NORWEGIAN PETROLEUM

C-0237

EXPORTS OF OIL AND GAS

Norway is a small player in the global crude market with production covering about 2 per cent of the global demand. Norwegian production of natural gas covers approximately 3 per cent of global demand, however, as an exporter Norway is a significant country. Norway is the third largest exporter of natural gas in the world, behind Russia and Qatar only. Norway supplies between 20 and 25 per cent of the EU gas demand. Nearly all oil and gas produced on the Norwegian shelf is exported, and combined, oil and gas equals about half of the total value of Norwegian exports of goods. This makes oil and gas the most important export commodities in the Norwegian economy.

OIL AND GAS EXPORTS

Norway is an important supplier of oil and gas to the global market, and almost all oil and gas produced on the Norwegian shelf is exported. Company and government revenues from sales of oil and gas have played a crucial role in creating modern Norwegian society.

230

Total production in Norway was about 230.5 million Sm³ o.e. in 2021.

333

The export value of crude, condensate and natural gas in 2020 was about NOK 333 billion (2021).

42%

Crude oil and natural gas amount to over 40% of the total value of Norway’s exports of goods in 2020.

All licensees on the Norwegian shelf are responsible for selling the oil and gas they produce. The only exception is Equinor (former Statoil), which in addition is responsible for selling the government share of its oil and gas production (the SDFI share). This responsibility is set out in governmental instructions to Equinor.

Oil is a global commodity that is sold and delivered to most parts of the world. In contrast, there have historically been geographically separate regional gas markets. About 95 % of Norwegian gas is transported via a network of subsea pipelines to other European countries, while about 5 % is exported as liquefied natural gas (LNG). This is transported by ship from the Melkøya facility in Troms and Finnmark.

What is produced on the Norwegian shelf?

The production from different reservoirs (the well stream) contains oil, gas and water in various combinations. To get marketable products, the production from the reservoirs must be separated and treated. The production from different reservoirs varies from oil with low gas content to almost dry gas (methane with only small amounts of other gases).

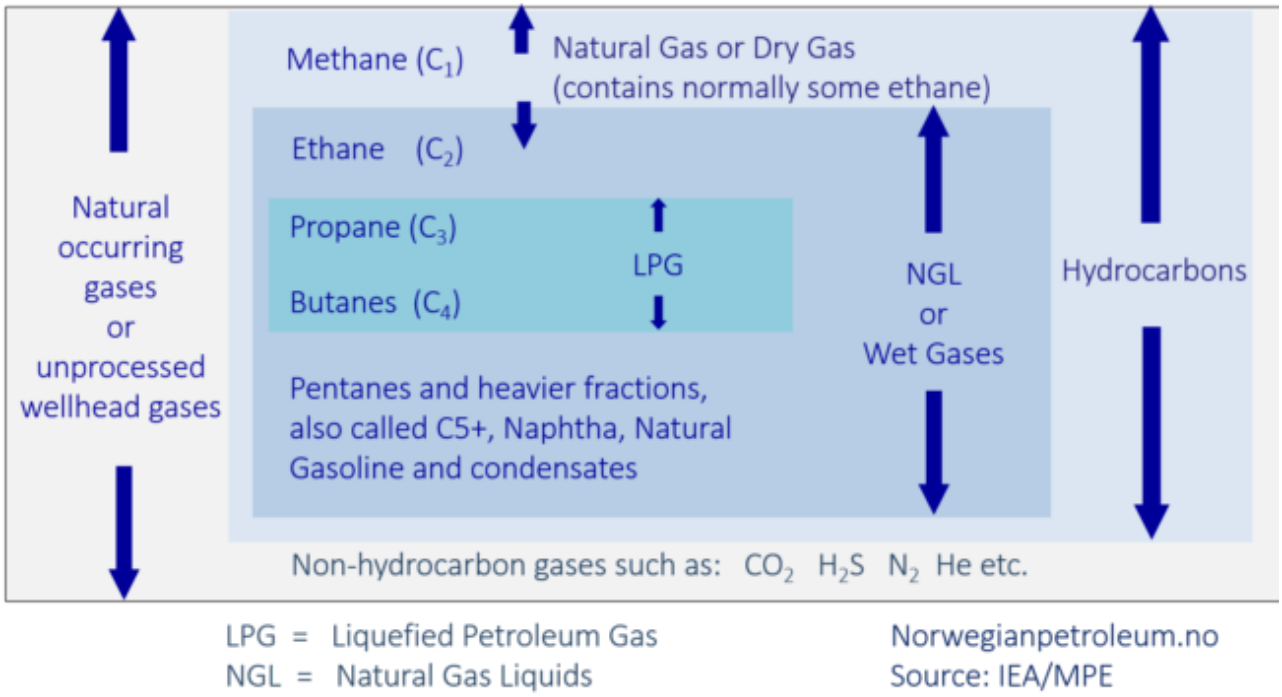
Crude oil is a fluid that is a combination of different types of hydrocarbons. The composition varies from field to field. The quality of the oil depends on several factors, for example how much and which substances, such as wax and sulphur, it contains. The composition also determines how light or heavy (viscous) the oil is.

Rich gas, or crude natural gas, is a mixture of various gases. When necessary, the gas is separated from the oil before the rich gas is treated in a processing facility that separates the dry and wet gas components. Dry gas is often referred to as natural gas, and consists mainly of methane, but also a little ethane.

Wet gas, or NGL (Natural Gas Liquids), consists of a mixture of heavier gases (ethane, propane, butane and naphtha). In addition there are heavier condensates which some classify as a separate product. Naphtha and condensate are liquid at room temperature, while the lighter wet gas components can be made liquid either by cooling or by adding pressure.

