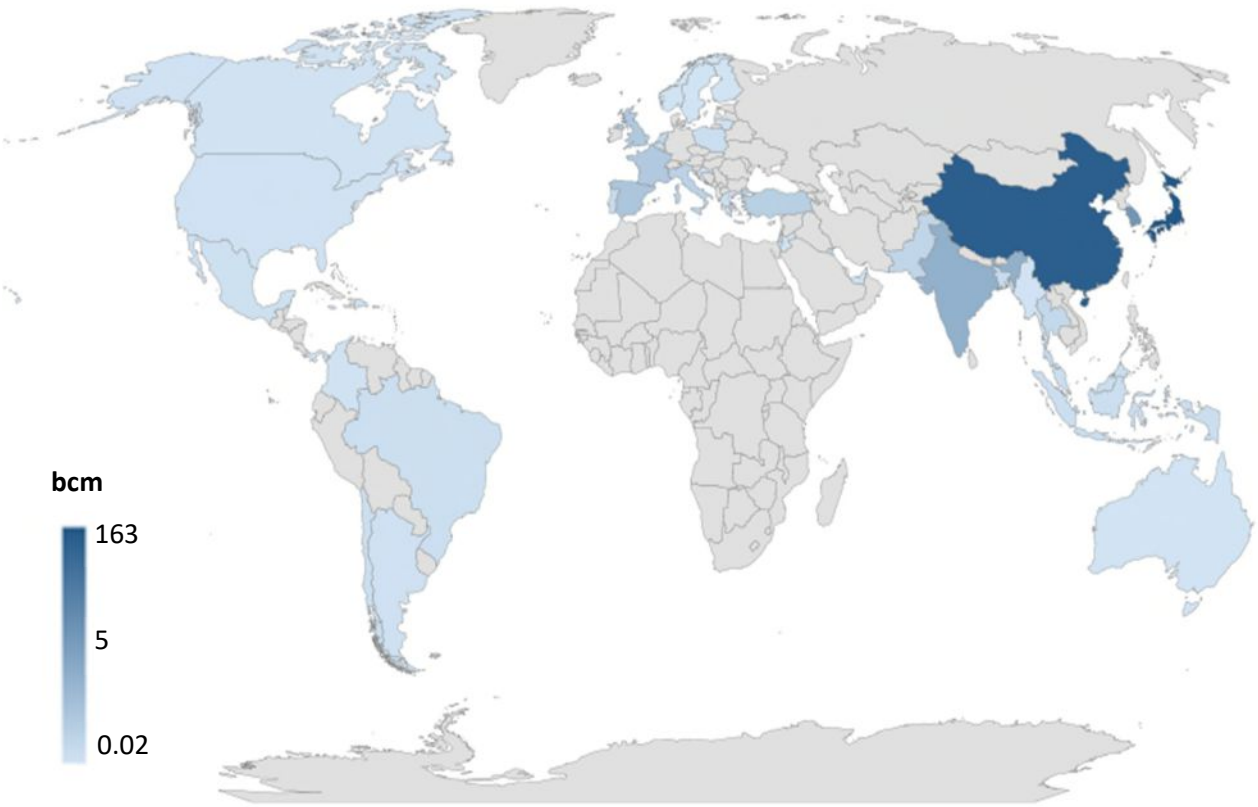


Map 1 shows global exporters of LNG. In 2020 Qatar and Australia were the largest exporters of LNG. The US moved to third largest, as it continues to expand capacity alongside the shale revolution. LNG liquefication capacity in the US increased by over 40 per cent in 2020 and export volumes were a third higher than in 2019. Other exporters of LNG tend to be those with large natural gas reserves including Russia, Malaysia, and Nigeria. Europe is not a major exporter of LNG; the largest European exporter of LNG is Norway. European exports of LNG accounted for just 16 per cent of global exports in 2020. The UK does not produce LNG but is able to re-export imported LNG – this is called a reload.

Whilst LNG can be traded flexibly outside of existing pipeline supply routes, factors such as shipping costs and boil-off (3) mean that proximity to the market plays some role in trade. A good example of this is Australia, which supplied 39 per cent of Japanese imports in 2020, whereas the UK has only ever received one cargo from Australia.

(3) 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 off at a gasification unit.

