

2017–2018 Minerals Yearbook

NORWAY

THE MINERAL INDUSTRY OF NORWAY

By Joanna Asha Goclawska

Note: In this chapter, information for 2017 is followed by information for 2018.

In 2017, Norway's real gross domestic product (GDP) increased by 2.3%, and the nominal GDP was \$398.4 billion. The GDP per capita was 46% higher in Norway than in other European countries, on average. Norway ranked 4th in the production of silicon, accounting for 6% of world production, and 10th in the production of titanium ore (ilmenite), accounting for 4% of world production. Approximately 50% of the world's olivine production came from Norway. Norway was also the leading petroleum producer in Europe, and it ranked third in exports of natural gas in the world (Government of Norway, 2018a; Norwegian Directorate of Mining, 2018, p. 18, 22; Bedinger, 2019; Schnebele, 2019; U.S. Energy Information Administration, 2019).

Minerals in the National Economy

In 2017, there were 4,392 employees and 688 companies in the mining and quarrying sector compared with 4,395 and 705, respectively, in 2016. The overall income in the primary mineral industry, excluding that from the extraction of crude petroleum and natural gas, increased by 5% to \$1.25 billion.¹ The export value of natural gas, crude petroleum, and condensate accounted for more than 15% of the country's GDP (table 1; Norwegian Directorate of Mining, 2018, p. 4, 5; Statistics Norway, 2018a, b; 2019a; Norwegian Petroleum, 2019b).

Government Policies and Programs

The Petroleum Act No. 72 of November 29, 1996, regulates exploration, the awarding of licenses, field development, infrastructure, and activities involving the cessation and decommissioning of petroleum operations for the petroleum sector. The act also includes provisions on insurance requirements and liabilities regarding pollution. The Norwegian Minerals Act of 2010 regulates the exploration, investigation, and extraction of mineral resources and the acquisition of mining rights. The act differentiates between Government-owned and privately owned minerals. Metals with a specific gravity of 5 grams per cubic centimeter and above, and the ores of these metals, are owned by the state. These include arsenic, cadmium, cobalt, copper, gold, iron, lead, manganese, molybdenum, nickel, niobium, platinum, silver, thorium, tin, titanium, tungsten, uranium, vanadium, and zinc. All other minerals are owned by the landowner. In 1990, the Government Pension Fund Global, formerly the Government Petroleum Fund, was established to ensure the management of Government petroleum revenues. In 2017, the fund had a 13.7% return

¹Where necessary, values have been converted from Norwegian kroner (NOK) to U.S. dollars (US\$) at an annual average exchange rate of NOK8.606=US\$1.00 for 2017.

on investment and a market value of more than \$1.04 trillion (Norwegian Petroleum Directorate, 2012; Norwegian Ministry of Trade and Industry, 2013, p. 60; Svensen and others, 2014; Norges Bank Investment Management, 2018, p. 3).

Production

In 2017, the most significant mineral commodity production increases were reported for cadmium (refinery, primary), which increased by 24%; ferromanganese, 22%; titanium mineral concentrates, 14%; and graphite, estimated 10%. The most significant production decreases were for bituminous coal, which decreased by 86%; refined copper, 19%; and sulfur (byproduct), 14%. Data on mineral production are in table 1.

Structure of the Mineral Industry

The Directorate of Mining, which is under the Ministry of Trade and Industry, is Norway's technical department responsible for administering the extraction of mineral resources. The Norwegian Petroleum Directorate (NPD), which is under the Ministry of Petroleum and Energy, regulates the use of petroleum resources. The Norwegian mineral industry is composed of Government- and privately owned operations, and most of the companies are small businesses. In 2017, 20 mining companies in Norway had a gross revenue of more than \$11.6 million (NOK100 million), and 548 companies had a gross revenue of less than \$116,000 (NOK1 million). Investments in the mining industry of Norway had been declining since 2013 and, in 2017, totaled \$69.5 million, which was a decrease of 5% compared with that of 2016. Table 2 is a list of Norway's major mineral industry facilities (Government of Norway, 2018b; Norwegian Directorate of Mining, 2018, p. 36, 43; Norwegian Petroleum Directorate, 2019).

Mineral Trade

In 2017, Norway's leading export partners included the United Kingdom (which received about 21.1% of the country's total exports), Germany (15.5%), and the Netherlands (9.9%); the leading import partners were Sweden (which supplied about 11.4% of the country's total imports), Germany (11%), and China (9.8%). Norway's trade in goods with the United States totaled \$5.06 billion in exports and \$5.45 billion in imports compared with \$4.41 billion and \$3.92 billion, respectively, in 2016. Norway was not a member of the European Union, but it was a member of the European Free Trade Association and participated in the euro area single market through the European Economic Area Agreement (Statistics Norway, 2018b, c; U.S. Census Bureau, 2018a, b; U.S. Central Intelligence Agency, 2019; World Bank, The, 2019).

