



2011 Minerals Yearbook

NORWAY

THE MINERAL INDUSTRY OF NORWAY

By Harold R. Newman

Norway's diverse geologic terrain contains a broad spectrum of mineral resources for exploration and development, including metals, industrial minerals, and mineral fuels. Norway's mineral resources include coal, iron ore, natural gas, nickel, petroleum, sand and gravel, stone, and titanium. The country's mines and quarries, the output of which was mostly of regional significance, were located mainly along the coast. The natural gas and petroleum fields were located mainly offshore in the Norwegian area of the North Sea. Even though Norway was not a member of the European Union (EU), it participated in the eurozone single market through the European Economic Area. In 2011, a majority of Norwegians remained opposed to membership in the EU (U.S. Department of State, 2012).

Minerals in the National Economy

The country's natural gas and petroleum sectors continued to contribute significantly to Norway's national economy. The petroleum sector accounted for the largest portion of the country's exports and about 20% of Government revenue. Norway was the world's seventh ranked petroleum exporter. In anticipation of the eventual decrease in natural gas and petroleum production, the Government saved a significant amount of revenue from petroleum exports in a sovereign wealth fund (SWF) valued at more than \$500 billion in 2011. Norway's SWF was the third largest of all the SWFs after those of Luxembourg and Qatar (U.S. Central Intelligence Agency, 2012).

Mineral Trade

Mineral trade was important to the economy in 2011. In terms of the value of exports, petroleum was Norway's most important mineral commodity. Norway was the world's 31st ranked petroleum exporter and was the leading petroleum exporter in Western Europe. The country ranked fifth in the world in natural gas production and was the second ranked exporter of natural gas after Russia (U.S. Energy Information Administration, 2011).

Total U.S. exports to Norway, which were valued at \$3.6 billion, included nonferrous metals, \$213 million; other petroleum products, \$144 million; aluminum and alumina, \$49 million; iron and steel products, \$31 million; and metallurgical-grade coal, \$17 million. Norway's total exports to the United States were valued at \$8.3 billion and included crude petroleum, \$2.2 billion; other petroleum products, \$1.7 billion; fuel oil, \$637 million; liquefied petroleum gases, \$430 million; and nickel, \$306 million (U.S. Census Bureau, 2011a, b).

Production

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

of primary aluminum increased whereas cobalt and petroleum production decreased. Aggregates, limestone, nepheline syenite, and sand and gravel were some of Norway's more economically important industrial mineral raw materials (table 1). The country's production of ilmenite accounted for about 5% of world production (Gambogi, 2012).

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 2011 and their respective mine and (or) plant locations and capacities.

Commodity Review

Metals

Gold.—Store Norske Gull AS, which was a subsidiary of Store Norske AS, was established to explore potential gold reserves on the Norwegian archipelago of Svalbard in the Arctic region. The company announced in 2011 that analyses of excavated material from its 2010 exploration efforts indicated that potential gold reserves existed on Svalbard but it was not known whether the quantities available would make extraction worthwhile. The results were encouraging enough that Store Norske planned to continue exploration efforts in 2012. The exploration for mineral resources in the past had proven fruitful in the northern areas of Norway, such as the discoveries of gold in the Karasjok region of Finnmark County in 2010 (Views and News from Norway, 2011).

Arctic Gold AB of Sweden mined gold and associated copper from its mine at Bidjovagge in northern Norway. Arctic Gold owned 161 mutingers (Government exploration permits) for a total area of 47.7 kilometers (km). These exploration permits covered several areas, including the ore deposit where the Outokumpu Oyj of Finland's mining operation had produced 6,292 kilograms (kg) of gold and 23,752 metric tons (t) of copper between 1985 and 1991. The production from this deposit was from about 10 ore bodies. The ores at Bidjovagge are located along an antiform structure that runs from north to south, where about nine partially mined ore bodies remain. An Australian Joint Ore Reserves Committee (JORC) estimate indicated mineral resources of 1.36 million metric tons (Mt) grading 2.74 grams per metric ton (g/t) gold and 1.21% copper and estimated inferred resources of 30,000 t grading 2.2 g/t gold and 1.1% copper from six mineralized areas (Arctic Gold AB, 2011).