Not all gas that is produced is sold. Some of the gas is used to generate power on the fields, and small amounts are flared for safety purposes. On some fields, gas is reinjected into the reservoirs. Reinjection is often used to maintain reservoir pressure and displace

the oil. This results in efficient recovery of the oil, and the gas is stored for possible recovery in the future.



Definition of Natural Gas, LPG and NGL

In addition to the export value of crude oil, natural gas, natural gas liquids (NGL) and condensate, the Norwegian service and supply industry has a high international turnover. You can read more about their exports of goods and services in the article about the service and supply industry.

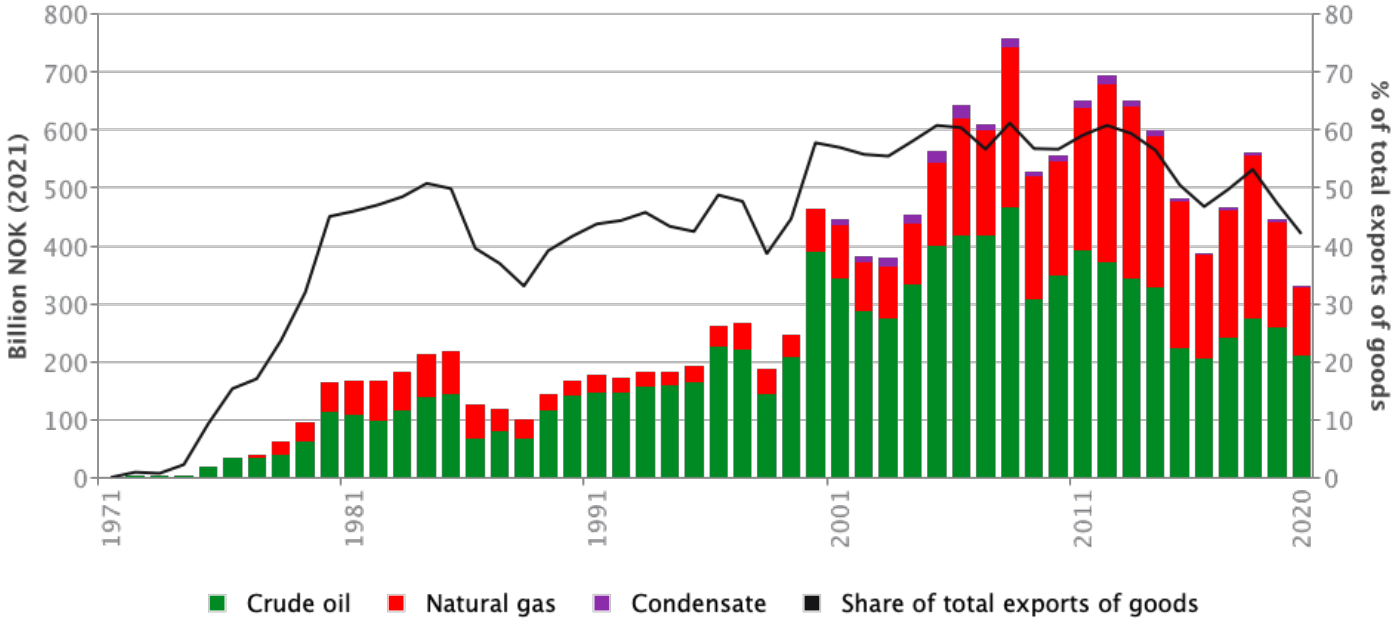
The total export value of crude oil, natural gas, NGL and condensate in 2020 was about NOK 333 billion (2021 NOK), or just over 40% of the total value of Norway's exports of goods. In 2020, oil liquids (crude, NGL and condensate) accounted for a significantly larger share of total export value compared to production of natural gas.

Export value of Norwegian petroleum, 1971-2020

Updated: 24.03.2021

The numbers are inflated with CPI Norway. 2020 are preliminary numbers.

