

Statistics report

Natural Gas Information

Overview

2020

leda

Introduction and Highlights

This overview summarises the key messages from the Natural Gas Information data set. It is the result of a yearlong team effort by colleagues in the Energy Data Centre of the International Energy Agency in coordination with representatives in OECD member countries and in other countries worldwide, providing the definitive set of energy data for the world. These data are used not only by IEA analysts but also by energy ministries, businesses, journalists, students and many others.

Some of the main messages from the overview are:

- In 2019 global production of natural gas hit a new high, breaking the 4 Tcm threshold for the first time with 4 088 Bcm produced, +3.3% compared to 2018. Since the financial crisis of 2007-2008, natural gas production has been steadily increasing at an annually compounded growth rate of 2.7%.
- For the first time since the financial crisis natural gas production of GECF countries was outstripped by OECD member countries in 2019, with a difference of 27.2 Bcm.
- Global imports reached the 1.2 Tcm mark in 2019, with 55.5 Bcm more natural gas traded than in 2018. The ratio of natural gas traded over natural gas produced increased from 29.8% in 2018 to 30.2% in 2019. LNG accounted for an increase of 65.6 Bcm.
- In 2019, global demand for natural gas increased by 1.5% compared to 2018, that is a 57.9 Bcm addition, up to 3 986 Bcm.
- Prices of natural gas by pipeline fell in 2019 in the European Union by 32.4%, and by 6.7 % in the United States, narrowing the gap between the two after having increased in 2018. The price difference is now 3.17 USD/MMBtu, the lowest observed over the past 10 years.
- LNG imports prices are now even closer than before, contained within a range of 2.22 USD/MMBtu, the smallest of the decade.

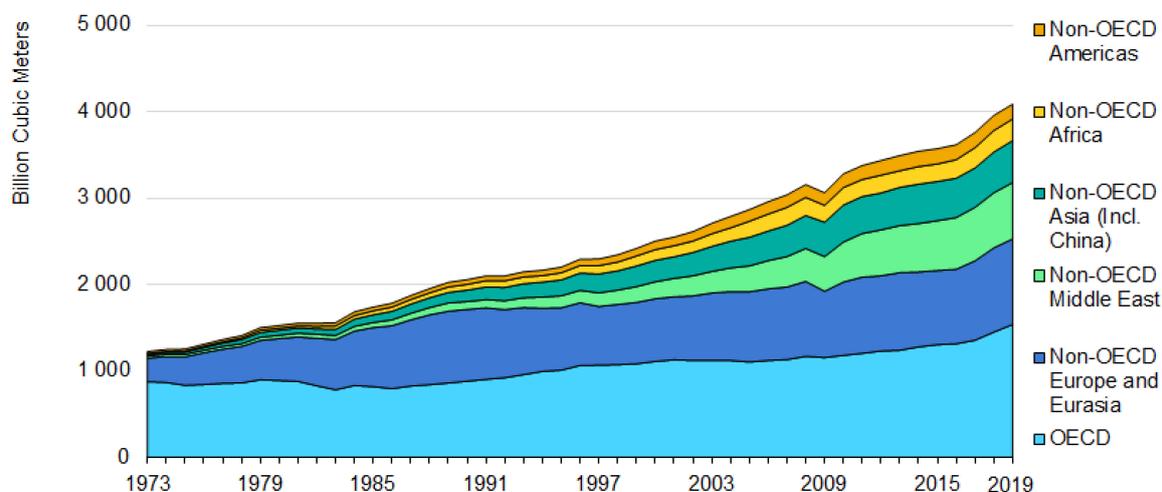
Natural Gas Production

World

In 2019 global production of natural gas hit a new high, breaking the 4 Tcm threshold for the first time with 4 088 Bcm produced, +3.3% compared to 2018. Since the financial crisis of 2007-08, natural gas production has been steadily increasing at an annually compounded growth rate of 2.7%.

Despite being smaller than the past two years, this increase represents an addition of 131,5 Bcm to global natural gas production and was largely driven by the OECD Americas region, which experienced an increase of 78.4 Bcm, coupled with a 24.9 Bcm increase observed in OECD Asia Oceania.

World natural gas production by region, 1973-2019



Note: Data for 2019 are provisional.

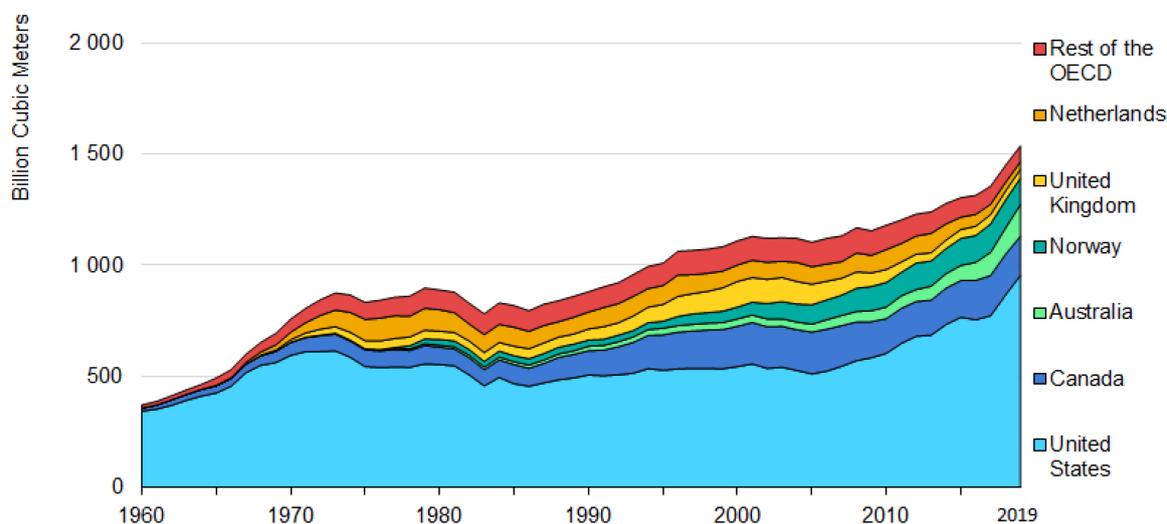
Source: IEA/OECD

OECD Countries

At the OECD level, total natural gas production experienced a 6.1% increase, passing the 1.5 Tcm threshold for the first time. This boost was driven by the OECD Americas region for the second consecutive year, as the United States remains the largest natural gas producer, with an increment of 88.3 Bcm (+10.2%) in 2019. Additionally, OECD Asia Oceania observed a continued increase and contributed by 24.9 Bcm, galvanized by Australia (+20.7%, +24.4 Bcm in 2019). On the other hand,