Iron and Steel.—Northern Iron Ltd. of Australia acquired the Sydvaranger iron project in 2007 for the production of magnetite ore concentrate to supply the European market. In 2011, the Sydvaranger project consisted of the Bjernevatn, the Fisketind Ost, the Kjelimannsasen, and the Tverrdalen

deposits. These four magnetite iron deposits, which contained JORC-compliant resources, and an additional 20 prospects with iron mineralization were located across a 12-km strike length. The Sydvaranger Mine was planned to have an annual production rate of 7 million metric tons per year (Mt/yr) that was expected to yield about 2.9 Mt/yr of magnetite concentrate grading 67.5% during a mine life of 19 years (Northern Iron Ltd., 2011).

Sibelco Nordic AS, which was the world's leading olivine producer, announced that it was restarting olivine production at its Raubergvik Mine following a 2-year closure. Initial production of 400,000 metric tons per year (t/yr) was planned beginning in 2012. Sibelco Nordic announced that it also intended to restart its Grubse Mine at Åheim which had a production capacity of 1.9 Mt/yr. Olivine was used as a slag conditioner for blast or electric arc furnaces. It was also used in furnace and ladle linings (Industrial Minerals, 2011c).

Titanium.—In 2011, Nordic Mining ASA received industrial approval from the Naustdal municipality board for its proposed rutile mine development at Engebøfjellet. The 2.5-km-long rutile-bearing eclogite body was reported to contain an estimated mineral resource of 400 Mt of eclogite at an average grade of 3.5% rutile. The rutile is disseminated in the eclogite. The Engebøfjellet eclogite deposit is practically free from the occurrence of the radioactive elements of thorium and uranium, in contrast to many rutile deposits in production elsewhere in the world. Nordic Mining reported that it was planning to produce 100,000 t/yr of rutile and 100,000 t/yr of associated garnet following a 2015 startup of the mine (Industrial Minerals, 2011b).

Industrial Minerals

Norway was a significant regional producer of industrial minerals. It was also among the world's leading producers of olivine and nepheline syenite. Production of aggregate, gravel, and sand for domestic use and export was also important. European countries were an important market for Norway's industrial minerals raw material.

Stone, Crushed.—Nordic Mining ASA announced that it was planning to produce high-quality hydrothermal quartz at its Nesodden deposit near Kvinnherad in western Norway. Nordic Mining was continuing with detailed mapping of the deposit which had estimated mineral resources of 2.7 Mt of crystalline quartz on a 12.6-km-long vein that reaches a depth of 150 meters. The hydrothermal quartz vein is situated in Proterozoic rocks south of the Hardanger Fault Zone (HFZ). The HFZ is a 600-km-long Caledonian ductile shear zone. The quartz has a low content of contaminants, such as alumina, boron, germanium, iron, lithium, and potassium; therefore, it could be regarded as high-purity quartz. Nordic Mining announced that it was planning to market the quartz to the solar cell industry and other electronic manufactures that used high-purity quartz (Industrial Minerals, 2011a)

Mineral Fuels and Other Sources of Energy

The energy situation in Norway was characterized by the abundance of two forms of energy—hydroelectric power and mineral fuel resources. Hydroelectric met most of the bulk of domestic demand for energy, and mineral fuels were produced for export. Most of the hydroelectric potential in Norway was being utilized, and major hydroelectric powerplants were not likely to be developed in the future. Production of natural gas was expected to increase in the future; however, production of petroleum was expected to decrease unless new areas are discovered in the Barents Sea and the Norwegian Sea (Guömundsson, 2011).

Norway had a highly developed natural gas and petroleum sector. Natural gas production had been steadily increasing, and petroleum production was on the decline (table 1). Norway was a leading petroleum producer and exporter in Western Europe. Also, Norway was the world's second ranked exporter of natural gas after Russia and the fifth ranked producer of natural gas (U.S. Energy Information Administration, 2011).

Coal.—Store Norske Spitsbergen Grubekompani A/S (SNSG) was Norway's sole coal producer. The mine was located on the Arctic archipelago of Svalbard, which is situated about midway between mainland Norway and the North Pole. Norway continued to be a net exporter of coal (Store Norske Spitsbergen Grubekompani AS, 2011a).

SNSG announced that it had adopted a business plan for its new mine in Lunckefjell and would submit an application to the Governor of Svalbard for permission to open the new Lunckefjell Mine. Pursuant to approval of the license, development of the Lunckefjell Mine was scheduled to commence in the spring of 2012. The planned start of mining operations was scheduled for the winter of 2013. The Lunckefjell deposit consisted of high-calorific-value coal, which was expected to be suitable for metallurgical purposes. Such coal had a higher market value than coal for energy production (Store Norske Spitsbergen Grubekompani A/S, 2011b).