Source: Statistics Norway, table 08800



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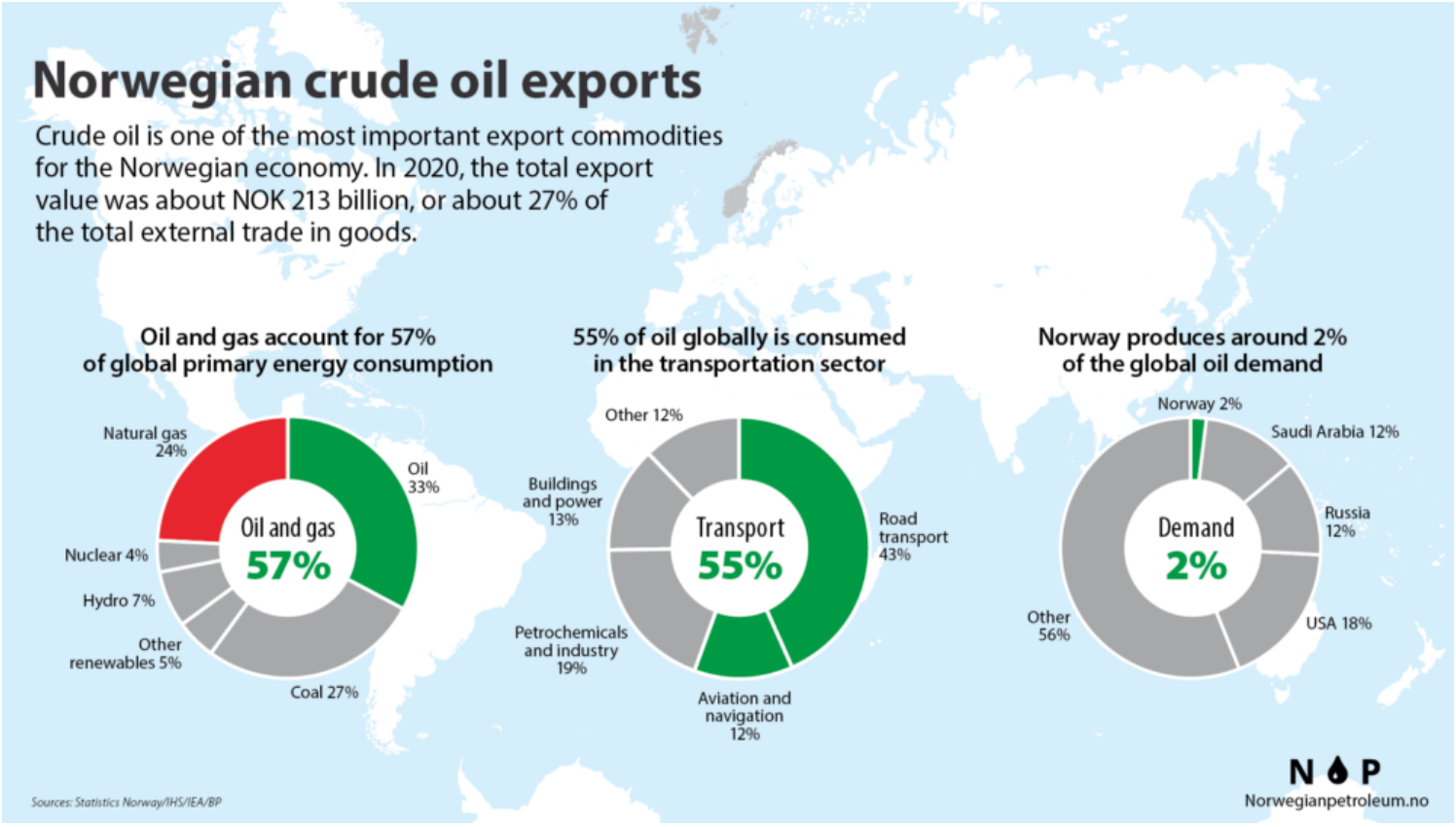
EXPORTS OF OIL, CONDENSATE AND NGL

Norwegian oil production reached a peak in 2001, when total liquid production, including NGL and condensate, was 3.4 million barrels of oil equivalents a day, and then declined until 2013. However, since 2014 the oil production on the Norwegian shelf has been increasing again. In 2020, production of oil liquids (crude, NGL and condensate) was around 2 million barrels per day. Norway now supplies about 2 % of global oil consumption.

Crude oil exports 2020

Updated: 24.03.2021



In 2020, Norway exported about 66 million Sm³ (1,1 million barrels per day) of crude oil directly to other countries in Europe, and 12,5 million Sm³ (0,2 million barrels per day) was delivered to onshore facilities in Norway. 15,1 million Sm³ of crude oil was delivered to China in 2020. Crude oil purchasers are mainly refineries, which process the oil to produce fuel and other oil products.

The tables below show sales of crude, NGL and condensate in 2020 by first delivery point.

Norwegian oil deliveries in 2020, by first delivery point

Updated: 24.03.2021

Source: Norwegian Petroleum Directorate

First delivery point/country	% of total	Volume (Mill. Sm^3)
China	15.5	15.1
Denmark	1.5	1.5
Finland	1.8	1.8
France	3.1	3.0
Germany	4.5	4.4
Italy	2.3	2.2
Norway	12.8	12.5
Other	3.2	3.2
South Korea	1.3	1.3
Spain	1.0	1.0
Sweden	14.7	14.4
The Netherlands	15.3	15.0
Turkey	2.9	2.8
United Kingdom	20.1	19.7

Sale of NGL and condensate in 2020, by first receiving country

Updated: 24.03.2021

Source: Norwegian Petroleum Directorate

First delivery point/country	% of total	Volumes (mill. Sm^3)
Belgium	13.9	2.5
France	6.2	1.1
Germany	2.1	0.4
Morocco	2.4	0.4
Norway	15.7	2.8
Other	11.5	2.1
Sweden	6.3	1.1
The Netherlands	19.9	3.6
Turkey	2.7	0.5
United Arab Emirates	2.2	0.4
United Kingdom	17.1	3.1

The oil market

In 2019, oil was the largest energy source globally, followed by coal and gas. Oil meets about 33 % of total world energy demand.

What is oil used for?