natural gas production in OECD Europe contracted by 15.5 Bcm (-6.6%), with reductions of 6.8 Bcm in Norway and 5 Bcm in the Netherlands following the implementation of production caps on the Groningen field.

Natural gas production in the OECD, 1960-2019



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Note: Data for 2019 are provisional.

Source: IEA/OECD

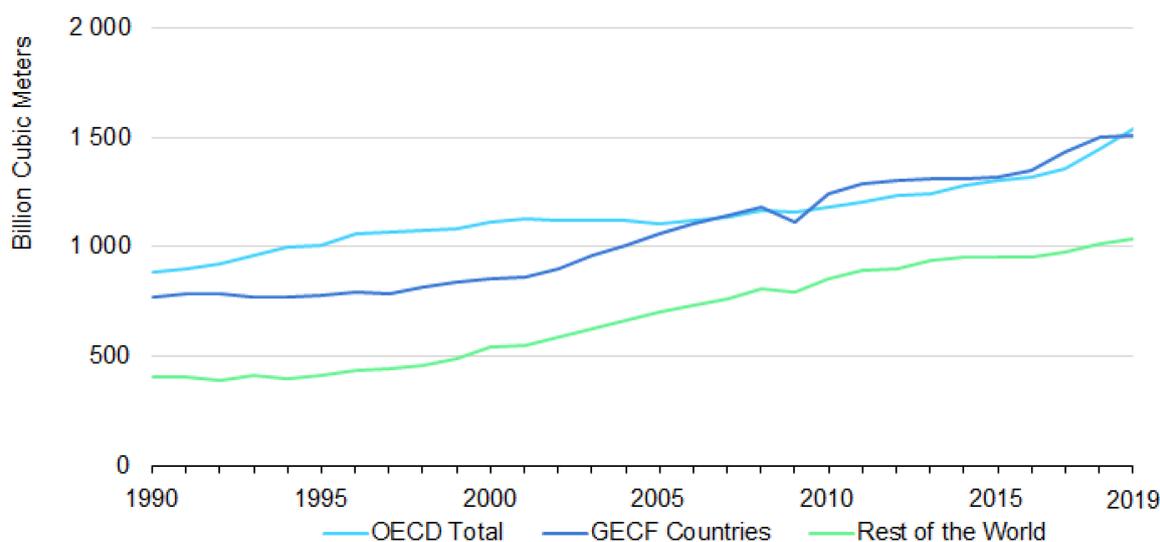
Looking at individual countries, some specific elements contributed to the variations observed in natural gas production for 2019:

- Natural gas production in the United States reported gains of 88.3 Bcm in 2019, which is the highest since the surge due to shale revolution;
- Canada is showing a different trend, with a steady decrease initiated in 2013, which move it down to the rank of 5th largest global producer of natural gas in 2019;
- While it remains the largest producer in OECD Europe, Norway has now seen its natural gas production decline for the past two years, down by 6.7 Bcm in 2019, which corresponds to a 5.4% shrinkage. Part of the diminution is accounted for by technical problems experienced on some of the fields; and,
- In the Netherlands, the production of natural gas is gradually declining due to the commitments to reduce the exploitation of the Groningen field, located in a region subject to potential earthquakes.

Non-OECD Countries

Outside the OECD region, total production of natural gas increased 43.7 Bcm in 2019. This increment represents a 1.7% growth compared to 2018 and is less than half as much as the boost observed in natural gas production for this grouping over the past two years. Russia was by far the most prominent natural gas producer of the non-OECD member countries in 2019, almost equal to the total of the next four largest producers combined (Iran, China, Qatar and Saudi Arabia).

World natural gas production by country grouping, 1990-2019



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Note: Data for 2019 are provisional.

Note: For this publication, GECF member countries include Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Lybia, Nigeria, Qatar, Russia, Trinidad and Tobago, Venezuela, and United Arab Emirates. At the time of publication, the status of the UAE had changed to observer.

Source: IEA/OECD

For the members of the Gas Exporting Countries Forum (GECF), natural gas production marginally increased by 0.9%, an addition of 13.9 Bcm to their 2018 output. While Russia (+1.6%), Iran (+2.9%) and Egypt (+7.0%) drove production up, their contributions were substantially offset by Algeria (-6.8%), Venezuela (-17.3%) and Bolivia (-14.1%) where the most significant drops were observed in 2019. With a differential of 27.2 Bcm, for the first time since the financial crisis natural gas production of GECF countries was outstripped by OECD member countries.

Russia remains the second largest natural gas global producer with a production higher by 11.8 Bcm in 2019.

Iran retained its position as the 3rd largest natural gas global producer in 2019 with an expansion of 6.4 Bcm in the volumes of natural gas supplied for 2019.

China experienced the 3rd largest increase in natural gas production at the global scale with an increase of 15.8 Bcm (+9.8%) in 2019, driving the increase in the non-OECD grouping, and now ranked as 4th global producer from being 6th in 2018.

Qatar has been hovering around the same production level for almost a decade and stands at 167.6 Bcm (+1.2%) in 2019.