Natural Gas.—Norway had estimated proven reserves of 2.3 trillion cubic meters of natural gas as of January 2011. 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 (U.S. Energy Information Administration, 2011).

StatoilHydro ASA's development and operation of the Valemon natural gas and condensate field in the North Sea was approved by the Government. Production startup was planned for 2014. The Valemon field was one of StatoilHydro's largest development projects on the Norwegian Continental Shelf (NCS). The recoverable reserves were estimated to be 26 billion cubic meters of natural gas, 5 million cubic meters of condensate, and 1 million cubic meters of natural gas liquids. The cost of the project, including the platform, pipelines, and production wells, was estimated to be \$3.7 billion. Natural gas from the Valemon field would be transported through an existing pipeline from Huldra to Heimdal, from which the natural gas would be exported to European markets (Rigzone, 2011a).

Petroleum.—Norway, which had the largest petroleum reserves in Western Europe, was reported to have 5.67 billion barrels of estimated proven reserves as of January 2011. All the reserves were located offshore on the NCS. The NCS 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, with smaller amounts in the Barents Sea and the Norwegian Sea (U.S. Energy Information Administration, 2011).

The Ministry of Petroleum and Energy announced that it had received applications from 41 companies for Awards in Predefined Areas (APA) in the 21st licensing round and had awarded 24 new production licenses. Mature exploration areas on the NCS continued to attract company interest in the APA. APAs were considered essential to ensure the best possible exploitation of resources on the continental shelf (OilVoice, 2011).

The single geologic structure that stretches between Lundin Petroleum AB of Sweden's Avaldsnes field and StatoilHydro's Aldous field was expected to become Norway's largest oilfield, even though the discovery lies in the North Sea's mature Utsira High area, which had already been drilled for years. The Aldous/Avaldsnes discovery was estimated to contain gross recoverable resources of between 1.7 and 3.3 billion barrels (Gbbbl) of crude oil, which was one of the largest discoveries on the NCS. The discovery was hailed as the third largest find in the North Sea after the Ekofisk and the Statfjord fields, each believed to hold more than an estimated 3 Gbbbl. Aldous and Avaldsnes were thought to be connected with the same oil water contact, pressure regime, oil type, and reservoir and would be developed together, with StatoilHydro as the operator (Petroleum Economist, 2011).

StatoilHydro was awarded 11 of the 24 new production licenses on the NCS. Most of the licenses lie near established infrastructure and could help to extend the lifetime of the installations and open up further exploration opportunities in these areas. StatoilHydro also received eight new operatorships, four of which were located in the Barents Sea, and the other four were located in the Norwegian Sea (Rigzone, 2011b).

Renewable Energy.—The Government was continuing its efforts to develop offshore wind power generation. The use of renewable resources in producing energy is more environmentally friendly than the use of fossil fuels; the renewable resources would appear to have environmental consequences of a smaller intensity and scale. Norway had excellent wind power potential with a range of 8 to 10 meters per second (Norwegian Wind Energy Association, 2011).

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. Continued exploration drilling in frontier areas in the Barents Sea and the Norwegian 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 wind power, are being investigated. Industrial minerals are expected to continue to be important to the nation's domestic economy.