Total sales of metallic ores increased in value by 27% to \$174 million, whereas sales of metallic ores in terms of tonnage decreased by 7% compared with those of 2016. The increase in the value of metallic ores, which included a 26% increase in exports of these ores, was a result of the increased market prices in 2017 and the weak Norwegian crown exchange rate. Total sales of natural stone increased in value by 5% to \$110 million. The value of natural stone exports stayed approximately the same as in 2016 and accounted for 57% of the total sales of natural stone. Total sales of energy minerals (which in Norway was synonymous with coal production) decreased in value by 84% to \$10.6 million. The export sales of coal decreased by 86% and accounted for 82% of the total sales. The reduction in sales was a result of the idling of the coal mines in Svea (Norwegian Directorate of Mining, 2018, p. 22, 26, 30).

Norway was an important supplier of petroleum and natural gas to the global market, and the majority of petroleum and natural gas production was exported. In 2017, Norway ranked third in exports of natural gas in the world (after Russia and Qatar) and exported about 96% of its yearly natural gas production. The value of exports of natural gas and crude petroleum (including condensates) accounted for approximately \$51.4 billion, or 50.1% of the total value of Norway's exports compared with 46.7% in 2016. The value of exports of nonfuel primary mineral commodities was approximately \$535 million, or 43% of the total sales (Norwegian Directorate of Mining, 2018, p. 32, 33; Norwegian Petroleum, 2019b; Statistics Norway, 2019a; U.S. Energy Information Administration, 2019).

Commodity Review

Metals

Titanium.—Kronos Worldwide, Inc., the parent company of Titania AS, which produced titanium minerals at the Tellnes Mine in Norway, announced that its worldwide production facilities had operated at full capacity in 2017 compared with approximately 98% of capacity in 2016, with an average production increase of 5% across all facilities. The average sales prices for titanium dioxide (TiO_2) increased by 22%, and the quantity of sales set new records in 2017 (Kronos Worldwide, Inc., 2018).

In October 2017, Nordic Mining ASA published a prefeasibility study for the Engebo rutile project, which was estimated to be one of the largest resources of rutile in the world. In the prefeasibility study, the drilling program's estimated mineral resources (measured and indicated) were 98 million metric tons (Mt) at a cutoff grade of 3% TiO_2 ; the average grades of rutile and garnet were 3.87% and 44.4%, respectively. Mineral resources (measured and indicated) at a cutoff grade of 2% TiO_2 were estimated to be 132 Mt, and the average grades of rutile and garnet were 3.51% and 42.9%, respectively. According to Nordic Mining, the Engebo hard-rock deposit contained high grades of rutile and garnet owing to the intact state of the host rock. The company planned to develop the mine in two stages. The first stage would be an open pit operation that would operate for a period of 16 years, starting in 2021, and the next stage would be an underground operation that would operate for an additional 13 years, starting in 2034 (Nordic Mining ASA, 2017, p. 13, 48; 2018).

Industrial Minerals

Cement.—Norcem AS (a subsidiary of HeidelbergCement Group) was Norway's sole producer of cement. Norcem had one plant located in Brevik in southern Norway, and another plant in Kjopsvik in the northern part of the country. In 2017, owing to ongoing infrastructure projects and nonresidential construction in the country, cement consumption in Norway increased by 4.6% compared with that of 2016. Norcem also produced aggregates, alternative fuels, prefabricated concrete, and ready-mixed concrete (European Cement Bureau, The, 2018, p. 17; HeidelbergCement AG, 2019; Norcem AS, 2019).

Mineral Fuels and Related Materials

Coal.—In 2017, Store Norske Spitsbergen Kulkompani AS produced coal in the Svalbard Gruve 7 Mine (Mine 7) at Longyearbyen. Store Norske was the only company that produced coal in Norway. In April 2016, the company stopped coal production at the Svea Mines. The coal stock was shipped out from July until September 2016. The operations were placed on care-and-maintenance status and were expected to remain in this state for up to 3 years. The two mines in Svea (the Svea Nord Mine and the Lunckefjellgruva Mine) are located 6 kilometers (km) south of Longyearbyen in the Svalbard archipelago, which is located in the Arctic Ocean halfway between Norway and the North Pole (Norwegian Directorate of Mining, 2018, p. 30; Store Norske Kulkompani AS, 2019).

