



2009 Minerals Yearbook

NORWAY [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF NORWAY

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Norway's diverse geologic terranes offer a broad spectrum of mineral resources for exploration and development. In terms of the value of exports, petroleum was Norway's most important mineral commodity. The growth of the country's natural gas and petroleum sector in the past has contributed significantly to Norway's economy. The mining and quarrying industry, which was mostly a regional industry, was located mainly along the coast.

Minerals in the National Economy

Norway's mineral resources include coal, iron ore, natural gas, nickel, olivine, petroleum, and titanium. The petroleum sector provided about one-half of the country's exports and more than 30% of Government revenue. Norway opted to stay out of the European Union (EU) through a referendum held in November 1994; nonetheless, as a member of the European Economic Area, it contributed sizably to the EU's budget. In anticipation of eventual decreases in natural gas and petroleum production, the Government continued to save a significant amount of revenue from petroleum exports in a sovereign wealth fund (Dimireva, 2010).

Trade was important to the national economy. Norway was the world's 28th ranked exporter. U.S. exports to Norway included other nonferrous metals, \$251 million; oilfield and drilling equipment, \$207 million; metallurgical-grade coal, \$6 million; and specialized mining equipment, \$5 million. Norway's exports to the United States included crude petroleum, \$888 million; other petroleum products, \$970 million; fuel oil, \$339 million; and nickel, \$182 million (U.S. Census Bureau, 2009a, b).

Ministers from the member states of the European Free Trade Association (EFTA), which included Iceland, Liechtenstein, Norway, and Switzerland, and the Cooperation Council for the Arab States of the Gulf (GCC), which included Bahrain, Kuwait, Oman, Qatar, and Saudi Arabia, signed a free trade agreement in June 2009. The agreement covered a broad range of topics, including trade in goods and services, and Government procurement. The EFTA and the GCC also signed an additional agreement concerning agricultural products. Total merchandise trade between the EFTA and the GCC amounted to \$7.2 billion in 2008, which was the latest year for which trade data were available. Trade had grown consistently, recording an average growth rate of 25% between 2003 and 2008. The EFTA was the GCC's sixth ranked export destination in 2008 (European Free Trade Association, 2009).

Production

Norway produced aluminum, cadmium, cobalt, copper, ferroalloys, nickel, steel, and zinc metals and was a global supplier of aluminum, ferroalloys, and petroleum. Metal production of primary aluminum, cobalt, and ferrosilicon

decreased. Mine production of various mineral commodities included feldspar, graphite, ilmenite, and iron ore. Aggregates, limestone, nepheline syenite, olivine, and sand and gravel were some of Norway's more economically important industrial mineral raw materials. Industrial mineral production of graphite increased whereas production of ilmenite, limestone, and olivine sand decreased (table 1).

Norway's North Cape Minerals A/S was a leading producer of olivine. The country's production of titanium accounted for about 7% of world production (Gambogi, 2010).

Structure of the Mineral Industry

The Norwegian mineral industry was composed of a mixture of Government and privately owned operations. Table 2 lists the major mineral companies that were operating in Norway in 2009 and their respective mine and (or) plant locations and capacities.

Commodity Review

Metals

Aluminum.—At yearend 2008, Alcoa Inc. of the United States and Orkla ASA of Sweden announced that they had concluded an agreement on the exchange of their equity stakes in a Norwegian smelting partnership and Swedish extrusion profile (SAPA) joint venture. Alcoa would take over Orkla's 50% equity in Elkem Aluminum ANS, which would give Alcoa a 100% share in Elkem Aluminum. The two smelters and anode facilities (Lista, which is located in southern Norway, and Mosjoen, which is located in northern Norway) had a combined output of 282,000 metric tons per year (t/yr) of primary aluminum. The addition of these assets increased Alcoa's global smelting capacity to more than 4.8 million metric tons per year (Mt/yr), making Alcoa a significant primary aluminum producer. Orkla would receive Alcoa's 45% interest in the SAPA extrusion profile business. The two parties would continue to develop and hold joint ownership in the carbothermic process technology that Alcoa was developing together with Orkla. Still in the research and development phase, the carbothermic process is a new technology that holds the potential to produce aluminum at a lower cost because it has reduced conversion costs, lower energy requirements, lower emissions, and a lower capital cost than traditional smelting (Alcoa Inc., 2008).