While the United states on its own represents about a quarter of the production of natural gas at the global level, together with Russia and Iran they account for 47.4% of the global production, a slight increase compared to the 46.2% they represented in 2018.

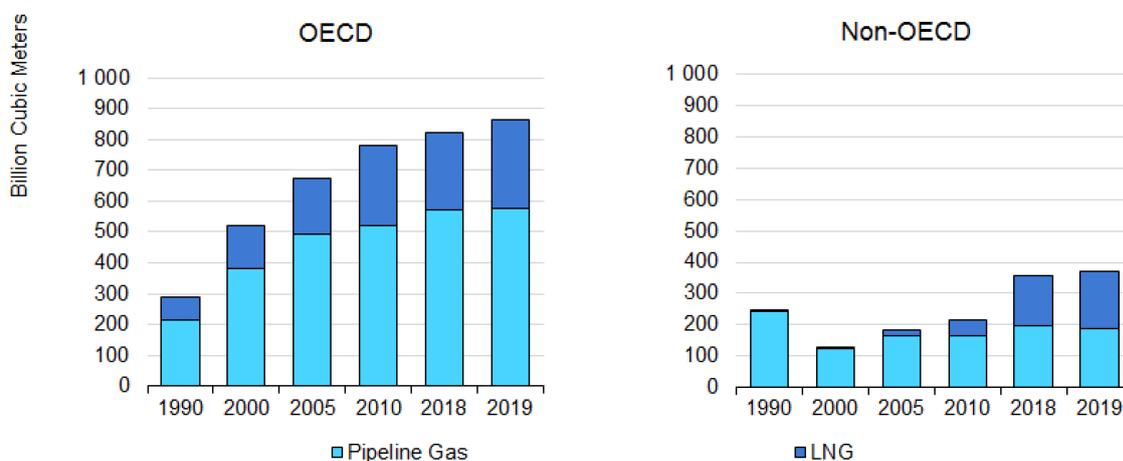
Natural Gas Imports

World

Global imports reached the 1.2 Tcm mark in 2019, with 55.5 Bcm more natural gas traded than in 2018. The ratio of natural gas traded over natural gas produced increased from 29.8% in 2018 to 30.2% in 2019. Similar to the trend observed since 2017, this increase in trade is coming exclusively from the development of LNG imports, with increments of 19.4 Bcm and 46.2 Bcm in 2019 for non-OECD countries and OECD countries respectively. Volumes of LNG accounted for 38.1% of the exchanges of natural gas in 2019, while they stood at 34.3% in 2018.

China consolidated its importance as a driver of global LNG dynamics next to Japan and Korea. For the second consecutive year, the highest increase in LNG imported volumes was experienced in China with 11.8 Bcm more than in 2018, followed by the United Kingdom where an additional 11.3 Bcm were shipped in 2019.

World natural gas imports, 1990-2019



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Note: Data for 2019 are provisional.

Source: IEA/OECD

Pipeline Imports

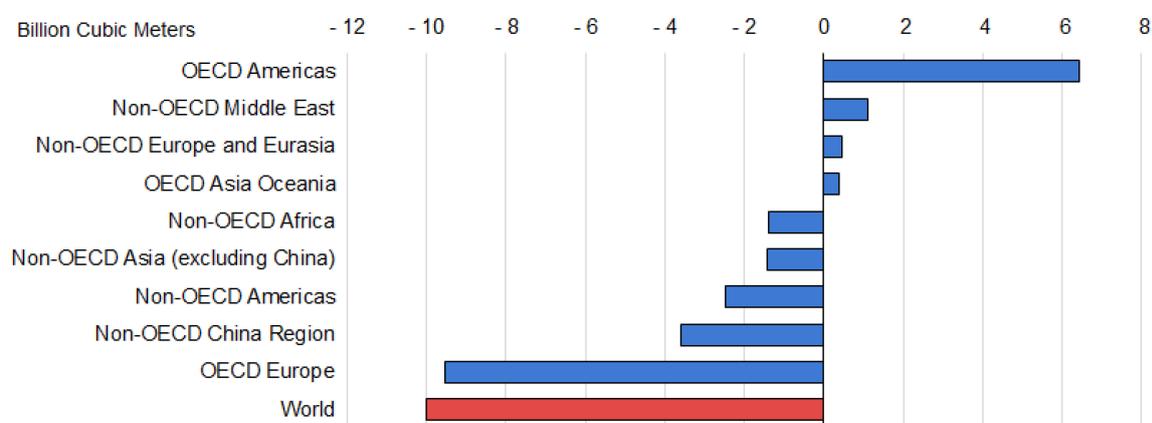
Looking at gross pipeline trade (including intraregional trade), while the OECD Americas experienced an expansion of its traded volumes in 2019 with a 9.1 Bcm increase in Mexico, most of the other regions observed a drop. The most important

fall was for OECD Europe, where several countries have moved from gaseous to LNG imports. The UK was the most significant and reduced its pipeline imports by 11.1 Bcm compared to 2018. Tukey and the Netherlands accentuated the decrease with reductions of 6.5 Bcm and 6.1 Bcm respectively.

The non-OECD area conveys a similar picture, more particularly in the non-OECD China Region where pipeline imports dropped by 3.6 Bcm, with China reducing its pipeline imports by 3.7 Bcm at the benefit of LNG trade.

Overall, at the global scale, pipeline trade shrunk by 10.0 Bcm in 2019.