Natural Gas and Petroleum.—In 2017, 34 exploration wells were drilled on the Norwegian Continental Shelf (NCS) and 11 discoveries were made compared with 37 and 18, respectively, in 2016. The new discoveries were relatively minor. At the end of the year, 85 fields were producing, 5 of which came onstream during the year. All the reserves were located offshore on the NCS, which is divided into three sections: the Barents Sea, the North Sea, and the Norwegian Sea. The NCS measures about 2,040,000 square kilometers and is roughly six times larger than Norway itself. In 2017, the NPD revised its estimates for the Barents Sea, estimating the undiscovered resources to be approximately 80% higher than in the analysis from 2015. The estimates for the North Sea and the Norwegian Sea remained unchanged (Norwegian Petroleum Directorate, 2018b).

In 2017, the sales of petroleum and natural gas totaled approximately 236.4 million cubic meters of crude petroleum equivalent, which was 2.7% more than in 2016. Natural gas sales increased to 124.2 billion cubic meters, which was a new record for Norwegian natural gas sales and was owing mainly to high demand for natural gas from Europe. Crude petroleum production decreased by about 579 million barrels (Mbbl) (reported as 92 million cubic meters), or by 2%, owing mainly to a maintenance shutdown of the Goliat field. The Troll field was the largest natural gas field on the NCS and a major oilfield; it was operated by Statoil ASA through its wholly owned subsidiary Statoil Energy AS. According to the Government of Norway, about 47% of the total petroleum resources on the NCS still were undiscovered (Norwegian Petroleum Directorate, 2018a; Statoil ASA, 2018, p. 24; Norwegian Petroleum, 2019a).

MINERAL INDUSTRY HIGHLIGHTS IN 2018

Minerals in the National Economy

In 2018, Norway's real GDP decreased by 1.3%. The nominal GDP was \$434.2 billion. Sales of goods from the mining and quarrying sector decreased by 2% to \$1.1 billion. There were 4,443 people employed in the mining and quarrying sector (Statistics Norway, 2019b, c; World Bank, The, 2019).

In the primary mineral industry in Norway, excluding that from the extraction of crude petroleum and natural gas, 22 companies had a gross revenue of more than \$12.3 million² (NOK100 million) each, and 538 companies had a gross revenue of less than approximately \$123,000 (NOK1 million) each. The 22 companies represented only 2.3% of all the companies in the industry, but they accounted for 60% of the gross revenue and 51% of the employment in the industry. The 538 companies represented 56% of all the companies in the industry, but they accounted for only 1% of the gross revenue (Norwegian Directorate of Mining, 2019, p. 40).

Although investments in the primary mineral industry, excluding that from the extraction of crude petroleum and natural gas, had been declining since 2013, in 2018, investments increased by \$699 million, which was an increase of more than 100% compared with that of the previous year. As of December 31, 2018, 621 exploration licenses and 169 recovery licenses for state-owned minerals were issued and covered approximately 0.5% of Norway's mainland area (Norwegian Directorate of Mining, 2019, p. 44, 47).

Crude petroleum and natural gas, which were two of the most important export commodities for the Norwegian economy, accounted for 26% and 27%, respectively, of the total value of Norway's exports in 2018. European countries received 1.2 million barrels per day (Mbb/d) (70 million cubic meters) of Norway's crude petroleum, and 0.3 Mbb/d (16 million cubic meters) were delivered to onshore facilities in Norway. Norway produced approximately 2% of the global crude petroleum supply (Norwegian Petroleum, 2019b).

Production

In 2018, the most significant mineral production increases were for that of graphite, by an estimated 45%; industrial sand and gravel (silica), 27%; cobalt (refinery), 20%; silicomanganese, 16%; and zinc (smelter, primary), 11%. The most significant production decreases were for that of ferromanganese, by 18%; and titanium mineral concentrates, 12%. Data on mineral production are in table 1.

Commodity Review

No new large mines started up operations in Norway in 2018. Sales of metallic ores increased in quantity to 2.2 Mt, or by 2% compared with that of 2017, although the sales in terms of revenue decreased by 5%. Sales of natural stone decreased

in terms of tonnage by 14% to 756,000 metric tons (t) but increased in terms of value by 2%.