Hydro Aluminium ANS (a subsidiary of Norse Hydro ASA) announced that it would close the Soderberg potlines at the Karmoy aluminum plant. Soderberg, which employed some of the oldest electrolytic technology, produced 120,000 t/yr aluminum. The potlines had to be closed by yearend owing to the more stringent emission limits imposed by the Norwegian Pollution Control Authority (Reuters, 2009).

Cobalt.—The toll refining of cobalt concentrate (which was produced by BHP Billiton) at Xstrata plc of Switzerland's

Nikkelverk A/S refinery at Kristiansand was expected to cease by yearend 2009. The Nikkelverk refinery had the capacity to process 86,000 t/yr of nickel, 39,000 t/yr of copper, and 5,000 t/yr of cobalt (Metal Bulletin, 2009, p. 4).

Iron and Steel.—Northern Iron Ltd. is an Australian company formed to acquire the Sydvaranger iron ore project, which consisted of the Bjernevatn, the Fisketinind Ost, the Hyttemalmen, and the Kjelimansasen projects. Northern Iron reported that mining was continuing at its Hyttemalmen open pit mine and that 400,000 metric tons (t) of ore had been mined by the end of September 2009. Construction of the processing plant was essentially complete, and commissioning of the mill area was underway at yearend 2009 (Metals Economics Group, 2009).

Nickel.—The Nikkelverk refinery processed primary nickel, and associated cobalt, copper, and precious metals were recovered as byproducts. Nikkelverk used a chlorine leach and electrowinning process to separate and recover component metals, which is a cost-effective means of treating complex raw materials. The efficiency of the process allows greater flexibility in sourcing and treating custom feed. The plant ranked among the lowest-cost nickel refineries in the Western World. The refinery processed a granulated matte produced by Xstrata's Raglan and Sudbury operations in Canada, as well as custom feed from other sources (Xstrata plc, 2009).

Titanium.—Titania A/S was one of the world's leading producers of ilmenite, accounting for about 6% of world production. It was the leading producer of ilmenite in Europe. Production from the Tellnes open pit mine resulted in about 671,000 t of ilmenite concentrate containing 43% titanium dioxide (Norges geologiske undersøkelse, 2010, p. 21).

Industrial Minerals

Norway was a significant producer of industrial minerals from more than 30 mines. It was among the world's leading producers of olivine and nepheline syenite. Production of aggregate, gravel, and sand were some of Norway's important raw materials. Industrial minerals represented a market worth about \$1.1 billion (Norges geologiske undersøkelse, 2010, p. 15, 36).

North Cape Minerals A/S, which produced olivine, announced that it was suspending its operations at Bryggja and Raubergvik but leaving the Åheim Mine and plant open. North Cape Minerals stated that the reduction in demand for olivine products required more long-term measures than the continued use of temporary layoffs, which was the strategy that it had employed in response to the reduced demand thus far (Roberts, 2009).

Mineral Fuels and Related Materials

Norway had a highly developed natural gas and petroleum sector. Natural gas production had been steadily increasing and petroleum production had been decreasing. Crude petroleum production fell to 1.9 million barrels per day (Mbb/d) in 2009 from 2.1 Mbb/d in 2008. One issue that had hampered the development of natural gas and petroleum reserves in the northern Barents Sea area was the lack of a defined maritime boundary between Norway and Russia. An agreement was

worked out between Russia's state-owned company OAO Gazprom and Norway's state-owned StatoilHydro ASA, however, in which the companies would work together in exploring and developing their Arctic sea regions. A memorandum of understanding was to be signed between the two state-owned companies in 2009 (U.S. Energy Information Administration, 2009a).