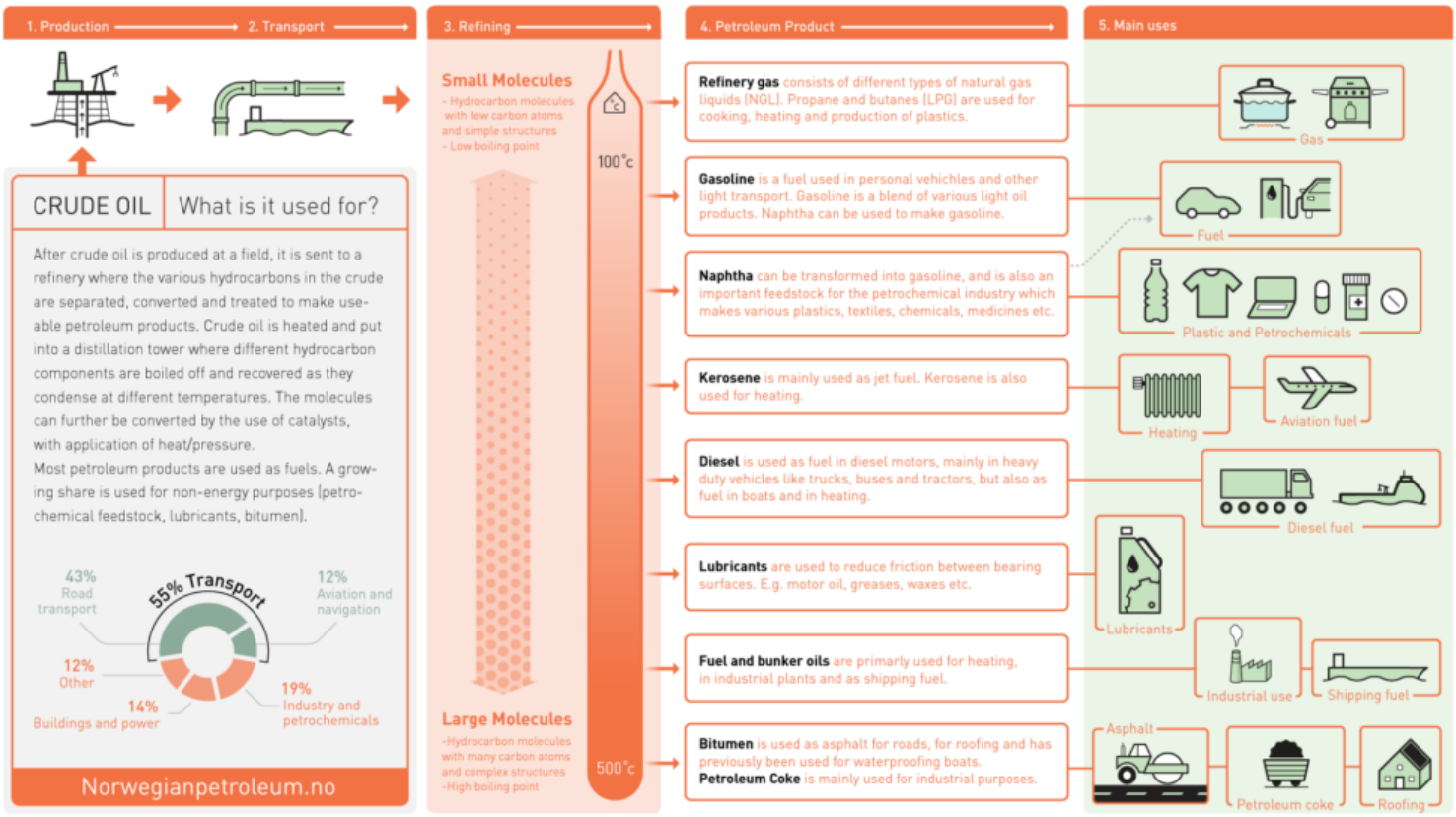
The transport sector consumes more oil than any other sector. Within this sector, light vehicles account for about 44 % of consumption, heavy vehicles about 32 %, aircraft 12 % and shipping 12 %. The next-largest sector in terms of oil consumption is the petrochemical industry, and manufacturing of plastics is the most important branch of this sector. The petrochemical industry also includes the manufacture of other oil-based products such as paints, cosmetics and textiles and so on. Moreover, oil is used as fuel in other energy-intensive industries such as iron, steel and cement production. The other main use of oil is to generate electricity and heat, and as an input for asphalt.

Which countries produce oil?

The US was the largest oil producer in 2019, followed by Saudi Arabia and Russia. OPEC, the Organization of the Petroleum Exporting Countries, accounted for about 30 % of global crude oil production in 2019. However, several major oil producers, including Russia and the US, are not OPEC members.

What is crude oil used for?

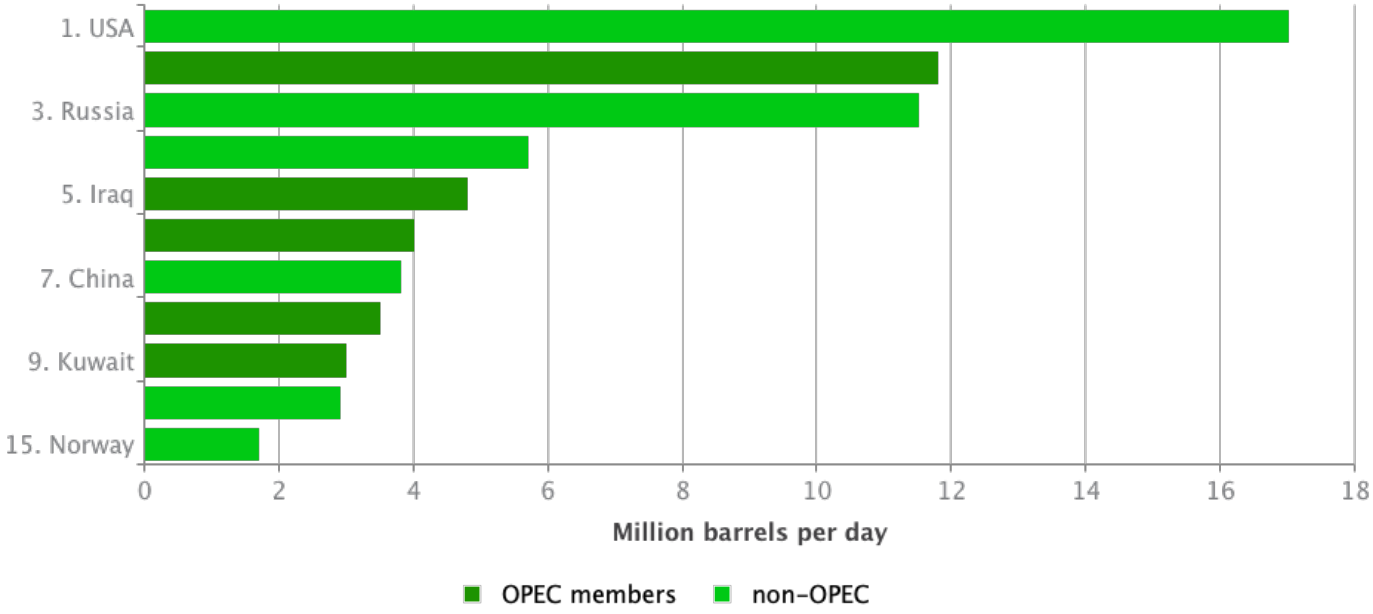
Source: The Ministry of Petroleum and Energy



Norway and the 10 largest oil producers in 2019

Updated: 29.06.2020

Source: BP Statistical Review of World Energy 2020



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Transport of crude oil

The oil from the Norwegian continental shelf is either transported by ship or through pipelines to a final delivery point on land. In 2018, about 20 % of Norwegian crude oil production was transported to land by pipeline, and 80 % by tanker.