Nussir ASA, which was a Norwegian company established in 2005 to develop the Nussir copper deposit, continued to await approval from the Government to develop a copper mine despite objections from indigenous herders and fishermen. Nussir owned a 100% interest in the Nussir Field exploration and mining project, which is located more than 400 km above the Arctic Circle in the Kvalsund municipality. The company received approval for a tailings permit from the Environmental Directorate in 2016, and the prefeasibility studies were completed in 2017. Nussir's estimate of reserves in January 2018 was 64.5 Mt of copper ore, with an average copper grade of 1.12%; this would make the Nussir Field the largest copper deposit in Norway (Mining Technology, 2019; Norwegian Directorate of Mining, 2019, p. 26, 27, 30, 47; Nussir ASA, 2019).

In 2018, Store Norske discontinued all coal mining operations in the Svea area, where production had stopped in April 2016. Production of coal was from only one mine, Mine 7 at Svalbard, which produced 142,500 t in 2018 (Finne, 2018; Stange, 2018; Norwegian Directorate of Mining, 2019, p. 34).

The total production of crude petroleum and natural gas decreased (in crude petroleum equivalents) to 1,426 Mbb/d (226.7 million cubic meters) in 2018. Petroleum production decreased by 6%, and natural gas production, by 2%. On the NCS, 53 exploration wells were drilled, and 12 discoveries were made. In 2018, the Johan Sverdrup oilfield, located in the North Sea, continued to be developed. Phase 1 of the Johan Sverdrup project was expected to start production in December 2019. The project's crude petroleum production capacity would be 440,000 barrels per day, and at its peak production, it would account for approximately one-third of all crude petroleum production in Norway (table 1; Equinor ASA, 2019; Norwegian Petroleum, 2019a, c).

Outlook

Increasing international demand for metals and minerals has resulted in higher prices and increased interest in Norway's rich mineral resources, including those of calcium carbonate, flake graphite, nickel, olivine, silicon, and titanium minerals. Norway is also one of the world's leading petroleum and natural gas exporters. Exploration activity on the NCS is high, and such major projects as the development of the Johan Sverdrup oilfield are likely to continue to be of great importance to the Norwegian economy. The construction of a new copper mine by Nussir in Norway's northern municipality of Kvalsund is expected to be approved by the Government. If the mine is successfully developed, production of copper in Norway will increase, reversing the declining trend of copper production in recent years (Norwegian Directorate of Mining, 2018, p. 18).

References Cited

- Bedinger, G.M., 2019, Titanium mineral concentrates: U.S. Geological Survey Mineral Commodity Summaries 2019, p. 176–177.
Equinor ASA, 2019, Johan Sverdrup, the North Sea giant, is on stream: Stavanger, Norway, Equinor ASA, October 5. (Accessed November 27, 2019, at <https://www.equinor.com/en/news/2019-10-johan-sverdrup.html>.)

²Where necessary, values have been converted from Norwegian kroner (NOK) to U.S. dollars (US\$) at an annual average exchange rate of NOK8.143=US\$1.00 for 2018.