References Cited

- Arctic Gold AB, 2011, Bidjovagge—Arctic Gold AB. (Accessed May 26, 2012, at http://www.arcticgold.se/bidjovagge_eng.html.)
- Gambogi, Joseph, 2012, Titanium mineral concentrates: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 174–175.
- Guömundsson, J., 2011, Natural gas in Norway and the mid-Nordic gas pipeline study: Norwegian University of Science and Technology. (Accessed June 2, 2012, at <http://www.ipt.ntnu.no/~jsg/publikasjoner/paper01a/ReykjavikNaturalGas.html>.)
- Industrial Minerals, 2011a, Nesodden quartz: Industrial Minerals, no. 521, February, p. 57.
- Industrial Minerals, 2011b, Nordic gains rutile plan approval after three-year drive: Industrial Minerals, May 13. (Accessed May 16, 2012, at <http://www.indmin.com?Print.aspx?ArticleId=2824619>.)
- Industrial Minerals, 2011c, Sibelco restarts Norwegian olivine mine after two-year closure: Industrial Minerals, no. 528, September, p. 8.
- Norwegian Wind Energy Association, 2011, The Norwegian Wind Energy Association is working to utilize Norway's large wind resources: Norwegian Wind Energy Association. (Accessed June 2, 2012, at <http://www.nordicenergysolutions.org/solutions/wind-power/industry-organization/norwegian-wind-energy-association>.)
- Northern Iron Ltd., 2011, Profile—Sydvaranger iron project: Northern Iron Ltd. (Accessed February 23, 2011, at <http://www.northerniron.com.au/projects>.)
- OilVoice, 2011, Norwegian Ministry receives record applications for mature areas: OilVoice. (Accessed October 5, 2011, at http://www.oilvoice.com/Norwegian_Ministry_Receives_Record_Applicants_for_Mature_Areas.html.)
- Petroleum Economist, 2011, Norway's largest oil discovery: Petroleum Economist, v. 79, no. 9, November, p. 10.
- Rigzone, 2011a, Norwegian Govt gives go-ahead to Statoil's \$3.7 B Valemon plan: Rigzone. (Accessed June 13, 2011, at http://www.rigzone.com/news/article_pf.asp?a_id=107927.)
- Rigzone, 2011b, Statoil expands presence in Norwegian Continental Shelf: Rigzone. (Accessed January 20, 2011, at http://www.rigzone.com/news/article_pf.asp?a_id=103262.)
- Store Norske Spitsbergen Grubekompani AS, 2011a, SNSG coal operations: Store Norske Spitsbergen Grubekompani AS. (Accessed May 27, 2012, at <http://www.snsk.no/store-norske-spitsbergen-grubekompani.145184.en.html>.)
- Store Norske Spitsbergen Grubekompani AS, 2011b, Store Norske will open new mine in Lunckefjell: Store Norske Spitsbergen Grubekompani AS. (Accessed February 23, 2011, at <http://www.snsk.no/store-norske-will-open-new-mine-in-lunckefjell.482085-1455755.html>.)
- U.S. Census Bureau, 2011a, U.S. exports to Norway by 5-digit end use code: U.S. Census Bureau. (Accessed May 26, 2012, at <http://www.census.gov/foreign-trade/statistics/product/enduse/exports/c4039.html>.)
- U.S. Census Bureau, 2011b, U.S. imports from Norway by 5-digit end use code: U.S. Census Bureau. (Accessed May 26, 2012, at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c4039.html>.)
- U.S. Central Intelligence Agency, 2012, Norway, *in* The world factbook: U.S. Central Intelligence Agency. (Accessed May 11, 2012, at <https://www.cia.gov/library/publications/the-world-factbook/geos/no.html>.)
- U.S. Department of State, 2012, Norway: U.S. Department of State background note. (Accessed May 11, 2012, at <http://www.state.gov/r/pa/ei/bgn/3421.htm>.)
- U.S. Energy Information Administration, 2011, Norway: U.S. Energy Information Administration country analysis brief. (Accessed June 2, 2012, at <http://www.eia.gov/countries/cab.cfm?fips=NO>.)
- Views and News from Norway, 2011, Firm strikes gold on Norway: Views and News from Norway. (Accessed May 26, 2012, at <http://www.newsinenglish.no/2011/01/07/firm-strikes-gold-on-svalbard/>.)