Map 2: Global importers of LNG by volume, 2020



Asia remained the key global LNG market. The top five importers of LNG in 2020 were Japan, China, South Korea, India, and Taiwan. Japan exclusively imports natural gas as LNG, which it uses for power generation in place of ageing nuclear capacity; it along with South Korea and Taiwan have well established LNG markets. China and more recently India have seen substantial increases in LNG demand in recent years. In 2020, the Ministry of Ecology in China moved to replace coal with gas for heating in seven million households. Demand in India is sensitive to LNG price; imports increased by 15 per cent in 2020 compared to 2019, reaching all-time highs in February as spot prices plummeted. In addition, there are several emerging LNG markets in Asia including Pakistan, Thailand, Kuwait and Singapore who are looking to LNG for stable supply as their economies grow.

Chart 1: Top 10 Global importers of LNG by volume, 2020

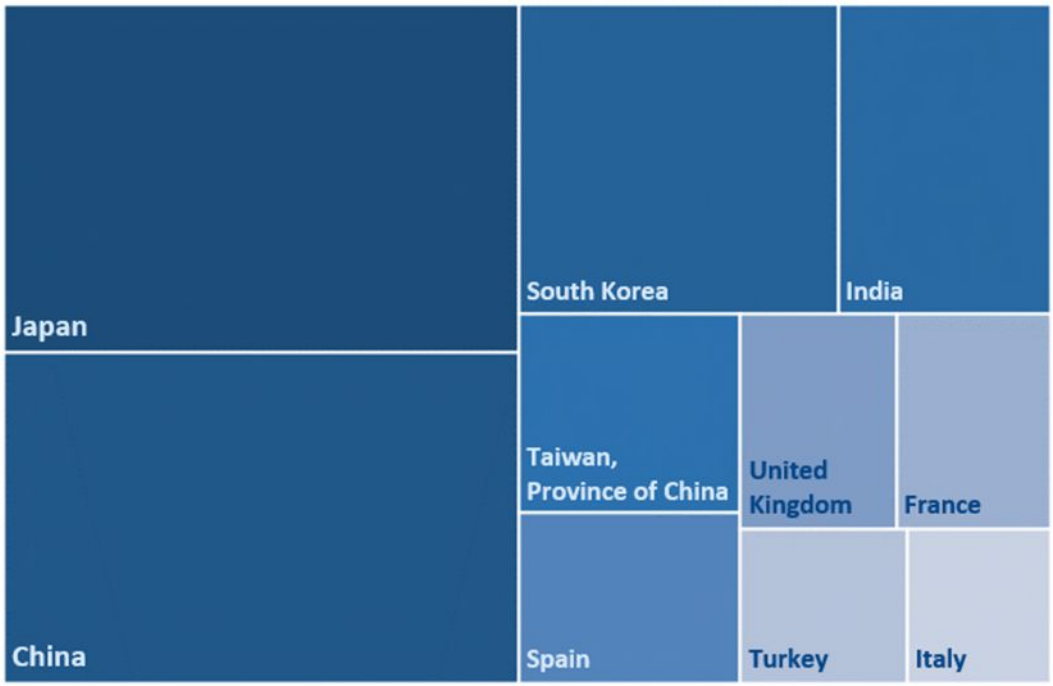
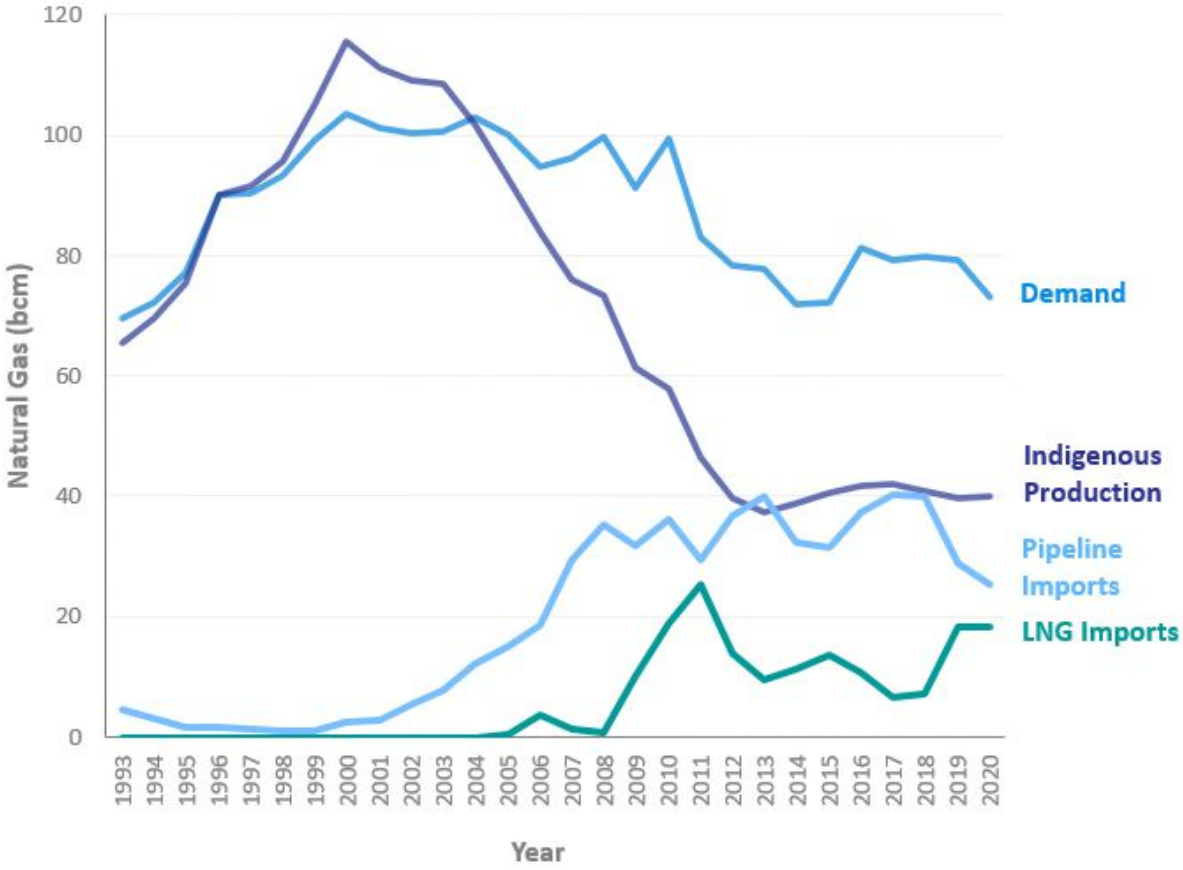