Changes per region in natural gas pipeline imports, 2018-2019



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Note: Data for 2019 are provisional.
Source: IEA/OECD

LNG Imports

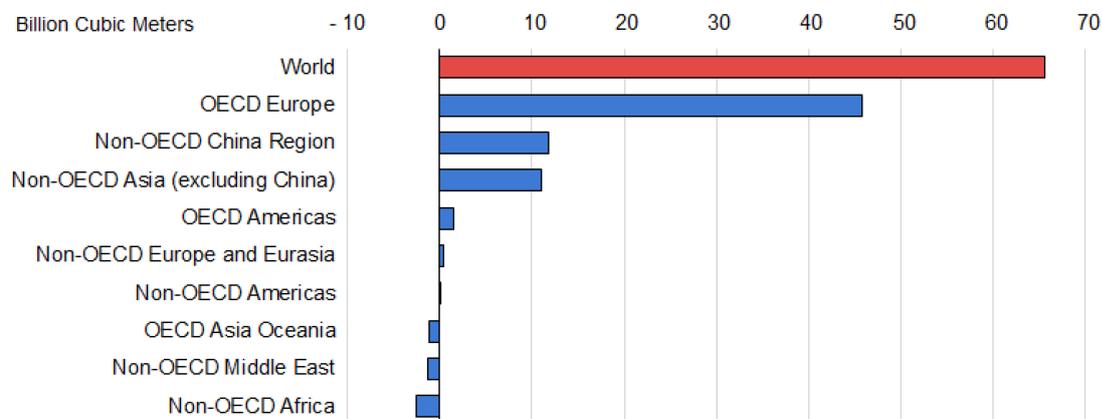
Most of the decrease observed in pipeline flows can be explained by the increasing weight of LNG in global natural gas trade. In 2019, the volume of LNG imported increased by around 65 Bcm in the world.

On the OECD side, 46.1 Bcm supplementary to 2018 LNG volumes were imported. OECD Europe is at the base of this impulse and added 45.8 Bcm to the LNG trade volumes. The United Kingdom was the biggest contributor and extended its LNG imports by 11.3 Bcm while significantly decreasing its pipeline imports by a similar amount. France and Spain similarly boosted their LNG imports in 2019 with additions of 9.8 Bcm and 6.6 Bcm respectively.

When looking at the non-OECD area, an addition of 19.4 Bcm was experienced in 2019, lead by both Non-OECD Asia (excluding China) and Non-OECD China regions,

where LNG imports increased by 11.0 Bcm and 11.8 Bcm respectively. Most of this increase came from Bangladesh (+5.4 Bcm) and China (+11.7 Bcm).

Changes per region in LNG imports, 2018-2019



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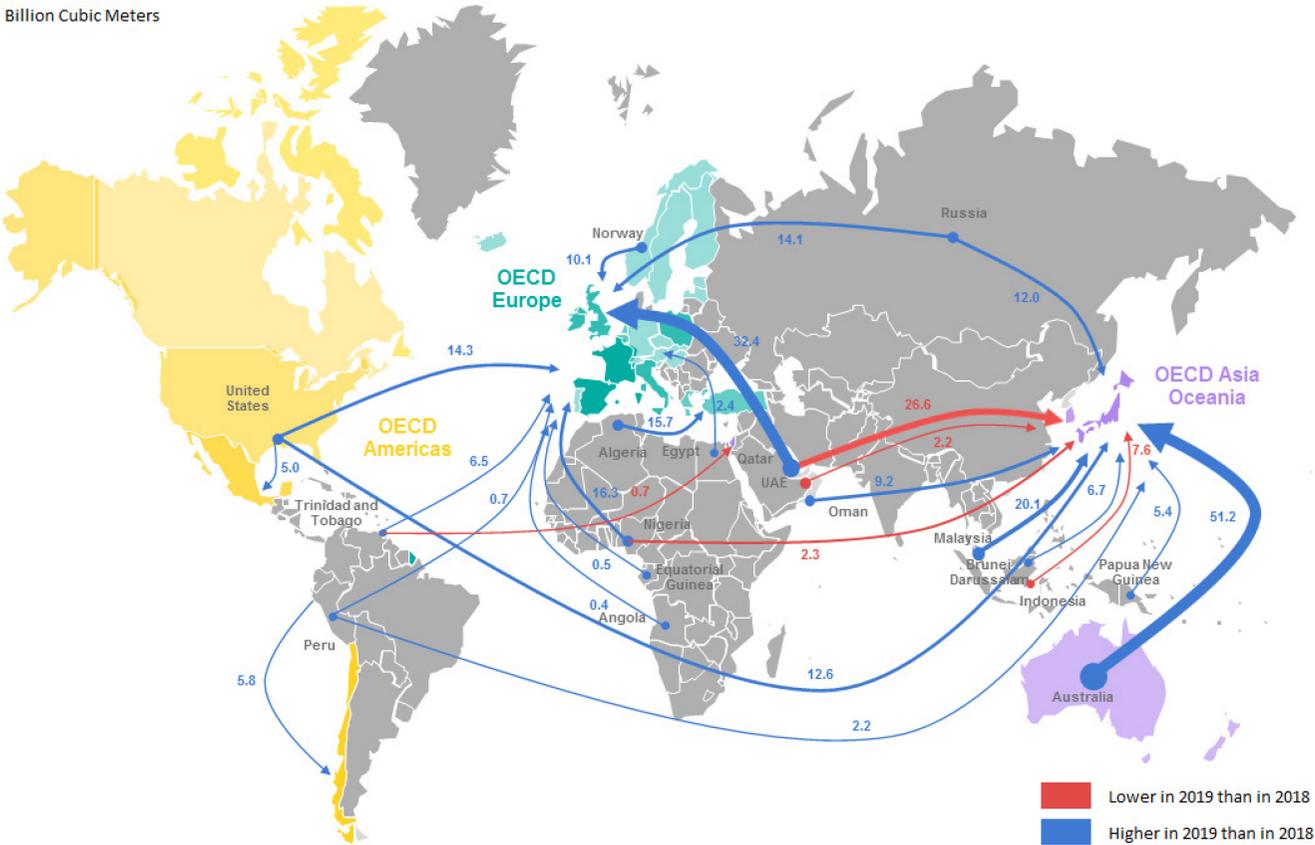
Note: Data for 2019 are provisional.