- European Cement Bureau, The, 2018, Activity report 2017: Brussels, Belgium, The European Cement Bureau, 46 p. (Accessed March 27, 2019, at <https://cembureau.eu/media/vxyilmsd/activity-report-2017.pdf>.)
- Finne, Arne, 2018, Store Norske seeks to reopen a Svalbard coal mine: High North News, May 8 (Accessed November 14, 2019, at <https://www.arctictoday.com/store-norske-seeks-reopen-svalbard-coal-mine/>.)
- Government of Norway, 2018a, Gas exports from the Norwegian shelf: Oslo, Norway, Government of Norway, May 4. (Accessed March 17, 2019, at <https://www.regjeringen.no/en/topics/energy/oil-and-gas/Gas-exports-from-the-Norwegian-shelf/id766092/>.)
- Government of Norway, 2018b, The Directorate of Mining: Oslo, Norway, Government of Norway. (Accessed March 14, 2019, at <https://www.regjeringen.no/en/dep/nfd/organisation/etater-og-virksomheter-under-narings--og-fiskeridepartementet/Subordinate-agencies-and-institutions/the-directorate-of-mining/id435109/>.)
- HeidelbergCement AG, 2019, Norway: Heidelberg, Germany, HeidelbergCement AG. (Accessed March 17, 2019, at <http://www.heidelbergcement.com/en/norway>.)
- Kronos Worldwide, Inc., 2018, Kronos Worldwide announces fourth quarter 2017 results: Dallas, Texas, Kronos Worldwide, Inc., March 12. (Accessed March 17, 2019, via <https://kronostio2.com/en/investor-relations/news-releases>.)
- Mining Technology, 2019, Copper, fjords, reindeer and controversy—Inside Norway's new arctic mine: New York, New York, Mining Technology, May 13. (Accessed March 17, 2019, <https://www.mining-technology.com/features/inside-norways-new-arctic-mine/>.)
- Norcem AS, 2019, Norcem Brevik: Brevik, Norway, Norcem AS. (Accessed March 17, 2019, at <http://www.norcem.no/en/brevik>.)
- Nordic Mining ASA, 2017, Engebø rutile and garnet, prefeasibility study: Oslo, Norway, Nordic Mining ASA, October 30, 337 p. (Accessed March 17, 2019, at <http://d2zbxcnktjvvs5.cloudfront.net/1516717596/pre-feasibility-final-report.pdf>.)
- Nordic Mining ASA, 2018, Engebø rutile and garnet: Nordic Mining ASA. (Accessed March 17, 2019, at <https://www.nordicmining.com/operations/engebø/>.)
- Norges Bank Investment Management, 2018, Government pension fund global—Annual report 2017: Oslo, Norway, Norges Bank Investment Management, 143 p. (Accessed March 17, 2019, at <https://www.nbim.no/contentassets/49715a01ed684b1686ff3c017f1efa12/annual-report-2017---government-pension-fund-global.pdf>.)
- Norwegian Directorate of Mining, 2018, Harde fakta om mineralnæringen, mineralstatistikk 2017 [Facts about the mineral industry, mineral statistics 2017]: Trondheim, Norway, Norwegian Directorate of Mining, 58 p. (Accessed March 11, 2019, at https://dirmin.no/sites/default/files/dirmin-statistikk_2017_ny.pdf.)
- Norwegian Directorate of Mining, 2019, Harde fakta om mineralnæringen, mineralstatistikk 2018 [Facts about the mineral industry, mineral statistics 2018]: Trondheim, Norway, Norwegian Directorate of Mining, 62 p. (Accessed October 22, 2019, at https://dirmin.no/sites/default/files/5106_dirmin_2018_enkelt sider_1809.pdf.)
- Norwegian Ministry of Trade and Industry, 2013, Strategy for the mineral industry: Oslo, Norway, Norwegian Ministry of Trade and Industry, 72 p. (Accessed March 20, 2019, at https://www.regjeringen.no/contentassets/3fe548d142cd496ebb7230a54e71ae1a/strategyfortheminerallindustry_2013.pdf.)
- Norwegian Petroleum, 2019a, Exploration activity: Norway, Norwegian Petroleum. (Accessed November 8, 2019, <https://www.norskpetroleum.no/en/exploration/exploration-activity>.)
- Norwegian Petroleum, 2019b, Exports of oil and gas: Norwegian Petroleum. (Accessed March 7, 2019, at <http://www.norskpetroleum.no/en/production-and-exports/exports-of-oil-and-gas/>.)
- Norwegian Petroleum, 2019c, Production forecasts: Norwegian Petroleum. (Accessed November 6, 2019, at <https://www.norskpetroleum.no/en/production-and-exports/production-forecasts/>.)
- Norwegian Petroleum Directorate, 2012, Regulations to act relating to petroleum activities: Stavanger, Norway, Norwegian Petroleum Directorate. (Accessed March 20, 2019, at <http://www.npd.no/en/Regulations/Regulations/Petroleum-activities/#1>.)
- Norwegian Petroleum Directorate, 2018a, Increasing oil and gas production for the next five-year period: Stavanger, Norway, Norwegian Petroleum Directorate, January 11. (Accessed March 17, 2019, at <https://www.npd.no/en/facts/news/general-news/2018/The-Shelf-2017/1-Increasing-oil-and-gas-production-for-the-next-fiveyear-period/>.)
- Norwegian Petroleum Directorate, 2018b, The shelf 2017: Stavanger, Norway, Norwegian Petroleum Directorate, January 11. (Accessed March 17, 2019, at <https://www.npd.no/en/facts/news/general-news/2018/The-Shelf-2017/>.)
- Norwegian Petroleum Directorate, 2019, About us: Stavanger, Norway, Norwegian Petroleum Directorate, March 14. (Accessed March 17, 2019, at <https://www.npd.no/en/About-us/>.)
- Nussir ASA, 2019, Nussir: Kvalsund, Norway, Nussir ASA. (Accessed March 17, 2019, at http://www.nussir.no/en_projec_nussir.php.)
- Schnebele, E.K., 2019, Silicon: U.S. Geological Survey Mineral Commodity Summaries 2019, p. 148–149.
- Stange, Rolf, 2018, Good times for Mine 7: Spitsbergen-Svalbard.com, November 20. (Accessed November 14, 2019, at <https://www.spitsbergen-svalbard.com/2018/11/20/good-times-for-mine-7.html>.)
- Statistics Norway, 2018a, Business statistics: Oslo, Norway, Statistics Norway. (Accessed March 4, 2019, at <https://www.ssb.no/en/statbank/table/07427/tableViewLayout1/>.)
- Statistics Norway, 2018b, Comparison of price levels in Europe: Oslo, Norway, Statistics Norway, December 17. (Accessed March 8, 2019, at <https://www.ssb.no/en/priser-og-prisindekser/statistikker/ppp/aar>.)
- Statistics Norway, 2018c, Structural business statistics for manufacturing, mining and quarrying: Oslo, Norway, Statistics Norway, April 17. (Accessed March 4, 2019, at <https://www.ssb.no/en/energi-og-industri/statistikker/sti/aar-endelige>.)
- Statistics Norway, 2019a, National accounts: Oslo, Norway, Statistics Norway, November. (Accessed March 4, 2019, at <http://www.ssb.no/en/knr>.)
- Statistics Norway, 2019b, Preliminary figures for number of enterprises, employed persons and turnover, by industry: Oslo, Norway, Statistics Norway. (Accessed November 14, 2019, at <https://www.ssb.no/en/statbank/table/12817/tableViewLayout1/>.)
- Statistics Norway, 2019c, Production of commodities in manufacturing, mining and quarrying: Oslo, Norway, Statistics Norway. (Accessed November 14, 2019, at <https://www.ssb.no/en/statbank/table/07345/tableViewLayout1/>.)
- Statoil ASA, 2018, Annual report and form 20-F—2017: Stavanger, Norway, Statoil ASA, 279 p. (Accessed March 27, 2019, at <https://www.equinor.com/en/investors.html#annual-reports>.)
- Store Norske Kulkompani AS, 2019, 100 years of experience in industrial activities in the Arctic: Longyearbyen, Norway, Store Norske Kulkompani AS. (Accessed March 17, 2019, at <https://www.snsk.no/bergverk/gruve-7>.)
- Svensen, T.K., Simonsen, S., and Lind, K.M., 2014, Oil and gas regulation in Norway—Overview: Oslo, Norway, Advokatfirmaet Wiersholm AS. (Accessed March 20, 2019, at [https://uk.practicallaw.thomsonreuters.com/6-529-5206?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/6-529-5206?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1).)
- U.S. Census Bureau, 2018a, U.S. exports to Norway by 5-digit end-use code 2008 - 2017: U.S. Census Bureau. (Accessed March 7, 2019, at <http://www.census.gov/foreign-trade/statistics/product/enduse/exports/c4039.html>.)
- U.S. Census Bureau, 2018b, U.S. imports from Norway by 5-digit end-use code 2008-2017: U.S. Census Bureau. (Accessed March 7, 2019, at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c4039.html>.)
- U.S. Central Intelligence Agency, 2019, Norway, in *The world factbook*: Washington, DC, U.S. Central Intelligence Agency, February 18. (Accessed March 6, 2019, at <https://www.cia.gov/library/publications/the-world-factbook/geos/no.html>.)
- U.S. Energy Information Administration, 2019, Norway: Washington, DC, U.S. Energy Information Administration. (Accessed March 6, 2019, at <https://www.eia.gov/beta/international/analysis.cfm?iso=NOR>.)
- World Bank, The, 2019, GDP (current US\$) - Norway: Washington, DC, The World Bank. (Accessed March 8, 2018, at <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2018&locations=NO&start=2016&view=chart>.)