Chart 1 shows the top ten largest LNG importers globally. The UK is the second largest European importer of LNG behind Spain. Demand in Europe is substantially lower than in Asia. For context, in 2020 Turkey and the four largest European importers imported volumes equivalent to just over a quarter of that imported by the top five Asian importers.

However, Europe's substantial storage allows for imports when price is low, even during periods of low demand, meaning it can play a vital role in balancing the global LNG market; this was the case in 2019.

UK Gas Overview

Chart 2: Summary of UK Natural Gas Use, 1993 – 2020

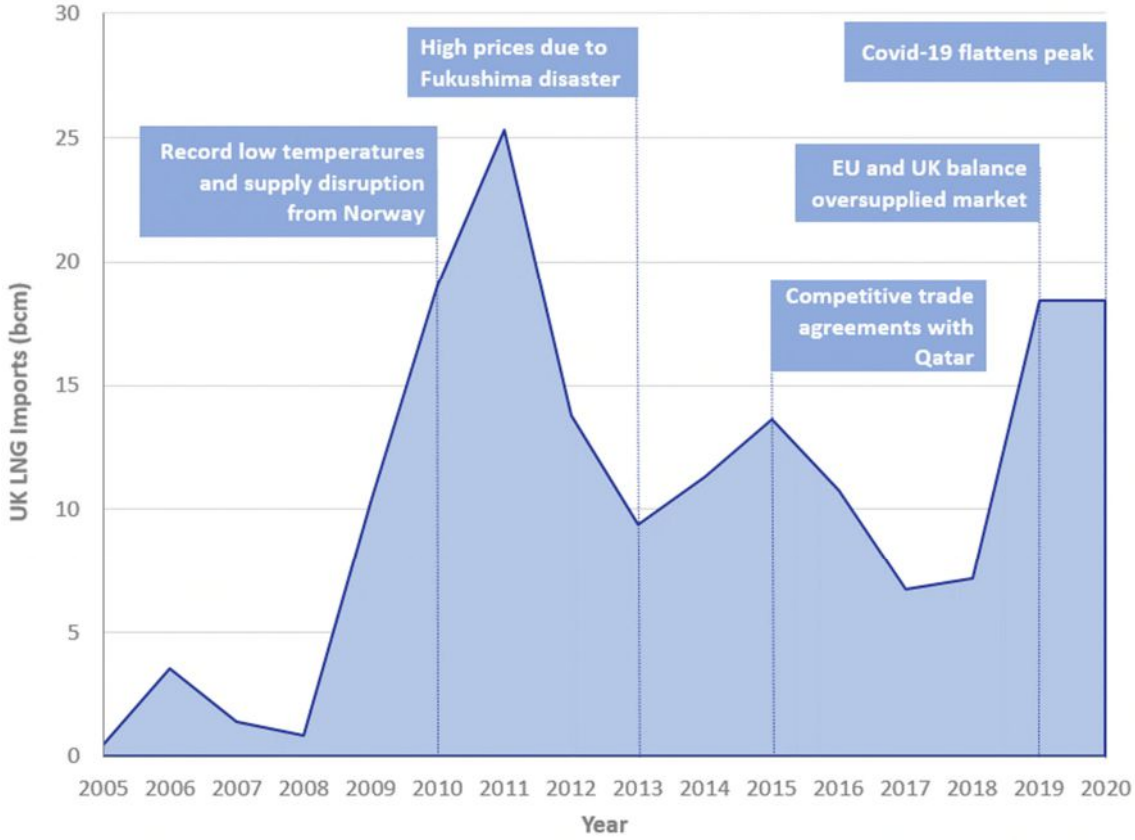


Indigenous production of natural gas from the UK Continental Shelf (UKCS) is transported via pipeline inland and to established trading partners. Chart 2 shows indigenous production exceeded demand between 1997 and 2003 when the UK was a net exporter of natural gas. Following this indigenous production declined before stabilising in 2013, at around a third of the 115 bcm peak in 2000. Since 2004 demand has also declined but at a slower rate than production. This meant that in 2020 indigenous production met just over half of demand. In 2020, UK demand for natural gas reduced by 7.7 per cent compared to 2019 as national restrictions were imposed to curb the Covid-19 pandemic.

As indigenous production declined, imports have increased to meet demand. The UK began importing LNG for commercial use in 2005. Imports of LNG were minimal until 2008 when they increased rapidly before peaking in 2011; since then, LNG imports have fluctuated. Historically natural gas imports by pipeline and of LNG have been negatively correlated meaning that as pipeline imports fall, imports of LNG increase, and vice versa. The UK continues to export some natural gas by pipeline; this tends to be seasonal. For example, exports to the Netherlands support a UK oversupply in summer months following the closure of storage facilities.

UK LNG Imports

Chart 3: UK LNG Imports, 2005 - 2020



2010-2011

Chart 3 shows that UK imports of LNG increased rapidly from 2008 peaking in 2011 at 25.3 billion cubic metres (bcm); accounting for 46 per cent of natural gas imports and 31 per cent of demand. This peak was the result of record low temperatures and disruption to pipeline supply due to industrial action in Norway. During the winter of 2010/11, on peak demand days, LNG was the second largest source of natural gas behind stock draws, making it more important than pipeline imports to meet demand.

2013

After the 2011 peak, LNG price increases saw a rapid decline in imports until 2013. These price increases were associated with the Tōhoku earthquake and tsunami in 2011 which caused the Fukushima disaster. In Asia, LNG was used as an emergency fuel to meet demand, as nuclear capacity was reduced over safety concerns. This led to the creation of an LNG spot market and subsequent changes to the global market structure.