Source: IEA/OECD

In terms of import origins, Qatar and Australia remain the first two LNG providers to OECD countries with respectively 59.1 Bcm and 51.2 Bcm of LNG exported in 2019. The United States has now become the third largest exporter of LNG to the OECD with an additional 18.0 Bcm in 2019, up to 32.0 Bcm exported. Russia is next, totalling 26.1 Bcm of LNG exports in 2019.

LNG Trade flows in the OECD in 2019

Billion Cubic Meters



Note: Data for 2019 are provisional.
 Source: IEA/OECD

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Natural Gas Demand

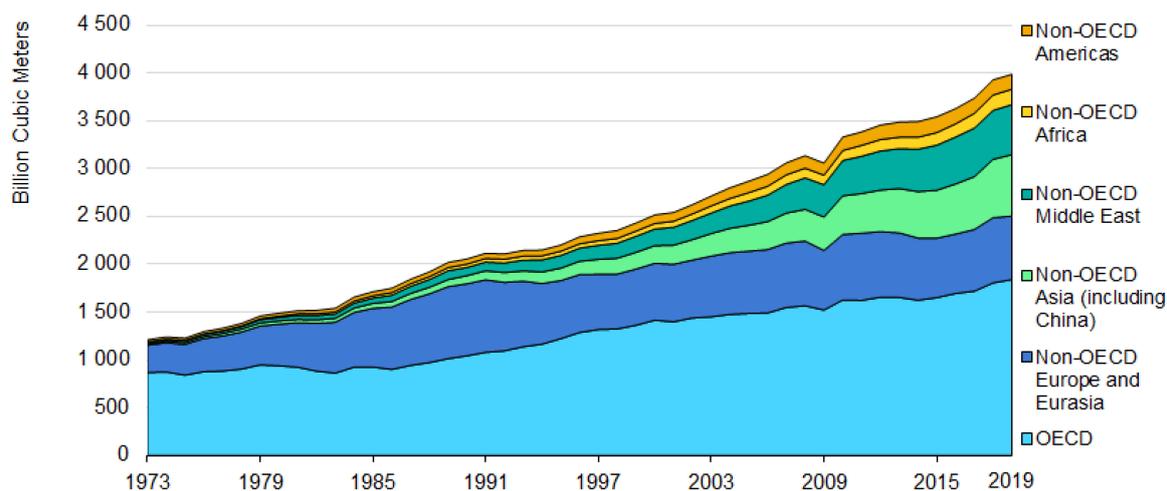
World

In 2019, global demand for natural gas increased by 1.5% compared to 2018, that is a 57.9 Bcm addition, up to 3 986 Bcm.

At the OECD level, natural gas demand was boosted by 1.9% in 2019, 34.5 Bcm more than in 2018. This increase is largely attributable to the OECD Americas (+22.3 Bcm), coupled with OECD Europe (+13.9 Bcm). The increased demand came mostly from the United States (+22.2 Bcm), Germany (+6.7 Bcm) and Australia (+6.7 Bcm), but those volumes were partially offset by the decreases experienced in Japan (-5.6 Bcm), Turkey (-4.7 Bcm) and Korea (-3.0 Bcm).

Similarly, demand for natural gas in non-OECD countries grew 1.1%, which represents an increase of 23.4 Bcm. That increase was largely driven by the 24.1 Bcm of additional demand observed in China in 2019, as well as increases in non-OECD Europe and Eurasia, where Turkmenistan experienced a 23.3% growth (+6.1 Bcm). Several countries in the Non-OECD Middle East region also contributed: Iran (+3.8 Bcm), Iraq (+3.4 Bcm), Kuwait (+2.5 Bcm) and Bahrain (+2.0 Bcm).

World natural gas demand by region, 1973-2019



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Note: Data for 2019 are provisional.

Source: IEA/OECD

Different trends characterised the demand growth since 1990 across regions:

In the OECD Americas, consumption grew steadily between 1990 and 2000 when it stabilized around 800 Bcm for the following 10 years. In 2010, demand growth resumed until 2016. After a small decline in 2017, the demand of natural gas in the OECD Americas reached a new high of 1 090 Bcm in 2019.

In OECD Europe, there was a sustained increase until 2005, when it stabilized between 530 Bcm and 575 Bcm until 2010. Then it fell, reaching a low of 460 Bcm in 2014. Despite growth in the recent years, OECD Europe is still slowly catching up and remains far from the levels observed prior to the financial crisis in 2009. In addition to macroeconomic drivers, improvements of the energy efficiency in major natural gas consuming sectors, such as space heating, contributed to slower demand growth.

In OECD Asia and Oceania, demand also increased at a stable pace until 2007, when it remained almost constant for three years, resuming its growth in 2010 driven by Korea and in 2011, supported by the decrease in nuclear power generation after the Fukushima accident in Japan. Since then, it has been oscillating around 215 Bcm.

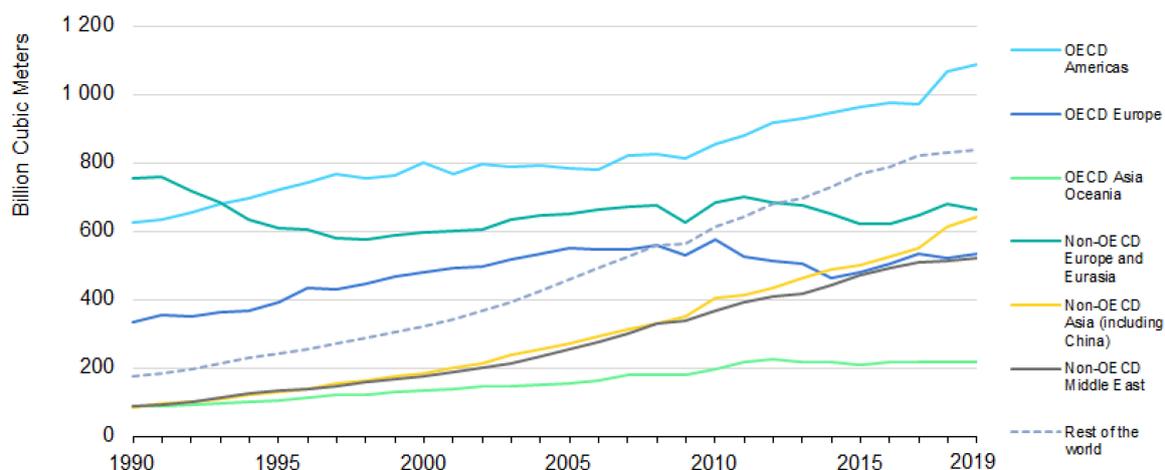
In non-OECD Europe and Eurasia, natural gas demand remains stable since 1994.