A United Nations commission ruled that the Norwegian Continental Shelf (NCS) extends further north than the automatic 200 nautical miles limit, adding 235,000 square kilometers (km²) of territory in the Arctic Ocean, Barents Sea, and Norwegian Sea to the country's domain. The Norwegian Petroleum Directorate stated that most of the additional area is at water depths of more than 2,500 meters (m) and is on oceanic crust, where natural gas and petroleum were unlikely to be present (Petroleum Economist, 2009, p. 32).

Coal.—Store Norske Spitsbergen Grubekompani A/S (Store Norske) was Norway's sole coal producer and the most northerly operator in the world. Norway continued to be a net exporter of coal from two mines on Svalbard: Svea Nord, which is located south of Longyearbyen, and the Gruve 7 Mine. About one-half of Store Norske's production was used in the country's only coal-fired power station on Spitsbergen Island (Store Norske Spitsbergen Grubekompani A/S, 2009).

Natural Gas.—Norway had estimated proven reserves of 2.3 trillion cubic meters of natural gas as of January 2009. Norway's natural gas production had been increasing every year since 1994. The annual increases had been sustained by incorporating new fields in the Barents Sea and the Norwegian Sea. Norway's single largest natural gas field was the Troll-Oseberg field, which produced about 81 million cubic meters per day in 2009 and represented about one-third of Norway's natural gas production (U.S. Energy Information Administration, 2009b).

Royal Dutch Shell plc of the Netherlands, which was Europe's leading petroleum company, announced that it had made a natural gas discovery at a record depth of 1,376 m in the northern Norwegian Sea that could be equal to the size of Norway's total annual production of natural gas. The find was made in the Gro prospect 360 kilometers (km) offshore and was estimated to hold between 10 billion and 100 billion cubic meters of natural gas. The market value of the well was reported to be an estimated \$228 billion. It was considered to be a significant find for the Norwegian Sea and could be a major boost for the Norwegian energy industry (Alexander's Gas & Oil Connections, 2009).

StatoilHydro made a deepwater natural gas discovery in the Asterix prospect in production license 327B, which is located 80 km west of the Luva natural gas field. The water depth at the location is 1,360 m. The estimated recoverable volume was about 16 billion cubic meters and represented one of the larger discoveries offshore Norway in recent years. The resources are located in the Upper Cretaceous reservoirs. The company was considering development of the prospect along with the Luva and the Snefrid South prospects, which are located nearby. Development of the prospects could form the basis for a deepwater gas infrastructure in the Norwegian Sea (Offshore Engineer, 2009, p. 16).

Petroleum.—Norway, which has the largest petroleum reserves in Western Europe, was reported to have 6.7 billion barrels of estimated proven reserves as of January 2009. All the reserves are located offshore on the NCS, which is divided into three sections: the Barents Sea, the North Sea, and the Norwegian Sea. The bulk of production had taken place in the North Sea, and smaller amounts had been produced in the Norwegian Sea. Norway produced about 2.47 Mbbbl/d of petroleum, of which 91% (2.25 Mbbbl/d) was exported. This made Norway the world's third ranked petroleum exporter after Saudi Arabia and Russia and the sixth ranked net oil exporter in the world (U.S. Energy Information Administration, 2009c).

The Government reported that a total of 65 exploration wells had been spudded in 2009. This was nine more than in 2008 and a new record. There were 28 new discoveries compared with 25 new discoveries in 2008. Of the 65 exploration wells, 44 were wildcat wells and 21 were appraisal wells. The exploration activity level was the highest in the North Sea, which is where the majority of the discoveries had been proven. The discoveries were generally small and close to existing fields. Norway's production continued to decline as reserves were not being replaced (Norwegian Petroleum Directorate, 2010).