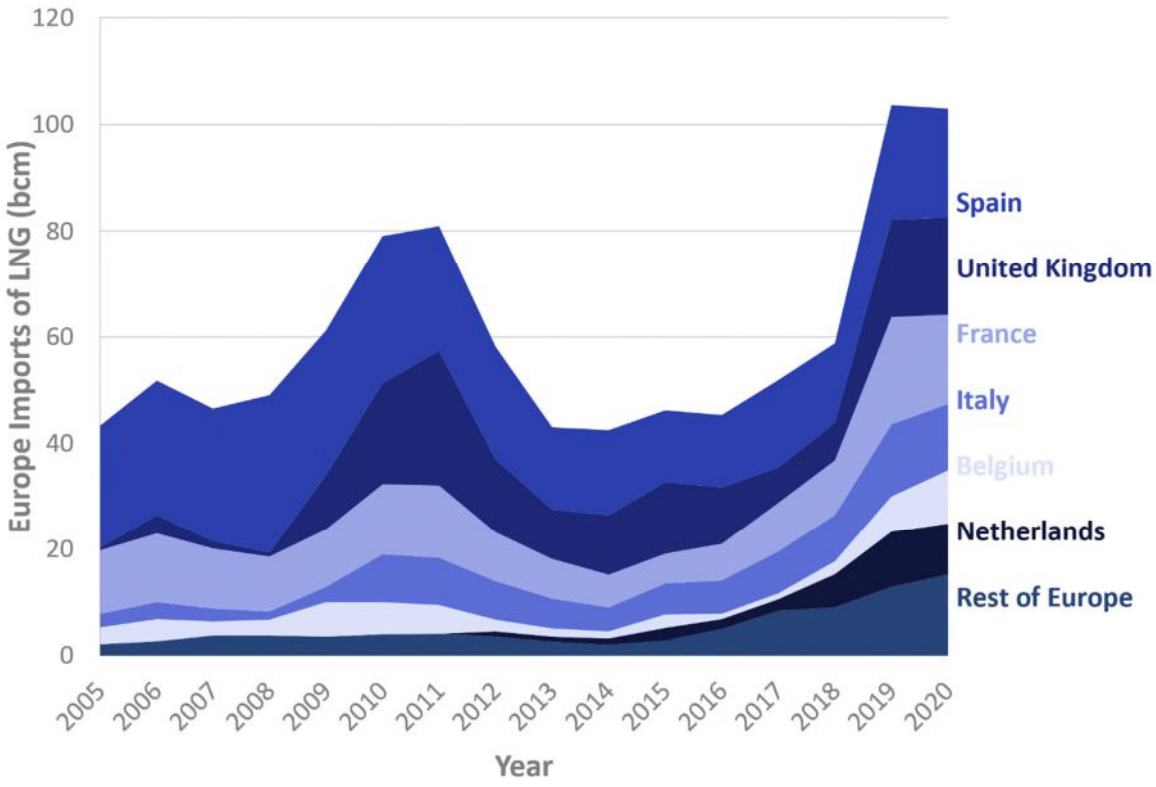
2014-2015

Following this, changes to UK LNG imports have been heavily influenced by markets. The 2014/15 bump in imports is linked to supply and purchase agreements (SPAs) with Qatar. These contractual agreements can be mutually beneficial, for example, Qatar Petroleum invested in UK LNG infrastructure including the South Hook LNG terminal, which in turn agreed to import Qatari LNG.

2019

In 2019, LNG imports peaked again at 18.5 bcm, just under three quarters of the peak in 2011. The UK played a key role in the European ‘LNG sink’, which saw steep increases in LNG imports across Europe to balance global LNG (Chart 4). This boom in 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 record lows and Europe played the role of the balancing market.