In non-OECD Asia (including China), demand of natural gas has been following a sustained upward trend, from 84.1 Bcm in 1990 up to almost six times that volume in 2015 at 500.1 Bcm, and now stands at 642.6 Bcm in 2019.

The demand of natural gas experienced in the non-OECD Middle East region is very similar, and got multiplied by six over the past three decades: from 86.3 Bcm in 1990, to 523.3 Bcm in 2019.

Finally, in the rest of the world, natural gas consumption showed a strong average growth rate of 5.6% over the past 29 years. This trend has been even stronger in China and Iran, where natural gas demand grew annually by 10.7% and 8.4% respectively.

World natural gas demand by selected regions, 1990-2019



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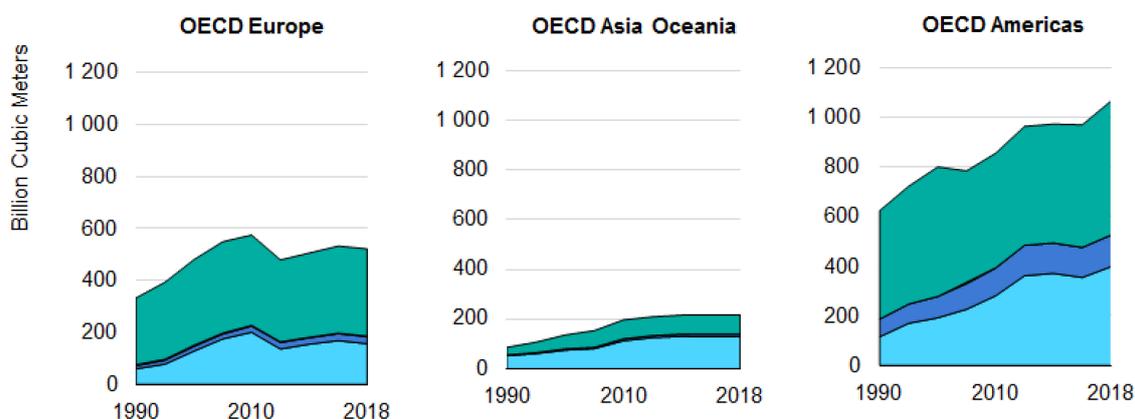
Source: IEA/OECD

At the country level, the most significant year-on-year increases were observed in China (+24.1 Bcm), the United States (+22.3 Bcm), Australia (+6.7 Bcm) and Germany (+6.7 Bcm), while the most significant decrease was observed in Russia (-13.7 Bcm), followed by Japan (-5.6 Bcm) and Uzbekistan (-5.0 Bcm).

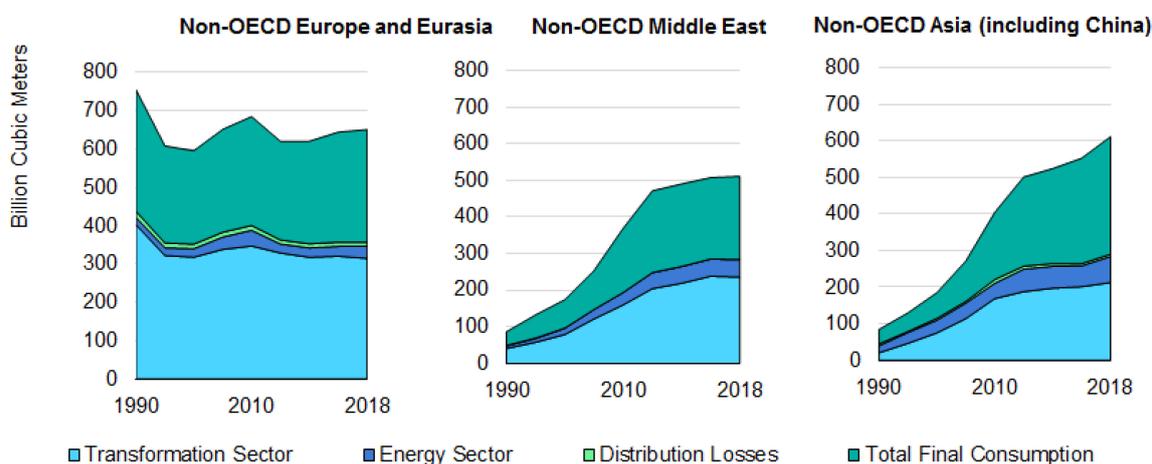
Main contributors

In the regions where natural gas demand grew the most over the past decade, the common denominator is the expansion of the transformation sector, which more than doubled between 1990 and 2018 at the global level from 722.6 Bcm to 1 593.3 Bcm.