TABLE 1
NORWAY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2014	2015	2016	2017	2018
METALS					
Aluminum, primary, metal	1,250,000 ^e	1,225,000	1,247,000 ^r	1,253,000	1,300,000 ^e
Cadmium, refinery, primary	320 ^r	310	335 ^r	416	420 ^e
Cobalt, refinery, metal	3,600	3,100	3,500	3,500	4,200
Copper, refinery, primary	35,800	35,500	28,100	22,700	20,600
Ferroalloys:					
Ferromanganese	295,400	309,200	329,100	400,800	327,600
Silicomanganese	314,300	309,900	306,100 ^r	284,500	330,000
Iron ore, mine:					
Gross weight	3,854,155	3,519,116	-- ^r	--	--
Fe content	2,390,000	2,182,000	-- ^r	--	--
Iron and steel:					
Pig iron	102,000	100,000	100,000	100,000 ^e	100,000 ^e
Steel, raw steel	600,000	590,000	620,000	603,000	575,000
Mercury, Hg content ^e	25	20	20	20	20
Nickel:					
Mine, Ni content	400 ^r	285 ^r	220 ^r	206	210
Refinery, metal, electrolytic	90,500	91,220 ^r	92,700 ^r	86,500	90,800
Titanium, mineral concentrates, ilmenite and leucoxene ^e	864,000	630,000 ^r	590,000 ^r	670,000	590,000
Zinc, smelter, primary	165,600	162,878	170,541	172,086	190,570
INDUSTRIAL MINERALS					
Cement, hydraulic ^e thousand metric tons	1,700	1,800	1,850	1,900	1,950
Feldspar	154	76	-- ^r	-- ^e	-- ^e
Graphite, crystalline flake	8,308	9,185 ^r	10,000 ^r	11,000 ^e	16,000 ^e
Lime, hydrated and quicklime ^e thousand metric tons	125	110	110	110	110
Sand and gravel, industrial, silica do.	1,095 ^r	1,112 ^r	1,174 ^r	1,066	1,358
Stone, sand, and gravel, construction:					
Sand and gravel, unspecified do.	14,110	14,295 ^r	14,959 ^r	14,696	13,478
Stone, crushed:					
Dolomite do.	714	472	730 ^e	730 ^e	730 ^e
Limestone do.	5,839	5,547 ^r	5,895 ^r	5,786	5,669
Olivine do.	1,394	1,672	1,400 ^e	1,400 ^e	1,400 ^e
Sulfur, byproduct, metallurgy, S content do.	77 ^r	76 ^r	74 ^r	64	64 ^e
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous thousand metric tons	1,701	1,203	960 ^r	135	143
Natural gas, marketable million cubic meters	106,710 ^r	117,000 ^r	116,800 ^r	124,200	121,600
Peat, horticultural use thousand metric tons	99	100 ^e	100 ^e	100 ^e	100 ^e
Petroleum:					
Crude thousand 42-gallon barrels	572,320	587,650 ^r	601,520 ^r	590,570	553,705
Refinery:					
Distillate fuel oil do.	47,815	48,000 ^e	48,000 ^{r, e}	48,000 ^e	48,000 ^e
Gasoline do.	28,105	28,000 ^e	28,000 ^{r, e}	28,000 ^e	28,000 ^e
Jet fuel do.	4,380	4,400 ^e	4,400 ^{r, e}	4,400 ^e	4,400 ^e
Kerosene do.	875	900 ^e	900 ^{r, e}	900 ^e	900 ^e
Residual fuel oil do.	11,315	11,500 ^e	11,500 ^{r, e}	11,500 ^e	11,500 ^e
Other do.	18,615	18,600 ^e	18,600 ^{r, e}	18,600 ^e	18,600 ^e
Total do.	111,000	111,000 ^e	111,000 ^{r, e}	111,000 ^e	111,000 ^e