The *Transocean Searcher* drilling rig started drilling the first of StatoilHydro's 13 production wells on the Gjoa field. Gjoa is located in the Sogen area about 75 km northeast of the Troll B platform. The rig was expected to drill nine petroleum wells and four natural gas wells. With this development, a new part of the North Sea would be opened for natural gas and petroleum production. The Vega and the Vega South satellites would be developed with subsea installations and tied back to Gjoa. The development of the Gjoa, the Vega, and the Vega South was the largest development project on the NCS. StatoilHydro was the operator for the development phase and Gaz de France Suez would assume operatorship when production starts (Rigzone.com, 2009).

In the 20th exploration round in 2009, OMV (Norge) AS was awarded two new licenses—PL 529, which was a 676-km² area, and PL537, which was a 597-km² area and the northernmost license in Norway. Both licenses are located in the Barents Sea. OMV (Norge) had interests in eight licenses: five in the Barents Sea, which was an emerging exploration area, two in the North Sea, and one in the Norwegian Sea. Five of these licenses were operated by OMV (Norge) (Oilvoice.com, 2009).

Renewable Energy.—The Ministry of Petroleum and Energy announced a new bill on alternative energy generation at sea. The new bill would help in developing major investments in offshore wind power generation. A significant part of the new offshore wind parks could be placed off the northern coast of Norway in areas of prevalent Arctic winds. The areas most suitable for wind power would be selected after the Parliament's adoption of the bill. Several of the projected offshore windmills are up to 100-m high and would generate more than 20 gigawatthours per year of electricity. The focus on wind power comes at a time when the Government-owned power grid operator, Statnett SF, was planning major grid-capacity extensions in the region. The extended capacity could open up a number of new industrial initiatives in the region (Barents Observer, 2009).

Outlook

Norway's economy is highly dependent upon the country's hydrocarbon resources—they are the country's single largest source of revenue—and the Government is expected to continue to manage these resources. Exploring for and proving undiscovered resources is a prerequisite for recovering the mineral fuel resources. Continued exploration drilling in frontier areas in the Norwegian Sea and the Barents Sea will likely continue. The Norwegian Petroleum Directorate is expected to continue with efforts to open up new offshore areas, particularly in the Arctic region. Norway is expected to continue to obtain nearly all its electricity from hydropower; however, other renewable resources, such as osmotic power and wind power, are being investigated. Industrial minerals are expected to continue to be important to the nation's domestic economy.