Natural gas demand in OECD regions by sector, 1990-2018



Natural gas demand in selected non-OECD regions by sector, 1990-2018



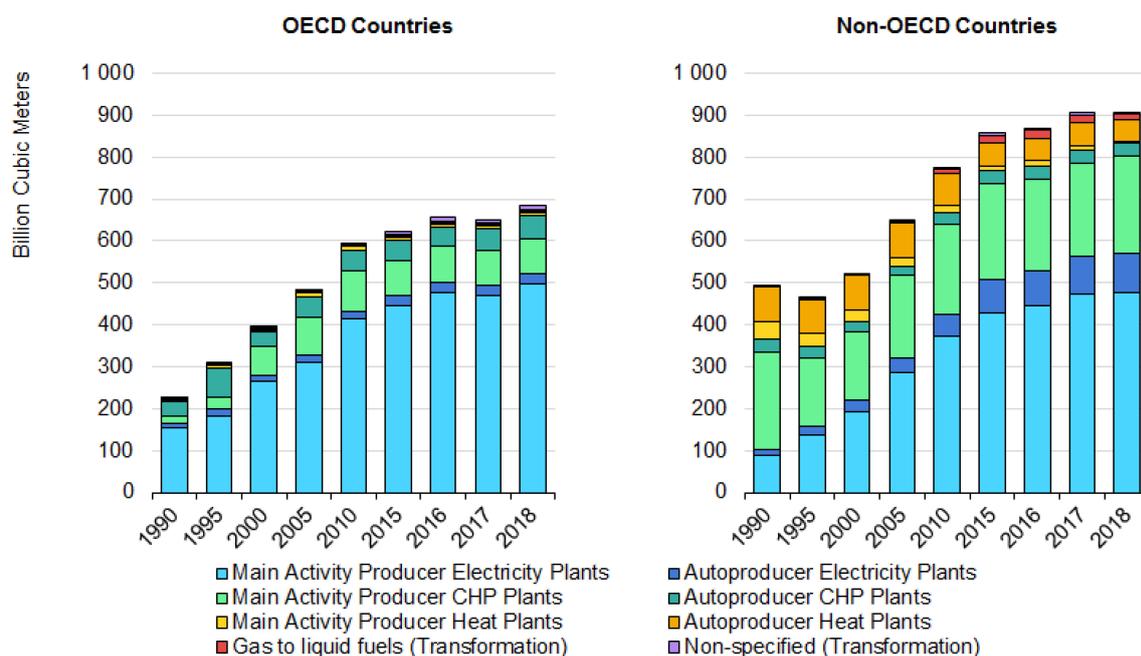
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Source: IEA/OECD.

Transformation sector

In the transformation sector power generation from main activity producers increased in OECD and non-OECD regions. In OECD countries the composition of the transformation sector remained constant over the 1990-2018 period. In non-OECD countries, on the contrary, power generation and heat generation from autoproducers are more developed. Over the past decade, non-OECD also expanded the use of natural gas for gas to liquid fuels applications.

World natural gas use in the transformation sector, 1990-2018



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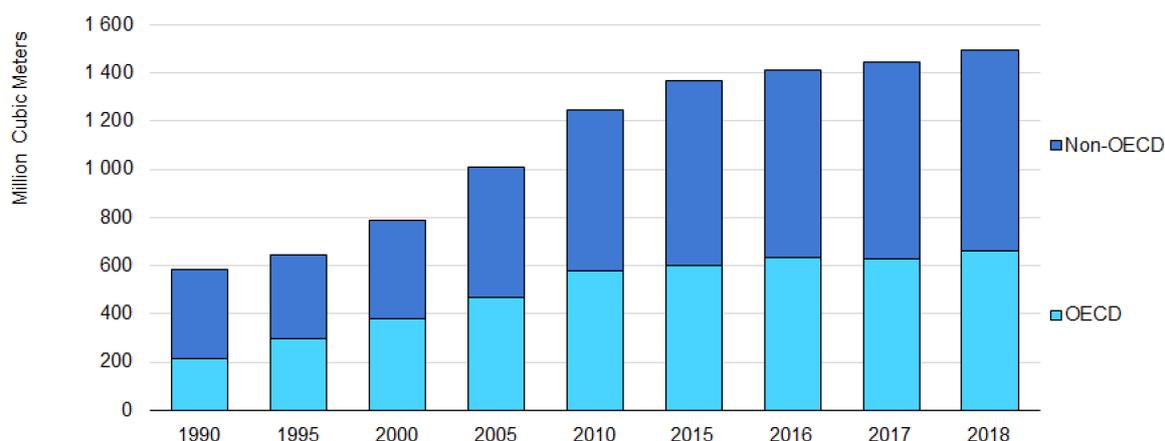
Source: IEA/OECD

Power Generation

In the OECD area, natural gas demand for power generation resumed its growth with an additional 31.9 Bcm consumed in 2018, up to 661.1 Bcm, the highest volume ever observed.

On the non-OECD side, there has been a continuous growth for more than twenty years now, and natural gas demand for power generation reached a new high at 832.5 Bcm.

World natural gas use for power generation, 1990-2018



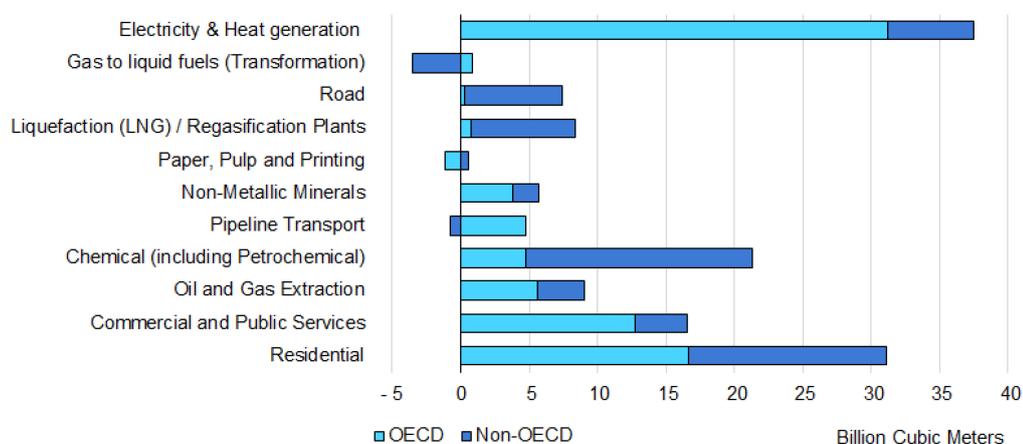
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Source: IEA/OECD

In other sectors, most of the natural gas demand sectors display similar trends for OECD and non-OECD countries. The exception is gas to liquid fuels and pipeline transport, where demand in non-OECD region has fallen, but risen in the OECD region.

