



Independent Statistics & Analysis

U.S. Energy Information  
Administration

## Country Analysis Executive Summary: Norway

Last Updated: June 30, 2022

### Overview

- Norway accounted for 2% of global crude oil production and 3% of global natural gas production, based on the latest data available. Norway exports most of the crude oil and natural gas it produces.<sup>1</sup>
- In 2021, crude oil and natural gas exports accounted for 50% of Norway's export revenues and more than 20% of the country's gross domestic product (GDP).<sup>2</sup>
- Crude oil and natural gas production will continue to play an important role in Norway's economy. In 2021, total investments in crude oil and natural gas extraction and pipeline transportation totaled nearly \$18 billion. Investments in 2021 were about \$160 million lower than in 2020. By comparison, Norway's neighbor, the [United Kingdom](#), invested an estimated \$4 billion in crude oil and natural gas exploration in 2021.<sup>3</sup>
- As of mid-2022, the Norwegian government was evaluating 88 crude oil and natural gas discoveries for future development. Although most of them are likely to be satellites to existing fields, larger discoveries are slated to be independent operations.<sup>4</sup>
- An extensive network of subsea oil pipelines transports crude oil and condensate to processing terminals on Norway's coast.<sup>5</sup> Many smaller pipelines connect North Sea fields to major pipelines. Shuttle tankers bring the remaining offshore oil production onshore.
- Several important natural gas pipelines originate in Norway and connect directly with other European countries, including [France](#), the United Kingdom, Belgium, and [Germany](#). Some pipelines run directly from Norway's major North Sea fields to processing facilities in the receiving country. Other pipelines connect Norway's onshore processing facilities to European markets. In late 2022, a new natural gas pipeline, the [Baltic Pipe](#), will also connect Norway, via Denmark, to [Poland](#).<sup>6</sup>
- Nearly all of Norway's electricity is generated from renewables. Hydroelectricity accounts for the highest share of [renewables-based electricity generation](#).

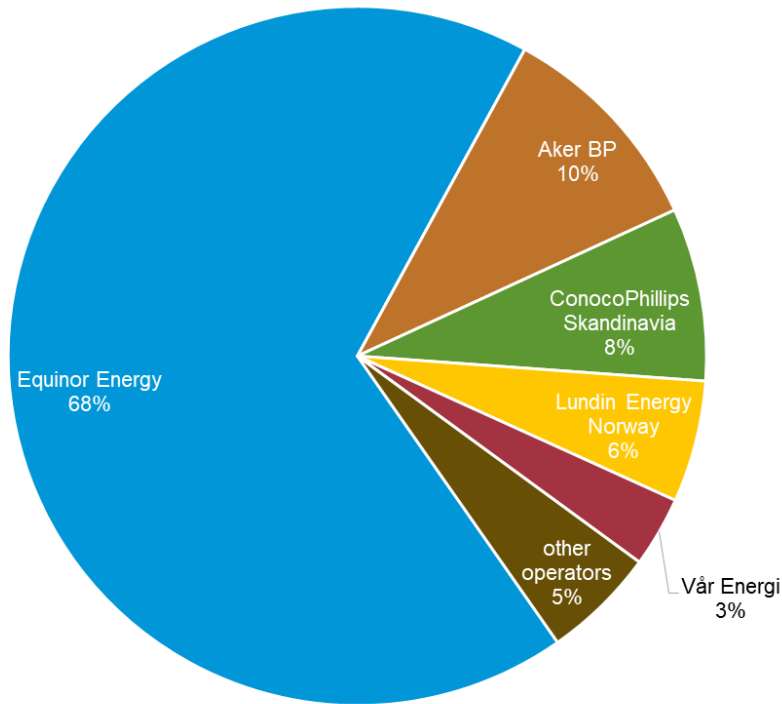
### Petroleum and other liquids

- According to the *Oil & Gas Journal*, Norway had 7.7 billion barrels of proved crude oil reserves as of January 1, 2022, the largest oil reserves in Western Europe.<sup>7</sup>
- In 2021, 83 fields produced 1.8 million barrels per day (b/d) of crude oil.<sup>8</sup> According to the Norwegian Petroleum Directorate, four new fields (Martin Linge, Solveig, Duva, and Aerfugl

Nord) and the redeveloped Yme field contributed to the 5% increase in annual crude oil production.