See article about the pipeline system for more information about oil pipelines on the Norwegian shelf.

Oil is transported from many fields on the Norwegian shelf to the markets using shuttle tankers. These are specialized tankers that take on oil via offshore loading buoys on the oil fields. Oil platforms often have limited storage capacity, and regular calls by shuttle tankers are needed to avoid stoppages because of capacity problems. Shuttle tankers are usually used for relatively short transport distances, and most Norwegian oil is therefore delivered to destinations in north-western Europe.

Larger tankers are used to carry oil that is to be transported further, for example from Norway to Mediterranean countries, Asia or America. They do not carry oil directly from the offshore fields, but from onshore terminals, which are supplied either by shuttle tankers or by pipeline from the oil fields. Pipelines are used to transport oil from the Norwegian shelf to four onshore terminals: Sture, Mongstad and Kårstø in Norway, and Teesside in the UK.

EXPORTS OF NATURAL GAS

The value of Norwegian gas exports in 2020, were significantly lower than the value of Norwegian oil exports (including LNG and condensate). Domestic consumption of gas in Norway is very low, and nearly all the gas produced is exported.

An extensive network of subsea pipelines links Norway's offshore gas fields and onshore terminals directly to other recipient countries in Europe. The total length of the Norwegian gas pipeline network is about 8 800 kilometres, which is roughly the distance from Oslo to Bangkok. See article about the pipeline system for more information about the gas pipelines on the Norwegian shelf.

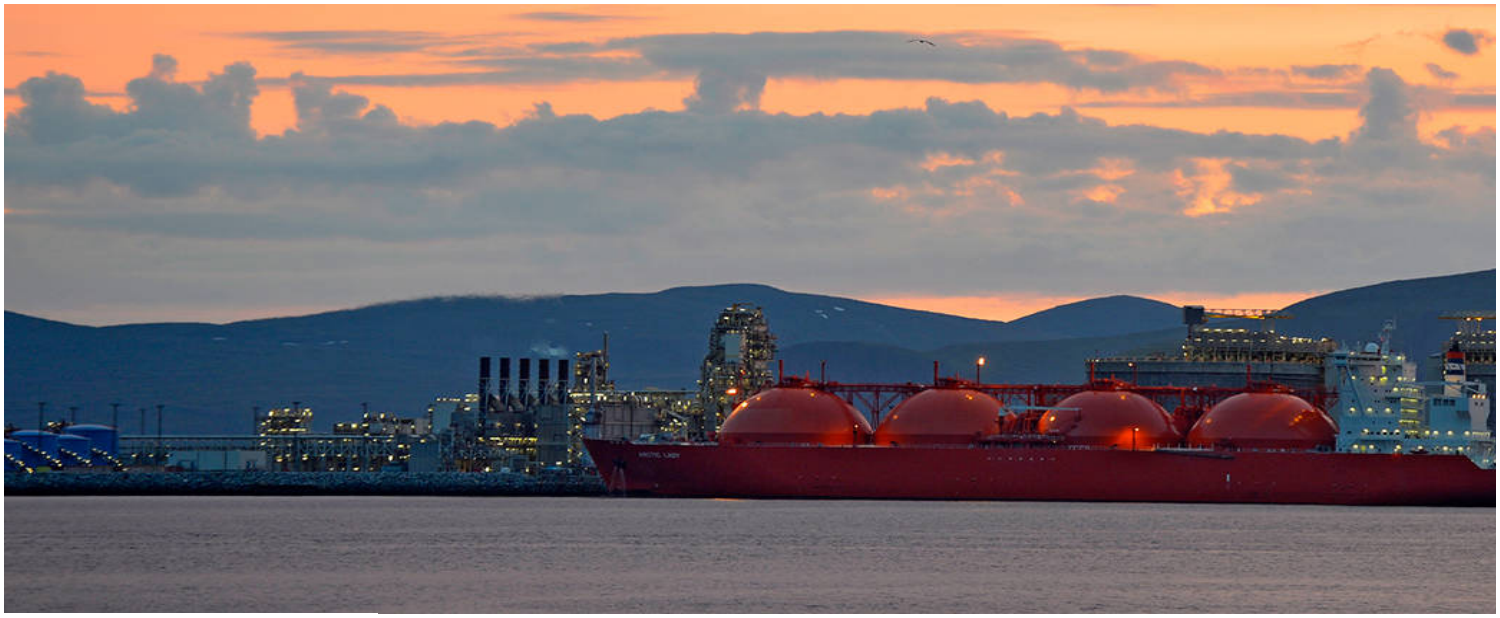
In addition, liquified natural gas (LNG) is shipped out from the Snøhvit field off Hammerfest on LNG carriers. Approximately 5% of Norwegian gas exports is LNG.

What is liquefied natural gas?

Liquified natural gas, or LNG, is produced by cooling and pressurising natural gas to a liquid state. It is transported on dedicated LNG carriers.