References Cited

- Alcoa Inc., 2008, Alcoa and ORKLA ASA agree to exchange equity stakes: Alcoa Inc., December 22. (Accessed March 11, 2010, at http://www.alcoa.com/norway/en/news/releases/2008_orkla_exchange.asp.)
- Alexander's Gas & Oil Connections, 2009, Shell's gas find in Norway may be biggest in 12 years: Alexander's Gas & Oil Connections. (Accessed September 8, 2009, at <http://www.gasandoil.com/goc/company/cne93393.htm>.)
- Barents Observer, 2009, Norway finds future in windmills: Alexander's Gas & Oil Connections. (Accessed October 19, 2009, at <http://www.gasandoil.com/goc/news/nte93548.htm>.)
- Dimireva, Ina, 2010, Norway—Economic overview: EUbusiness.com. (Accessed September 20, 2010, at <http://www.eubusiness.com/europe/norway/econ/>.)
- European Free Trade Association, 2009, The EFTA states and GCC sign free trade agreement: European Free Trade Association, June 22. (Accessed June 23, 2009, at <http://www.efta.int/content/free-trade/efta-countries/GCC-cooperation/the-efta-states-and-gcc-sign-free-trade-agreement>.)
- Gambogi, Joseph, 2010, Titanium and titanium dioxide: U.S. Geological Survey Mineral Commodity Summaries 2010, p. 174-175.
- Metal Bulletin, 2009, BHP's cobalt tolling deal at Nikkelverk will end this year: Metal Bulletin, no. 9112, August 18, p. 4.
- Metals Economics Group, 2009, Sydvaranger: Metals Economics Group. (Accessed October 27, 2009, via <http://services.metalseconomics.com/Minesearch/Default.aspx?profile&projAid=97231>.)
- Norges geologiske undersøkelse [Geological Survey of Norway], 2010, Mineralressurser I Norge 2009 [Mineral Resources in Norway 2009]: Trondheim Norway, Norges geologiske undersøkelse publikasjon no. 1 2010, 45 p. (Accessed December 18, 2010, at http://www.ngu.no/upload/Publikasjoner/Rapporter/2010/Mineralressurser_i_Norge-2009-no.pdf.)
- Norwegian Petroleum Directorate, 2010, The shelf in 2009—Exploration: Norwegian Petroleum Directorate, January 15. (Accessed December 27, 2010, at <http://www.npd.no/en/news/News/2010/The-shelf-in-2009/Exploration-in-2009-Record-activity-level>.)
- Offshore Engineer, 2009, Norwegian double for StatoilHydro: Offshore Engineer, v. 34, no. 4, April, p. 16.
- Oilvoice.com, 2009, OMV wins two new exploration licenses in Norway: Alexander's Gas & Oil Connections. (Accessed September 8, 2009, at <http://www.gasandoil.com/goc/company/cne93179.htm>.)
- Petroleum Economist, 2009, Western Europe: Petroleum Economist, v. 76, no. 5, May, p. 32.
- Reuters, 2009, Norsk Hydro ASA to close facility at Karmoy: Thomson Reuters. (Accessed December 27, 2010, at <http://www.reuters.com/sectors/industries/significant?industryCode=51213&categoryId=2>.)
- Rigzone.com, 2009, StatoilHydro kicks off drilling at Gjøa, plans to tie-in Vega satellites: Rigzone.com, January 5. (Accessed January 12, 2009, at http://www.rigzone.com/news/article.asp?a_id=71253.)
- Roberts, Jessica, 2009, NCM suspends olivine mines: Industrial Minerals, July 21. (Accessed February 23, 2011, at <http://www.indmin.com/Article/2256813/NCM-suspends-olivine-mines.html>.)

- Store Norske Spitsbergen Grubekompani A/S, 2009, Home page: Store Norske Spitsbergen Grubekompani A/S. (Accessed December 27, 2010, at <http://www.snsk.no>.)
- U.S. Census Bureau, 2009a, U.S. exports to Norway by 5-digit end use code 2005-2009: U.S. Census Bureau. (Accessed December 24, 2010, at <http://www.census.gov/foreign-trade/statistics/product/enduse/exports/c4039.html>.)
- U.S. Census Bureau, 2009b, U.S. imports from Norway by 5-digit end use code 2005-2009: U.S. Census Bureau. (Accessed December 24, 2010, at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c4039.html>.)
- U.S. Energy Information Administration, 2009a, Norway—Background: U.S. Energy Information Administration country analysis brief. (Accessed January 21, 2010, at <http://www.eia.doe.gov/emeu/cabs/Norway/Background.html>.)
- U.S. Energy Information Administration, 2009b, Norway—Natural gas: U.S. Energy Information Administration country analysis brief. (Accessed January 21, 2010, at <http://www.eia.doe.gov/emeu/cabs/Norway/NaturalGas.html>.)
- U.S. Energy Information Administration, 2009c, Norway—Oil: U.S. Energy Information Administration country analysis brief. (Accessed January 21, 2010, at <http://www.eia.doe.gov/emeu/cabs/Norway/Oil.html>.)
- Xstrata plc, 2009 Nikkelverk refinery: Xstrata plc. (Accessed December 27, 2010, at <http://www.xstratanickel.com/EN/Operations/Pages/NikkelverkRefinery.aspx>.)