- Five operators accounted for nearly 95% of total crude oil output in 2021 (Figure 1). Equinor Energy-operated fields produced the largest volume of crude oil. The Edvard Grieg field (operated by Lundin Energy) and the Ekofisk field (operated by ConocoPhillips) ranked among the top-five highest producing crude oil fields (Table 1).
- Norway has one refinery, which has a total crude oil distillation capacity of 203,000 b/d.<sup>9</sup>
- Only 12% of the total petroleum liquids produced in Norway are consumed domestically; the remainder are exported mainly to European countries (Figure 2). According to the International Energy Agency, Norway exported an average of 1.6 million b/d of crude oil, and 79% of those exports went to European countries in 2021 (Figure 3). Similarly, 75% of Norway's refined petroleum product exports were destined for European countries in 2021.

Figure 1. Norway crude oil production by operator, 2021



 Data source: Norwegian Petroleum Directorate

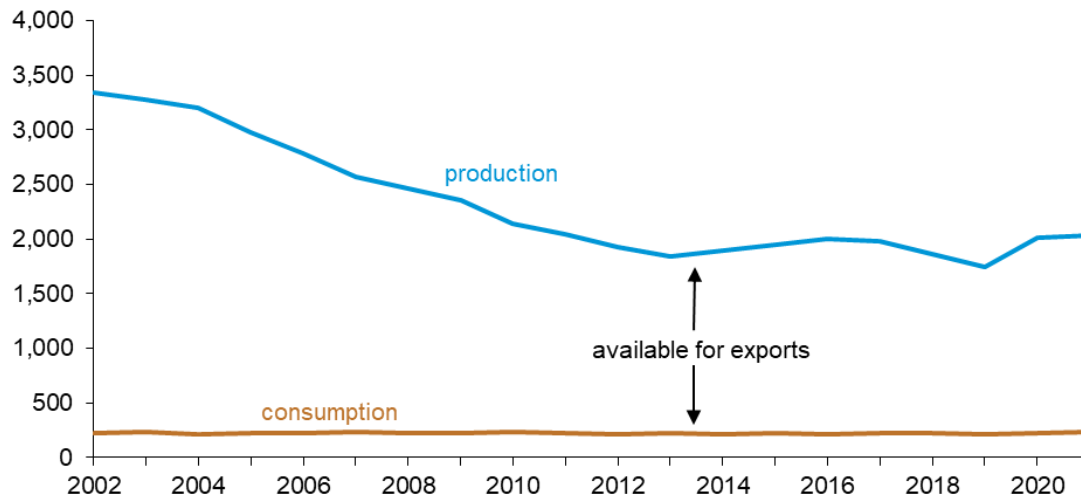
**Table 1. Norway's top 10 producing crude oil fields, by volume, 2021**

Field	Thousand barrels per day
Johan Sverdrup	511
Snorre	100
Edvard Grieg	98
Ekofisk	81
Troll	70
Oseberg	57
Heidrun	55
Grane	53
Eldfisk	45
Alvheim	42
<b>Total volume, top 10 fields</b>	<b>1,112</b>
<b>Total volume, Norway</b>	<b>1,768</b>

Data source: Norwegian Petroleum Directorate

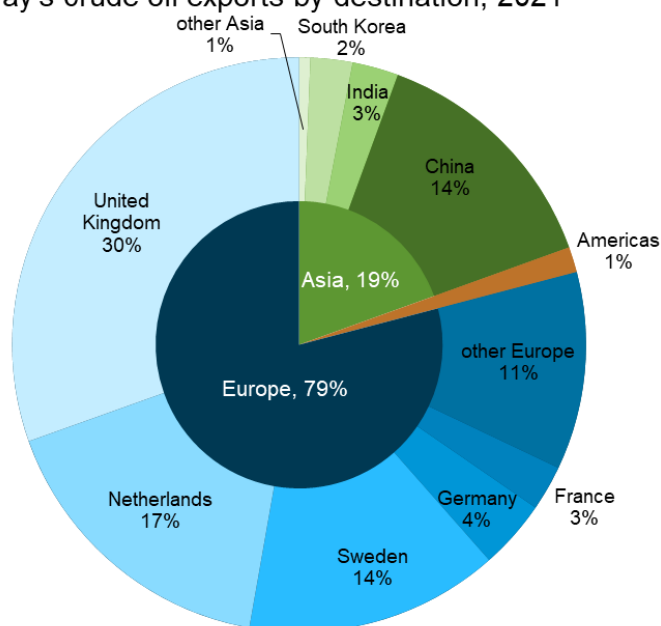
**Figure 2. Norway petroleum and other liquids production and consumption**


thousand barrels per day



Data source: U.S. Energy Information Administration, International Energy Statistics