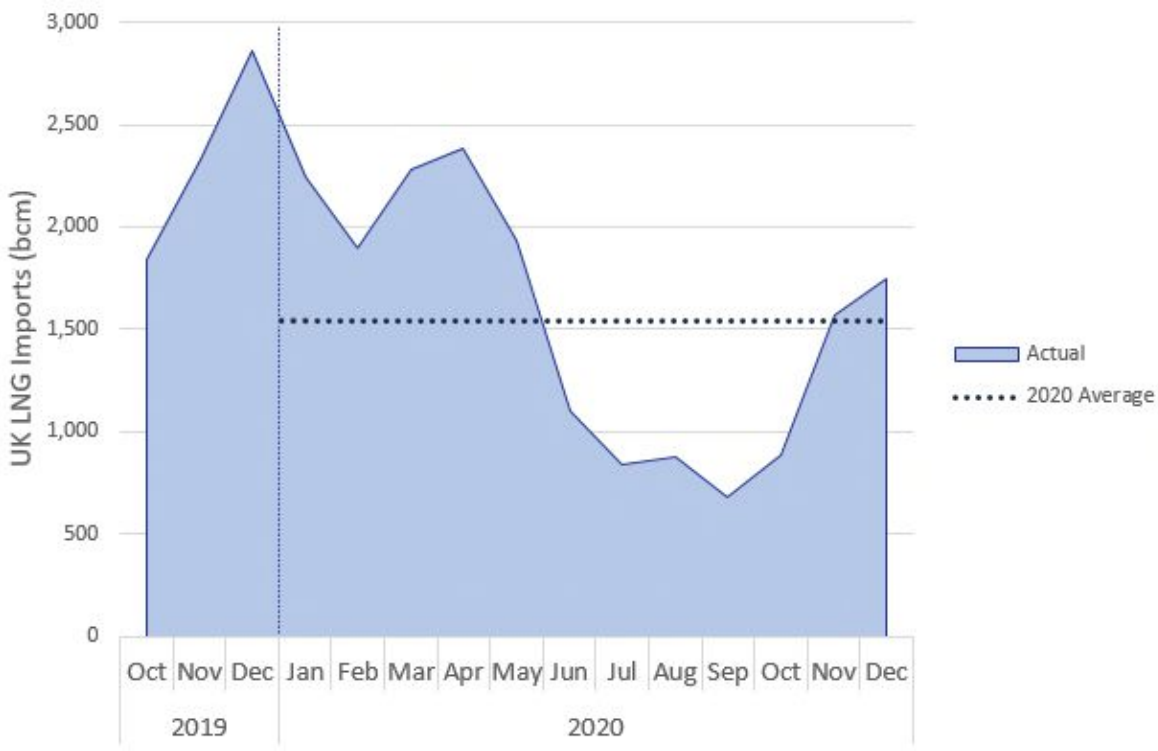
Chart 4: Europe LNG Imports, 2005 – 2020



2020

In 2020, the UK imported 18.4 bcm of LNG, accounting for 42 per cent of natural gas imports and 22 per cent of supply – maintaining the high levels seen in 2019. Chart 4 shows this trend was consistent for much of Europe. Chart 5 shows monthly imports unpacking hidden complexities within the 2020 figure.

Chart 5: UK LNG Monthly Imports, October 2019 - December 2020



In early 2020, Europe held high levels of gas in storage, due to stockpiling in late 2019 as a safety net during negotiations between Russia and Ukraine regarding a new transit deal. High storage levels combined with a mild winter saw a slump in imports from January.

Alongside this, in the first quarter of 2020 global lockdowns, to prevent the spread of Covid-19, began to reduce LNG demand, particularly in key Asian markets. This led to a decline in LNG prices which buyers in Europe took advantage of, sustaining high levels of imports in the first half of the year.

However, unlike in 2019, European gas inventory started the year at record high levels. In addition, restrictions to curb the Covid-19 pandemic continued into the summer exacerbating lower seasonal demand. This combination meant that maintaining high LNG imports was not sustainable and as such they began to fall over the summer.

Moving into winter, UK imports increased as temperature declined; meanwhile a cold Asian winter increased LNG demand, which combined with unanticipated supply outages led to the highest LNG spot price ever recorded, in January 2021.

UK LNG Import Sources

Chart 6: Top 6 2020 Import Sources as a percentage of total LNG imports, 2005 - 2020