^eEstimated. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through November 18, 2019. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, clay, ferrosilicon, nepheline syenite, nitrogen (in ammonia), silicon metal, and tin may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
NORWAY: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Alcoa Inc.	Smelters at Lista and Mosjoen	282
Do.		Hydro Aluminium AS (Norsk Hydro ASA, 70%)	Smelters at Ardal, Hoyanger, Karmoy, and Sunndal and Husnes	1,020
Do.		do.	Rolling mill at Holmestrand	90
Cadmium	metric tons	Boliden Odda A/S (Boliden AB, 100%)	Smelter at Eitrheimsneset	300
Cement		Norcem A/S (HeidelbergCement Group)	Plants at Brevik and Kjøpsvik	2,000
Coal		Store Norske Spitsbergen Kulkompani AS	Mine at Longyearbyen	200
Do.		do.	Mines at Svea ¹	NA
Cobalt		Nikkelverk A/S (Glencore plc, 100%)	Refinery at Kristiansand	5
Copper, metal		do.	do.	40
Ferroalloys:				
Ferromanganese		Eramet Norway AS	Ferromanganese plant at Porsgrunn	115
Do.		do.	Ferromanganese plant at Sauda	170
Do.		Glencore Manganese (Glencore plc, 100%)	Ferromanganese plant at Mo i Rana	120
Ferrosilicon		Elkem Bjølvfossen (China Bluestar)	Ferrosilicon plant at Alvik	NA
Do.		Elkem Bremanger (China Bluestar)	Ferrosilicon plant at Svelgen	NA
Do.		FESIL Rana Metall ASA (MFC Group)	Ferrosilicon plant at Mo i Rana	90
Do.		Finnfjord Smelteverk A/S	Ferrosilicon plant at Finnsnes	100
Do.		Hafslund AS	Ferrosilicon powder plant at Sarpsborg	5
Silicomanganese		Eramet Norway AS	Silicomanganese plant at Kvinesdal	160
Do.		do.	Silicomanganese plant at Porsgrunn	65
Graphite, flake		Skaland Graphite AS (LNS Group)	Traelen Mine and plant at Skaland	9
Iron and steel:				
Iron:				
Iron ore		Sydvaranger AS (Tschudi Group, 100%) ²	Mine at Bjørnevattn	NA
Pig iron		TiZir (Eramet Norway AS, 50%)	Plant at Tyssedal	110
Do.		Ulstein Jernstøperi A/S (Bergen Engines A/S)	Hordvikneset	10
Raw steel		Celsa Armeringsstål	Plant at Mo i Rana	600
Lime		Hylla Kalkverk (Franzefoss Minerals AS, 100%)	Verdal plant	200
Natural gas	million cubic meters	Amoco Norway A/S	Hod and Valhall fields	910
Do.	do.	ConocoPhillips Skandinavia A/S (operator)	Ekofisk field	9,900
Do.	do.	Elf Petroleum Norge A/S	Heimdal	NA
Do.	do.	Petoro AS, 56%; Equinor Energy AS, ³ 30.6%; A/S Norske Shell, 8.1%; Total E&P Norge AS, 3.7%; ConocoPhillips Skandinavia A/S, 1.6%	Troll field	20,000
Do.	do.	Equinor Energy AS ³ (operator)	Grane, Gullfaks, Mikkell, Sleipner Ost, and Statfjord fields	14,400
Do.	do.	Total E&P Norge AS, 40%; Petoro AS, 30%; LOTOS Exploration and Production Norge AS, 30%	Skirre field	1,550
Nepheline syenite		Sibelco Nordic AS	Mine at Stjernøy	350
Nickel:				
Ore, concentrate, Ni content	metric tons	Titania AS (Kronos Norge AS, 100%)	Mine at Tellnes	350
Metal		Nikkelverk A/S (Glencore plc, 100%)	Refinery at Kristiansand	92
Petroleum	42-gallon barrels per day	OKEA ASA (operator)	Draugen field	90,000
Do.	do.	Aker BP ASA (operator)	Ula field	155,000
Do.	do.	Esso Norge A/S (Exxon Mobil Corp., 100%)	Slagen refinery at Slagentangen	NA
Do.	do.	Equinor Mongstad A/S (Equinor ASA, 100%) ³	Mongstad refinery	NA
Silicon metal		Elkem Salten (China Bluestar)	Silicon plant at Straumen	70
Do.		Elkem Thamshavn (China Bluestar)	Silicon plant at Orkanger	45
Do.		Holla Metall (Wacker Chemicals Norway A/S)	Plant at Holla	50