TABLE 1
NORWAY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^e	
METALS						
Aluminum:						
Primary	metric tons	1,304,400	1,368,000	1,090,000	1,060,000 ^f	1,070,000 ²
Secondary ^e	do.	350,000 ²	350,000	350,000	300,000	300,000
Cadmium, smelter	do.	269	178	249	300	309 ²
Cobalt, metal, refined	do.	3,939	3,719	3,510	3,208	3,067 ²
Copper, metal, refined, primary and secondary	do.	34,212	32,000	33,900	32,000 ^e	32,000
Iron and steel:						
Iron ore and concentrate, Fe content		403	477	896	3,105 ²	3,200
Metal: ^e						
Pig iron		100	100	100	100	100
Ferroalloys:						
Ferromanganese		130	130	130	130	130
Ferrosilicomanganese		294	273 ²	250 ²	249	249
Ferrosilicon, 75% basis		170	185 ²	233 ²	230	230
Silicon metal		146	155	150	175	175
Other		60	60	150	150	150
Total		800	803	913	934	934
Steel, crude		740	560	579	514	620 ²
Semimanufactures, rolled		650	600	600 ^e	600 ^e	600
Mercury	metric tons	45	33	30 ^e	25 ^e	25
Nickel:						
Mine output:						
Concentrate ^e	do.	600	900	850	800	800
Ni content	do.	246	377	369	332	340
Metal, primary	do.	87,590	88,741	88,577	88,000	88,000
Titanium:						
Ilmenite concentrate		882	915	671	864	900
TiO ₂ content ^e		390	403	289 ²	371	400
Zinc, metal, primary	metric tons	157,027	145,469	137,622	147,775	150,000
INDUSTRIAL MINERALS						
Cement, hydraulic ^e		1,700	1,800	1,700	1,700	1,800
Clays		319	279	227	230 ^e	230
Feldspar		65	62	71	56	60
Graphite	metric tons	1,400	4,100	4,562	6,270	6,000
Lime, hydrated, quicklime ^e		70	110	100	100	100
Mica, flake ^e	metric tons	1,000	1,000	--	--	--
Nepheline syenite		312	346	270 ^e	327	325
Nitrogen, N content of ammonia		350	350	300	300	300
Olivine sand		2,562	2,554	1,267	2,560	2,600
Sand and gravel		15,325	14,817	13,047	13,011	14,000
Stone, crushed:						
Dolomite		826	744	579	604	600
Limestone		8,770	6,781	6,151	6,129	6,200
Quartz and quartzite		1,067	1,025	1,022	1,055	1,000
Sulfur, byproduct: ^e						
Metallurgical		80	80	80	80	80
Petroleum		20	20	20	20	20
Total		100	100	100	100	100
Talc, soapstone, steatite	thousand metric tons	66	38	23	64	60

See footnotes at end of table.

TABLE 1—Continued
NORWAY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^e	
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades	3,223	3,429	2,437	1,685	1,800	
Gas, natural, marketed ³	million cubic meters	89,700	99,200	99,000	105,280	110,000
Peat, for agricultural use	do.	159	497	500 ^e	500 ^e	500
Petroleum:						
Crude ⁴	thousand 42-gallon barrels	923,940	901,550	854,830	777,450	775,000
Natural gas liquids ^e	do.	60,000	50,000	50,000	50,000	50,000
Refinery products: ^e						
Naphtha	do.	10,000	10,000	10,000	10,000	10,000
Gasoline	do.	28,000	28,000	28,000	28,000	28,000
Kerosene	do.	5,800	5,800	5,800	5,800	5,800
Distillate fuel oil	do.	50,000	50,000	50,000	50,000	50,000
Residual fuel oil	do.	12,000	12,000	12,000	12,000	12,000
Other products	do.	4,000	4,000	4,000	4,000	4,000
Refinery fuel and losses	do.	3,000	3,000	3,000	3,000	3,000
Total	do.	113,000	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 November 30, 2012.

²Reported figure.

³Reported as total methane sales.

⁴Excluding natural gas liquids.

TABLE 2
NORWAY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(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, Karmoy, and Sunndal	600
Do.	do.	Plant at Holmestrand	90
Do.	Elkem Aluminium ANS (Elkem ASA, 50%, and Alcoa Inc., 50%)	Smelters at Farsund and Mosjoen	250
Do.	Sor-Norge Aluminium A/S (Alusuisse Group, 50%, and Hydro Aluminium ANS, 49%)	Smelter at Odda	50
Cadmium	Norzink A/S (Outokumpu Oyj, 100%)	Smelter at Eittheimsneset	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.	Arctic Bulk Minerals A/S	Mine and plant at Kirkenes	1,500

See footnotes at end of table.

TABLE 2—Continued
NORWAY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
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.		Breivik Kalkverk A/S	Alesund Mine at Larsnes	20
Do.		Mjoendalen Kalkfabrik	Plant at Asen/Drammen	7
Limestone		Norcem A/S	Dalen, Bjornvedt, and Kjopsvik Mines	1,600
Do.		Vardelskalk A/S (Franzefoss Burk A/S, 100%)	Sandvika Mine	800
Do.		Breivik 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 fields	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, 40%; Petoro, 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 Valhallfields	910
Nepheline syenite		North Cape Mineral A/S (Unimin Corp., 84%)	Mine at Stjernoy	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		Sibelco Nordic AS	Grubse and Raubergvik Mines and plant at Aheim	2,500
Do.		do.	Stranda Mine and plant	300
Do.		Franzefoss Bruk A/S	Lefdal Mine at Bryggja	500
Petroleum	42-gallon barrels per day	StatoilHydro ASA	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	Draugen field	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 Hjerkin	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 Kvarns A/S	Mine at Nordland	150
Do.		Snekkevik Kvarnsbrudd	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 Jernverk, 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.			