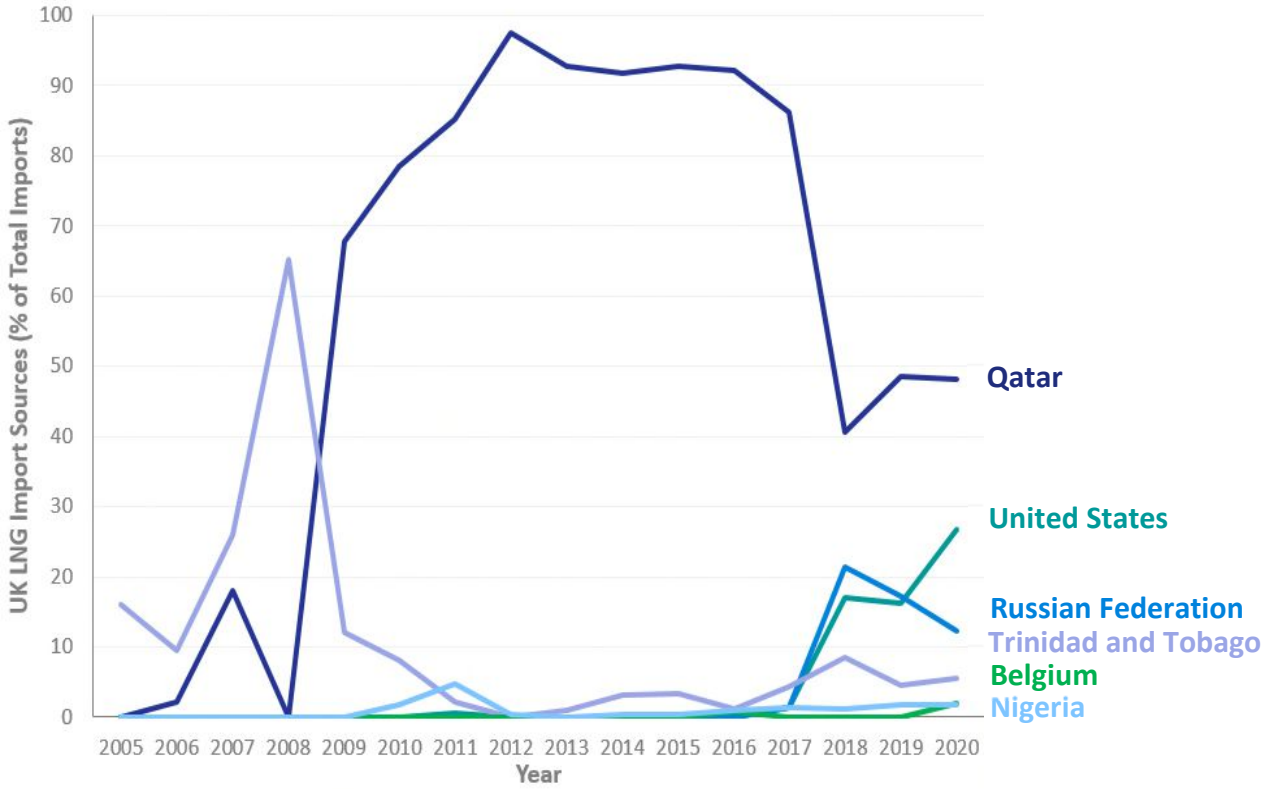


Chart 6 shows the top six sources of UK LNG imports as a percentage of total imports. A strong trading relationship with Qatar means that it remains the dominant source in 2020. However, the share of Qatari LNG has declined in recent years falling from 98 per cent in 2012 to just under half in 2020. This fall is in line with increases in global liquification capacity allowing for a diversification of import sources. For example, in 2005 the UK imported LNG from just two sources, Algeria and Trinidad and Tobago, this climbed to eight in 2011 and 10 in 2020. Notably, imports from the US increased by 64 per cent in 2020 compared to 2019. This was despite a complex year for US shale as several wells were forced to shut-in because of the Covid-19 pandemic, and as further environmental concerns were raised.

Summary

The UK uses natural gas from indigenous production and imports. Some of these imports arrive as LNG. The UK began importing LNG in 2005 with the peak in 2011 when LNG made up more than a 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 European and UK imports.

UK LNG imports in 2020 were stable compared to 2019 when they substantially increased, as Europe balanced an oversupplied market. Moving into 2020, substantial levels of gas in European storage, followed by restrictions in response to the Covid-19 pandemic, muted potential growth for UK LNG imports. Total LNG imports made up 22 per cent of supply of gas to the UK in 2020 compared to 21 per cent in 2019, with Qatar as the primary source of supply followed by the US.

Major commentators are projecting continued growth of LNG markets despite setbacks in 2020 due to the Covid-19 pandemic, as established importers shift focus to reducing greenhouse gas emissions and as emerging economies seek secure energy supply.

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