TABLE 1
NORWAY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009 ^e	
METALS						
Aluminum:						
Primary	metric tons	1,376,500	1,422,000	1,304,400	1,368,000 ^r	1,130,000
Secondary	do.	362,400	349,200	350,000	350,000 ^e	350,000
Cadmium, smelter	do.	153	125	269	178	249 ²
Cobalt, metal, refined	do.	5,021	4,927	3,939	3,719	3,510 ²
Copper, metal, refined, primary and secondary	do.	38,500	39,700	34,212	32,000 ^e	32,000
Iron and steel:						
Iron ore and concentrate, Fe content		448 ^r	397 ^r	403 ^r	477 ^r	896 ²
Metal:^c						
Pig iron		100	100	100	100	100
Ferroalloys:						
Ferromanganese		130	130	130 ^r	130 ^r	130
Ferrosilicomanganese		290	250	280 ^r	260 ^r	150
Ferrosilicon, 75% basis		165	93	90	250 ^r	207 ²
Silicon metal		176	150	146 ^r	180 ^r	170 ²
Other		60	60	60	60	50
Total		820 ^r	680 ^r	710 ^r	880 ^r	707
Steel, crude		701	679	740	560	579 ²
Semimanufactures, rolled		650	600	650	600	600
Mercury	metric tons	34	23	45	33	30
Nickel:						
Mine output:						
Concentrate ^e	do.	130	400	600	900	850
Ni content	do.	100	362	246	377 ^r	336 ²
Metal, primary	do.	84,900	81,974	87,590	88,741	87,000
Titanium:^c						
Ilmenite concentrate		860	850	882 ²	915 ²	671 ²
TiO ₂ content		388	385	390	403 ^r	289 ²
Zinc, metal, primary	metric tons	151,285	160,670	157,027	145,469	138,973 ²
INDUSTRIAL MINERALS						
Cement, hydraulic ^e		1,900	1,850	1,800	1,800	1,700
Clays		230	320	319	279	275
Feldspar		270	65	65	62	48 ²
Graphite	metric tons	8,893	9,000	1,400	4,100 ^r	4,562 ²
Lime, hydrated, quicklime ^e		60 ^r	70 ^r	70 ^r	110 ^r	100
Mica, flake ^e	metric tons	2,700	2,700	1,000	1,000	--
Nepheline syenite ^e		320	330	312 ²	346 ²	270
Nitrogen, N content of ammonia		300	350	350	350	300
Olivine sand		3,100 ^e	3,000 ^e	2,562 ²	2,554 ²	1,267 ²
Sand and gravel		1,500	13,418	15,325	14,817	13,047 ²
Stone, crushed:						
Dolomite		513	525 ^e	826	744	544 ²
Limestone		7,200 ^e	7,200 ^e	8,770	6,781	6,151 ²
Quartz and quartzite		909	834	1,067	1,025	773 ²
Sulfur, byproduct:^c						
Metallurgical		80 ²	80	80	80	80
Petroleum		20	20	20	20	20
Total		100	100	100	100	100
Talc, soapstone, steatite		34	57	66	38	23 ²
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades		300 ^e	236	322	343	244 ²
Gas, natural, marketed ³	million cubic meters	84,964	87,600	89,700	99,200	99,000
Peat, for agricultural use	do.	--	78	159	497	500

See footnotes at end of table.

TABLE 1—Continued
 NORWAY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009 ^e	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude ⁴	thousand 42-gallon barrels	964,290	965,000	923,940	901,550	854,830 ²
Natural gas liquids ^c	do.	60,879 ²	60,000	60,000	50,000	50,000
Refinery products: ^e						
Naphtha	do.	10,017 ²	10,000	10,000	10,000	10,000
Gasoline	do.	28,078 ²	28,000	28,000	28,000	28,000
Kerosene	do.	5,771 ²	5,800	5,800	5,800	5,800
Distillate fuel oil	do.	50,121 ²	50,000	50,000	50,000	50,000
Residual fuel oil	do.	11,806 ²	12,000	12,000	12,000	12,000
Other products	do.	4,194 ²	4,000	4,000	4,000	4,000
Refinery fuel and losses	do.	2,977 ²	3,000	3,000	3,000	3,000
Total	do.	112,964 ²	113,000	113,000	113,000	113,000

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^fRevised. do. Ditto. -- Zero.

¹Table includes data available through October 31, 2010.