The advantage of LNG is that transport does not require pipelines, and it can therefore be sold anywhere in the world. However, conversion to LNG and transport by LNG carrier is considerably more energy-intensive and expensive than pipeline transport.

At present, only gas from the Snøhvit field is converted to LNG on a large scale in Norway. Globally, the supply of LNG has been growing rapidly over the last decade. It has mainly been driven by developments in the United States and Australia, amongst others and increasing demand, primarily in Asia. The growth is expected to continue the coming years.



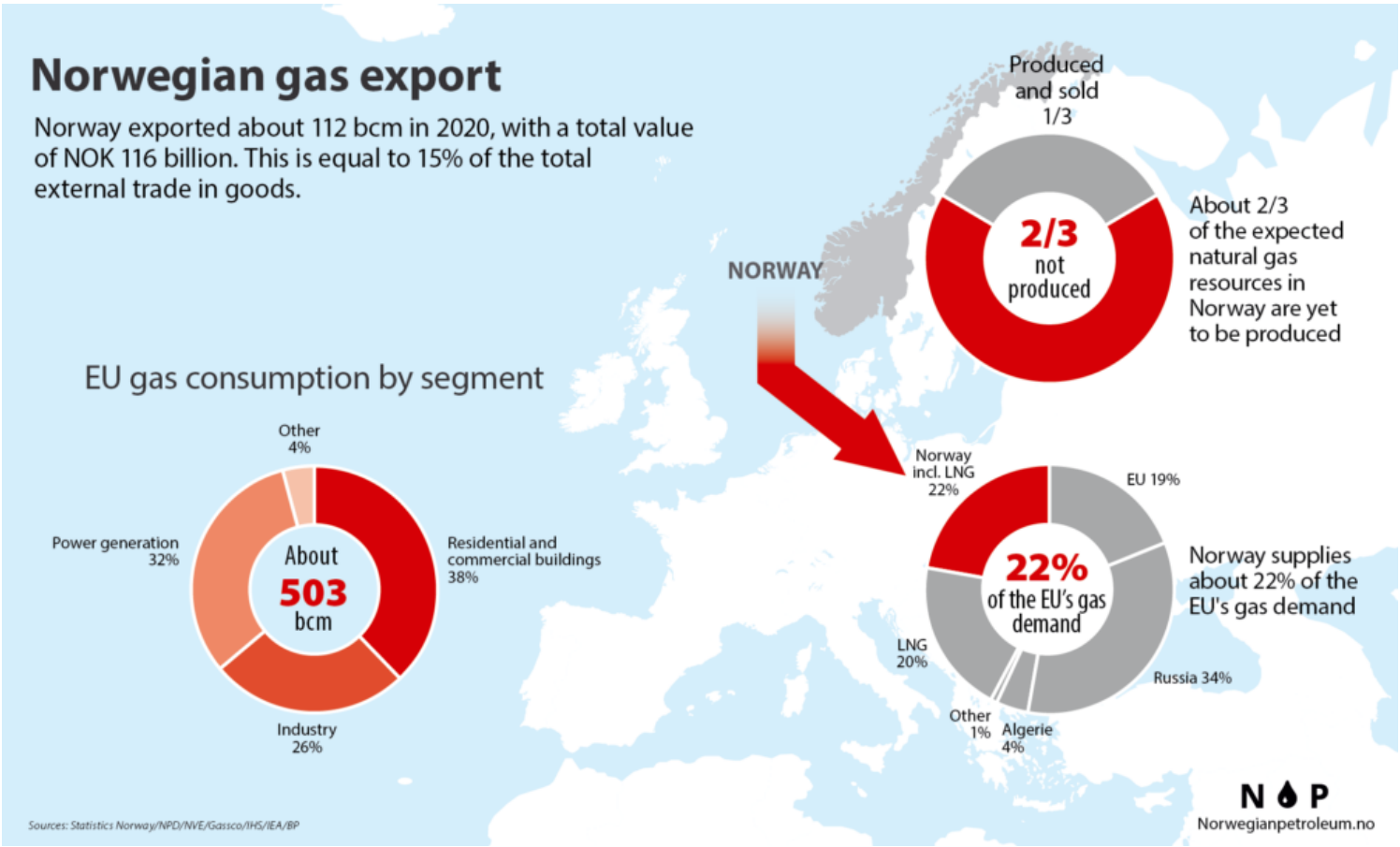
Arctic Princess at the LNG facility on Melkøya. Photo: Harald Pettersen, Equinor (Statoil)

Norwegian gas exports maintained on a stable high level in 2020, and Norway exported about 112 billion Sm^3 gas, mainly to other countries in Europe. The gross energy content in the total volume of Norwegian sales gas corresponds to about nine times normal Norwegian electricity production

In much of Europe, gas is an important source of energy for heating homes and industrial buildings, gas is used for cooking, as feedstock in industrial processes and is used in gas-fired power plants to generate electricity. Norwegian gas provides between 20 and 25 % of the EU's gas demand and makes an important contribution to energy security in Europe.

Norwegian natural gas exports 2020

Updated: 24.03.2021



Gas markets

How is natural gas used and what is driving growth in consumption?

Natural gas meets about 24 % of total world energy demand, and thus, like oil, plays a very important part in meeting global energy needs. Natural gas has accounted for almost one third of the world's energy consumption growth during the last decade, and the use of natural gas is expected to increase in the future as well. Natural gas is used mainly for heating homes and commercial buildings, cooking and power generation and in the petrochemical industry.

Many of the products we use every day, such as cell phones, makeup, sunglasses, computers, medications and fertilizers for agriculture are made with natural gas as a feedstock. Natural gas is transported by pipeline or is cooled and pressurised to produce LNG, which is transported on LNG carriers. Economic growth, the prices of alternative energy sources, weather, temperature, climate change adaptation and mitigation measures are all factors that influence gas demand.