Figure 3. Norway's crude oil exports by destination, 2021



 Data source: International Energy Agency  
 Note: Percentages do not sum to 100% because of independent rounding

## Natural gas

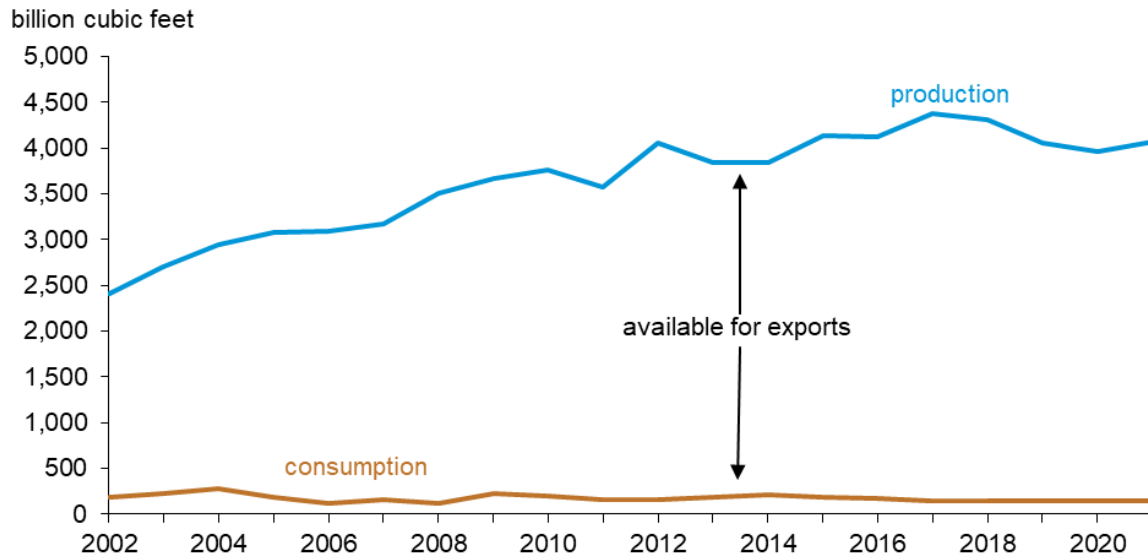
- Norway has 51 trillion cubic feet (Tcf) of proved natural gas reserves as of January 1, 2022.<sup>10</sup> Norway was the eighth-largest producer of dry natural gas globally and produced 4.1 Tcf of dry natural gas in 2021, according to the Norwegian Petroleum Directorate (Figure 4).
- In 2021, three fields accounted for 50% of Norway's total dry natural gas production (Table 2).
- In March 2022, following Russia's full-scale invasion of Ukraine, the Norwegian government authorized an increase of approximately 50 billion cubic feet (Bcf) in natural gas production, primarily from the Oseberg and Heidrun fields. In addition, the newly reopened Hammerfest liquefied natural gas (LNG) facility, which processes natural gas from the Snøhvit field in the Barents Sea, could increase natural gas production by up to 247 Bcf in 2022.
- In 2021, Norway was the third-largest exporter of natural gas in the world after [Russia](#) and the United States. Most of the natural gas exports are shipped via the extensive export pipeline infrastructure, and the remainder were exported as LNG. In 2021, Germany received the largest share of Norway's total natural gas exports, and Sweden received 83% of Norway's LNG exports (Figure 5).<sup>11</sup>

**Table 2. Norway's top 10 producing natural gas fields, by volume, 2021**

Field	Trillion cubic feet
Troll	1.32
Ormen Lange	0.40
Aasta Hansteen	0.31
Oseberg	0.29
Gullfaks Sør	0.20
Visund	0.19
Åsgard	0.18
Skarv	0.16
Kvitebjørn	0.12
Tyrihans	0.09
<b>Total volume, top 10 fields</b>	<b>3.27</b>
<b>Total volume, Norway</b>	<b>4.07</b>