²Reported figure.

³Reported as total methane sales.

⁴Excluding natural gas liquids.

TABLE 2
NORWAY: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Aluminum	Hydro Aluminium ANS (Norsk Hydro ASA, 70%)	Smelters at Ardal, Hoyanger, Husnes, Karmoy, and Sunndal	600	
Do.	do.	Plant at Holmestrand	90	
Do.	Elkem Aluminium ANS (Alcoa Inc., 100%)	Smelters at Lista and Mosjoen; anode plant at Mosjoen	282	
Do.	Sør-Norge Aluminium ASA (Norse Hydro A/S, 50%, and Rio Tinto Alcan, 50%)	Smelter at Husnes	165	
Cadmium	Norzink A/S (Outokumpu Oyj, 100%)	Smelter at Eitrheimsneset	0.3	
Cement	Norcem A/S	Plants at Brevik and Kjøpsvik	2,150	
Coal	Store Norske Spitsbergen Grubekompani A/S	Mines at Longyearbyen and Svea	450	
Cobalt	Nikkelverk A/S (Xstrata plc, 100%)	Smelter at Kristiansand	5	
Copper:				
Ore, Cu content	Nikkel og Olivin A/S (Outokumpu Oyj, 100%)	Mine at Narvik	1	
Metal	Nikkelverk A/S (Xstrata plc, 100%)	Smelter at Kristiansand	40	
Dolomite	Franzefoss Bruk A/S	Mine at Ballagen	350	
Do.	Norwegian Holding A/S	Mines at Hammerfall, Logavlen, and Kvitblikk	500	
Feldspar	Franzefoss Bruk A/S	Mine at Lillesand	100	
Ferroalloys	Elkem Salten (Elkem A/S, 100%)	Ferrosilicon plant at Straumen	90	
Do.	Elkem Bjølvefossen (Elkem A/S, 100%)	Ferrosilicon plant at Alvik	60	
Do.	Elkem Thamshavn (Elkem A/S, 100%)	Ferrosilicon plant at Orkanger	60	
Do.	Finnfjord Smelteverk A/S, Rana Metal (FESIL ASA, 100%)	Ferrosilicon plant at Mo i Rana	110	
Do.	A/S Hafslung Metal (FESIL ASA, 100%)	Ferrosilicon plant at Sarpsborg	75	
Do.	Ila og Lilleby Smelteverk (FESIL ASA, 100%)	Ferrosilicon plant at Finnsnes	20	
Do.	Oye Smelteverk (Tinfos Jernverk A/S, 100%)	Silicomanganese plant at Kvinesdal	235	
Iron, metal	Ulstein Jernstoperi A/S	Hordvikneset	10	
Iron ore	Rana Gruber A/S (Norsk Jernverk Holding A/S, 100%)	Mine at Mo i Rana	2,000	
Do.	Northern Iron Ltd.	Bjørnevatn, Fisketin Ost, Hyttemalmen, and Kjelimannsasen mines, northern Norway	7,000	
Do.	Arctic Bulk Minerals A/S	Mine and plant at Kirkenes	1,500	
Lime	Hylla Kalkverk (Nikolai Bruch A/S, 100%)	Verdal/Trondheim Mine and plant	80	
Do.	A/S Norsk Jernverk	Plant at Mo i Rana	48	
Do.	Ardal og Sunndal Verk A/S	More og Romsdal Mine at Surnadal	20	
Do.	Brevik Kalkverk A/S	Alesund Mine at Larsnes	20	
Do.	Mjøendalen Kalkfabrik	Plant at Asen/Drammen	7	
Limestone	Norcem A/S	Dalen, Bjørntvedt, and Kjøpsvik Mines	1,600	
Do.	Vardelskalk A/S (Franzefoss Bruk A/S, 100%)	Sandvika Mine	800	
Do.	Brevik Kalkverk A/S	Visnes and Glaerum Mines	500	
Magnesium	Norsk Hydro ASA (Government, 51%)	Plants at Porsgrunn and Sauda	50	
Manganese, alloys	Eramet SA	do.	500	
Natural gas	million cubic meters	StatoilHydro ASA	Gama, Gullfaks, Sleipner Ost, and Statfjord field	12,270
Do.	do.	Phillips Petroleum Company Norway	Ekofisk field	9,900
Do.	do.	Elf Petroleum Norge A/S	Frigg, Heimdal, and Ost-Frigg fields	5,750
Do.	do.	Norsk Hydro Produksjon A/S	Troll-Oseberg field	2,600
Do.	do.	StatoilHydro ASA	Mikkel field	2,100
Do.	do.	Total S.A., 40%; Petoro S.A., 30%; Marathon Petroleum Norge AS, 20%; Norsk Hydro Produksjon A/S, 10%	Skirne field	1,550
Do.	do.	BP Petroleum Development of Norway	Gyda and Ula fields	1,040
Do.	do.	Esso Norge A/S	Odin field	1,000
Do.	do.	Amoco Norway A/S	Hod and Valhall fields	910
Nepheline syenite	North Cape Mineral A/S (Unimin Corp., 84%)	Mine at Stjernøy	350	
Nickel:				
Ore, Ni content	Nikkel og Olivin A/S (Outokumpu Oyj, 100%)	Mine at Narvik	3	
Do.	Titania A/S (Kronos Norge A/S, 100%)	Mine at Tellnes	0.5	
Metal	Nikkelverk A/S (Xstrata plc, 100%)	Smelter at Kristiansand	85	
Olivine	North Cape Minerals A/S (Sibelco Group, 89%, and Franzefoss A/S, 11%)	Aheim Mine and plant	2,500	
Do.	do.	Stranda Mine and plant	300	
Do.	Franzefoss Bruk A/S	Lefdal Mine at Bryggja	500	