See footnotes at end of table.

TABLE 2—Continued
NORWAY: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Stone:			
Dolomite	Franzefoss Miljokalk A/S	Mine at Ballangen	350
Do.	Omya Hustadmarmor A/S	Mines at Hammerfall and Seljeli	900
Limestone	Bronnoy Kalk	Akselberg Mine	2,200
Do.	Franzefoss Minerals	Hamar and Hole quarries	50
Do.	Norcem A/S (HeidelbergCement Group)	Dalen, Bjorntvedt, and Kjøpsvik Mines	1,600
Do.	Vardelskalk A/S (Franzefoss Burk A/S, 100%)	Sandvika Mine	800
Do.	Visnes Kalk AS	Lyngstad quarry	600
Olivine	Sibelco Nordic AS	Mines and plant at Aheim	2,000
Quartzite	Elkem Marnes (China Bluestar)	Mine at Marnes	200
Do.	Elkem Tana (China Bluestar)	Mine at Tana	1200
Do.	Georg Tveit A/S (Eramet Norway AS, 75%)	Mine at Kragero	110
Titanium, mineral concentrate	Titania AS (Kronos Norge AS, 100%)	Mine at Tellnes	850
Zinc, metal	Boliden Odda A/S (Boliden AB, 100%)	Smelter at Odda	200

Do., do. Ditto. NA Not available.

¹In April 2016, production was suspended owing to low coal demand. In 2018, Store Norske Spitsbergen Kulkompani AS decided to discontinue all coal mining operations at the Svea mines.

²In 2015, Northern Iron Ltd. announced bankruptcy. In April 2016, the mine was sold to the Tschudi Group, which planned to restart operations in 2020.

³In 2018, Statoil ASA and its subsidiaries changed names from Statoil to Equinor.