Using gas instead of coal for power generation can yield considerable reductions in greenhouse gas emissions. Europe and the rest of the world use a lot of coal for power generation. In electricity production, gas emits approximately half as much CO_2 as coal. Replacing coal with gas in power generation is a simple, efficient and cheap way to quickly reduce greenhouse gas emissions and improve air quality. The EU, based on info from IEA, serves as a good example. In 2019, the EU managed to reduce CO_2 emissions from power generation by 42 million tonnes of CO_2 due to gas replacing coal. In comparison, 42 million tonnes CO_2 corresponds to about 80 % of Norway's total CO_2 emissions.

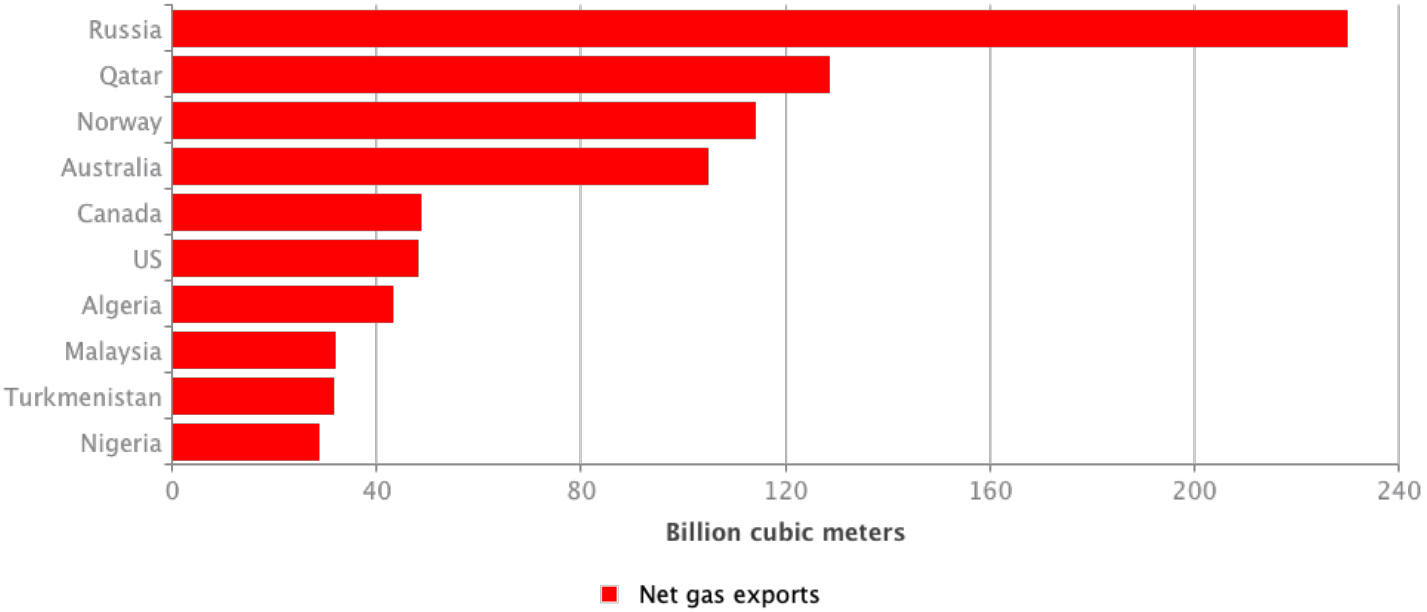
Gas is also a good partner for intermittent renewable energy. Unlike hydroelectric power, other renewable energy sources such as sun and wind cannot be stored over time and are as such less flexible. In the absence of effective storage capability of energy, gas can produce power when the sun does not shine and the wind does not blow. As Europe is getting more and more intermittent renewable energy sources, the more Europe will need the kind of flexibility gas can provide in order to balance fluctuations in the energy supply and ensure that consumers have reliable power supply.

Gas exporting countries

Norway is the third largest gas exporter in the world (2019). Several of the world’s largest gas producers export little to other countries. When assessing the global gas market, it is therefore most important to consider which countries have the largest volumes available for export.