See footnotes at end of table.

TABLE 2—Continued
 NORWAY: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum	42-gallon barrels per day	StatoilHydro ASA (Government, 100%)	Gullfaks, Statfjord, Tommeliten, and Veslefrikk fields	1,069,300
Do.	do.	Norsk Hydro Produksjon A/S	Brage, Mime, and Oseberg fields	566,200
Do.	do.	Phillips Petroleum Company Norway	Ekofisk field	237,500
Do.	do.	Saga Petroleum A/S	Snorre field	170,000
Do.	do.	BP Petroleum Development of Norway	Gyda and Ula fields	155,000
Do.	do.	A/S Norske Shell	Draugenfield	90,000
Do.	do.	ExxonMobil Refining & Supply Co.	Slagen refinery	110,000
Do.	do.	Statoil Mongstad	Mongstad refinery	200,000
Pyrite		Folldal Verk A/S (Norsulfid A/S, 100%)	Mine at Hjerkind	10
Quartzite		Elkem Tana (Elkem A/S, 100%)	Mine at Tana	540
Do.		Elkem Marnes (Elkem A/S, 100%)	Mine at Sandhornoy	200
Do.		Vatnet Kvarts A/S	Mine at Nordland	150
Do.		Snekkevik Kvartsbrudd	Mine at Kragero	110
Silicon metal		Lilleby Metall A/S (FESIL ASA, 100%)	Plant at Trondheim	9
Do.		FESIL ASA	Plant at Holla	50
Steel		Fundia AB (Norsk Jenverk, 50%, and Rautaruukki Group, 50%)	Plants at Christiania, Mandal Stal, Mo i Rana, and Spigerverk	600
Talc		A/S Norwegian Talc (Pluess-Staufer AG, 51%)	Mine and plant at Altermark/Knarrevik and Framfjord	90
Do.		Kvam Minerals A/S	Mine and plant at Kvam	6
Titanium, concentrate		Titania A/S (Kronos Norge A/S, 100%)	Mine at Tellnes	915
Zinc, metal		Norzik A/S (Outokumpu Oyj, 100%)	Smelter at Odda	150
Do., do.	Ditto.			