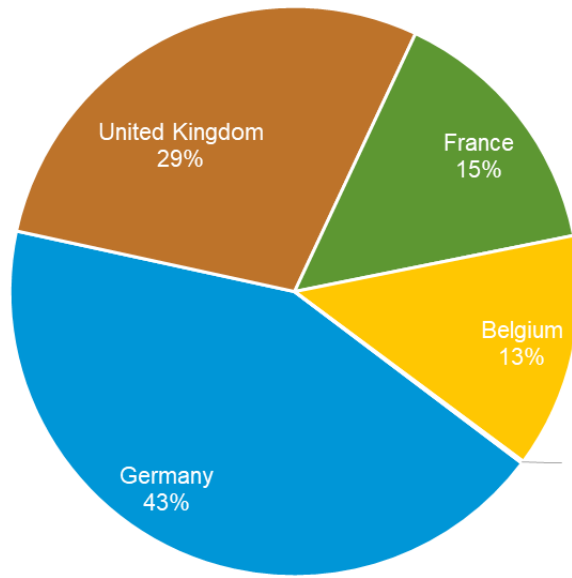
Data source: Norwegian Petroleum Directorate

**Figure 4. Norway natural gas production and consumption**



Data source: U.S. Energy Information Administration, International Energy Statistics; 2021 data from the Norwegian Petroleum Directorate

Figure 5. Norway natural gas exports by destination, 2021

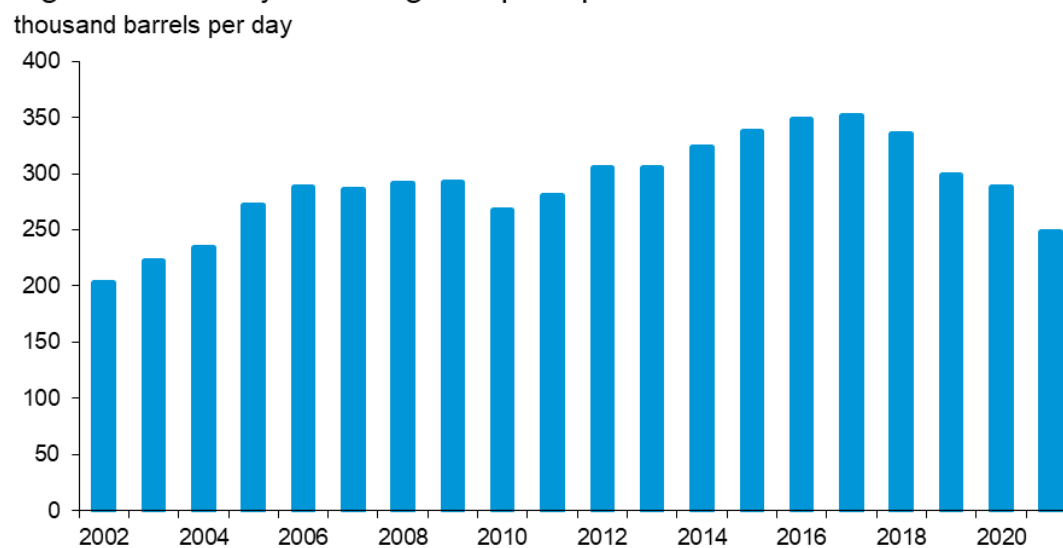


Data source: Global Trade Tracker

## Hydrocarbon gas liquids

- As natural gas production has grown in Norway, the quantities of recovered natural gas liquids (NGLs) have increased significantly, from 203,000 b/d of oil equivalent in 2002 to 351,000 b/d of oil equivalent at its peak in 2017 (Figure 6). In 2021, NGL production was 249,000 b/d of oil equivalent.<sup>12</sup>
- Although more than 50 fields produced NGLs in 2021, two fields, Åsgard and Troll, represented more than 20% of total NGL production (Table 3).<sup>13</sup>
- Kårstø is the largest NGL processing hub in Europe.<sup>14</sup> The site receives rich natural gas and natural gas plant liquids (NGPL), which are separated into liquid products and dry gas, from about 30 fields, including major developments on the Norwegian continental shelf, by pipeline. The dry gas is then transported by pipeline to continental Europe and the United Kingdom.
- Ethane, propane, butanes, and natural gasoline extracted from the rich natural gas at Kårstø are either placed into storage or shipped by tanker or barge. Propane, butanes, and natural gasoline are exported from Kårstø to destinations worldwide, whereas [ethane is shipped](#) to petrochemical users in the North Sea Basin. The two propane caverns at Karsto, with a combined capacity of more than 1.6 million barrels, are the largest in Europe.<sup>15</sup>
- Norway is also an importer of hydrocarbon gas liquids. Ineos's Rafnes petrochemical cracker receives ethane from the United States, which is [loaded at either](#) Sunoco Logistics's export terminal at Marcus Hook, Pennsylvania, or Enterprise Product Partners' terminal in Morgan's Point, Texas, and shipped across the Atlantic ocean in [purpose-built tankers](#). This ethane is then cracked into ethylene, a basic chemical and a precursor to various plastics and resins.