In 2018, the industry sector showed an increase in natural gas consumption in both the OECD (+12.7 Bcm) and non-OECD countries (+26.2 Bcm), driven by the chemical and petrochemical sector in the non-OECD area (+16.5 Bcm). Other increases observed came from the residential sector and the commercial and public services sector with additions of 14.4 Bcm and 12.7 Bcm respectively for the OECD area and and 14.4 Bcm and 3.8 Bcm for non-OECD countries.

Change in natural gas demand in selected sectors, 2017-2018



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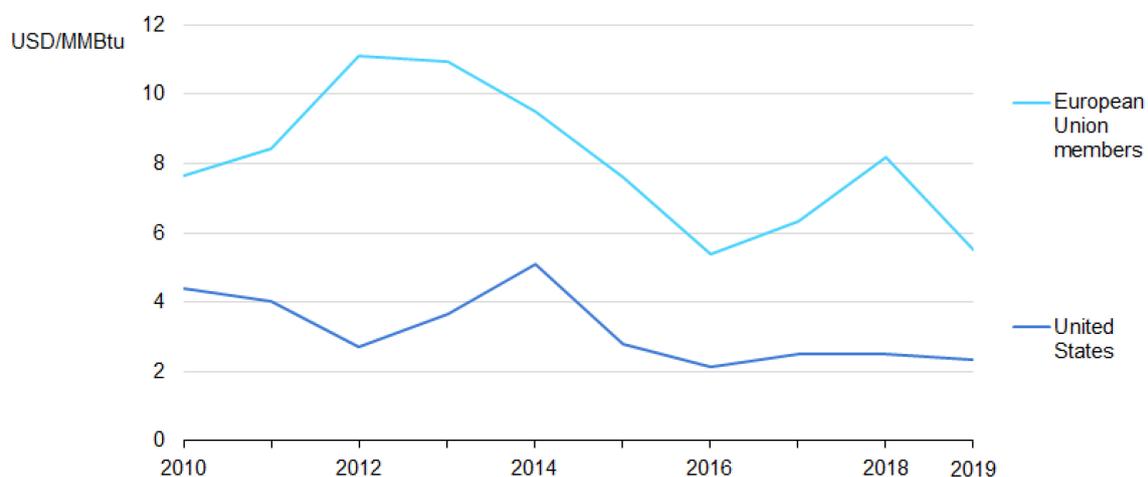
Source: IEA/OECD

Natural Gas Imports Prices

Pipeline Imports

In 2019, prices of natural gas by pipeline fell in the European Union by 32.4%, and by 6.7 % in the United States, narrowing the gap between the two after having increased in 2018. The differential is now 3.17 USD/MMBtu, the lowest observed over the past 10 years.

Natural gas prices for imports by pipeline, 2010-2019



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Source: IEA/OECD

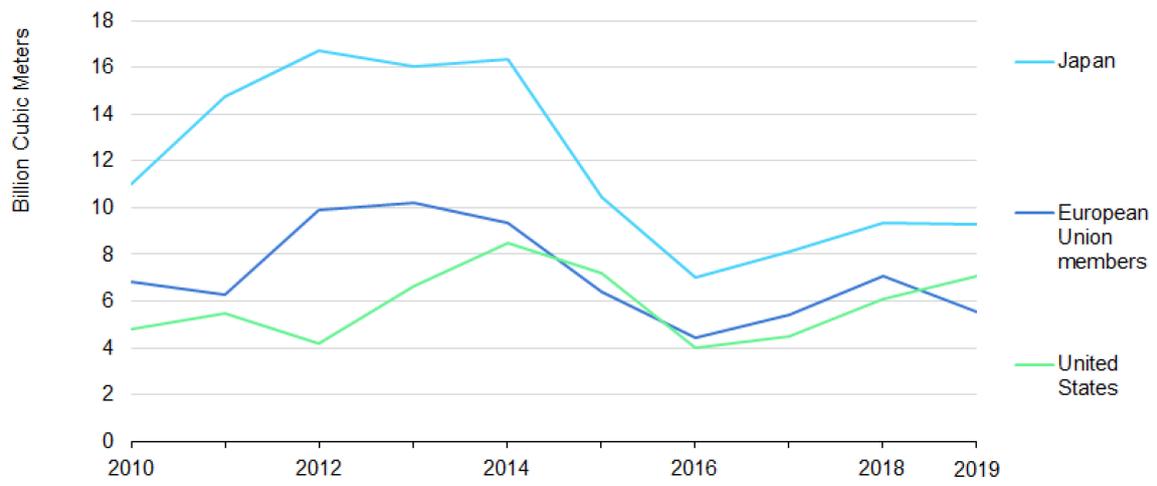
LNG Imports

For LNG imports prices, there was only a marginal decrease in Japan (-0.1%), while the European Union experienced a more severe drop (-21.7%), with prices now lower than the prices observed in the United States after its 17.0% increase.

Those variations indicate a convergence in the three prices, which are now within a band of 2.22 USD/MMBtu, the smallest of the decade.

These price trends are a reflection of the relative positions of different regions in the LNG market, with the United States being a net exporter of natural gas for the fourth consecutive year.

Natural gas prices for LNG imports, 2010-2019



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Source: IEA/OECD

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