Norwegian net gas exports in 2019 compared to other gas exporting countries

Updated: 29.06.2020
Source: BP Statistical Review of World Energy 2020



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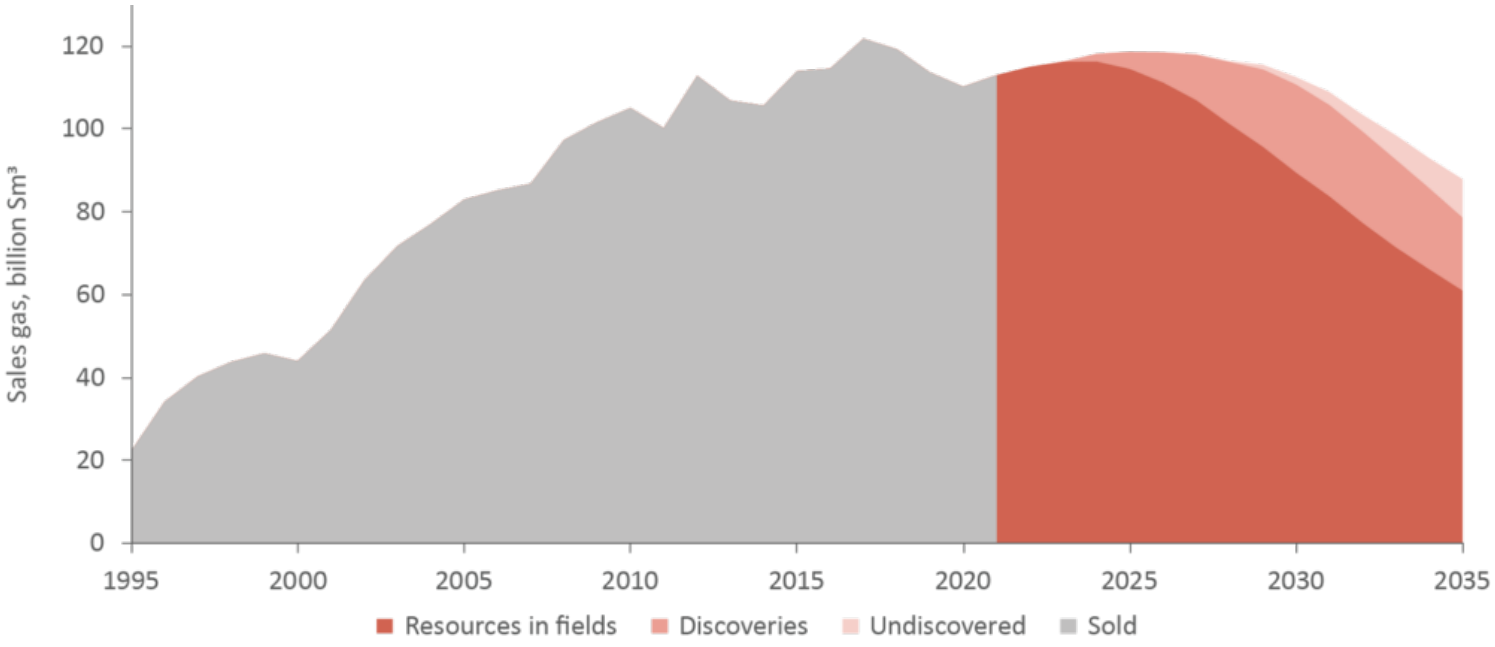
Only about one third of the Norway's estimated gas resources have been produced so far. The production level is expected to remain high for the next 15-20 years. If the most optimistic resource estimates prove to be correct, production figures will be higher than the current forecasts.

Expected volumes of sales gas from Norwegian fields (1995-2035)

Updated: 13.01.2022

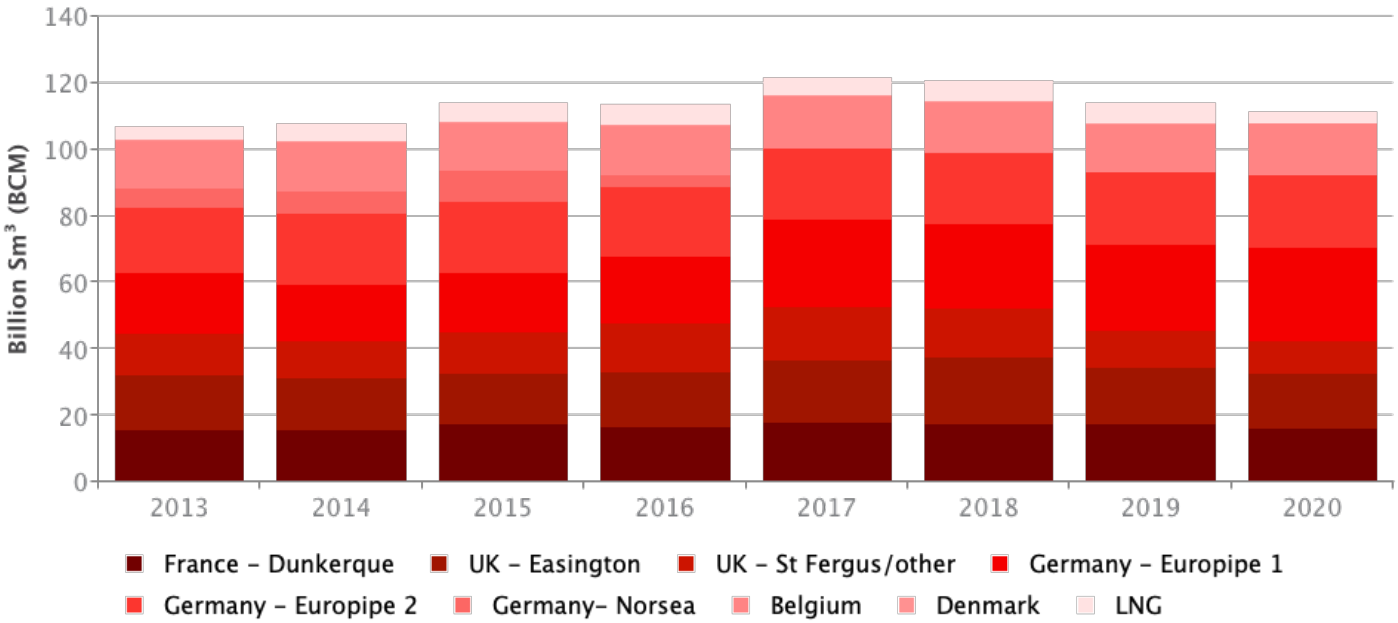
Source: The Norwegian Petroleum Directorate



Most natural gas from Norway which is sold on the European market is delivered to gas receiving terminals in Germany, the UK, Belgium and France through the Norwegian gas pipeline network. The total length of the pipeline network is about 8 800 kilometres, which is roughly the distance from Oslo to Bangkok. Norwegian gas accounts for a large portion of the total gas consumption in these four gas receiving countries; however, much of the gas is transported further to other European countries.

Norwegian natural gas exports in 2013-2019 by first delivery point

Updated: 24.03.2021
Source: Norwegian Petroleum Directorate / Gassco



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Updated: 13.01.2022