Figure 6. Norway natural gas liquids production




 Data source: Norwegian Petroleum Directorate

Table 3. Norway's top 10 producing natural gas liquids fields, by volume 2021

Field	Thousand barrels per day of oil equivalent
Åsgard	31
Troll	24
Gullfaks	21
Gjoa	20
Oseberg	17
Skarv	16
Johan Sverdrup	15
Vega	11
Tyrihans	11
Visund	10
<b>Total volume, top 10 fields</b>	<b>175</b>
<b>Total volume, Norway</b>	<b>249</b>

Data source: Norwegian Petroleum Directorate

## Electricity

- In 2020, Norway had a total installed capacity of 38 million kilowatts (MMkW) and produced 154 billion kilowatthours (BkWh), and 142 BkWh of that electricity was generated from hydropower. Total net consumption of electricity in 2020 was 124 BkWh.
- Although most of Norway's electricity comes from hydropower, the country also has 30 thermal power plants that generate electricity from various energy sources, which include

municipal waste, industrial waste, surplus heat, oil, natural gas, and coal. Total production from these thermal plants was 3.4 BkWh in 2020.<sup>16</sup>

- In 2020, Norway imported 4.5 BkWh of electricity and exported 25.0 BkWh. Norway primarily traded electricity with Sweden. Other trade partners include [the Netherlands](#), Denmark, Finland, and Germany.<sup>17</sup>

## Notes

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- Data presented in the text are the most recent available as of June 2022.
- Data are EIA estimates unless otherwise noted.

## Endnotes

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<sup>1</sup> Norwegian Petroleum Directorate, [Exports of Oil and Gas](#), accessed May 16, 2022

<sup>2</sup> Statistics Norway, National accounts and business cycles, [Table 3: Final expenditure and gross domestic product. Quarter and year. At current prices. NOK million](#), accessed May 16, 2022

<sup>3</sup> Westwood Global Energy Group, [UK and Norway Exploration and Production Outlook for 2021](#), accessed June 6, 2022

<sup>4</sup> Norwegian Petroleum Directorate, [Discoveries](#), accessed May 18, 2022

<sup>5</sup> Norwegian Petroleum Directorate, [The Oil and Gas Pipeline System](#), accessed May 20, 2022

<sup>6</sup> Baltic Pipe Project, [ENERGINET: Gas can now flow to Denmark from the Norwegian gas pipeline](#), published April 28, 2022

<sup>7</sup> *Oil & Gas Journal*, "Worldwide Look at Reserves and Production," accessed May 17, 2022

<sup>8</sup> Norwegian Petroleum Directorate, [Fields](#), accessed May 17, 2022

<sup>9</sup> *Oil & Gas Journal*, "2021 Worldwide Refining Survey," p. 14, published January 2022

<sup>10</sup> *Oil & Gas Journal*, "Worldwide Look at Reserves and Production," accessed May 19, 2022

<sup>11</sup> Global Trade Tracker, accessed June 6, 2022

<sup>12</sup> Norwegian Petroleum Directorate, [Facts—Production](#), accessed June 6, 2022

<sup>13</sup> Norwegian Petroleum Directorate, [Fields](#), accessed June 8, 2022

<sup>14</sup> Norwegian Petroleum Directorate, [Onshore Facilities](#), accessed June 8, 2022

<sup>15</sup> Gassco, [Kårstø gas processing plant](#), accessed June 22, 2022

<sup>16</sup> Ministry of Petroleum and Energy, [Electricity Production](#), accessed May 20, 2022

<sup>17</sup> Power Technology, [How Norway became Europe's biggest power exporter](#), published April 19, 2022