



# 2017–2018 Minerals Yearbook

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## SWEDEN

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# THE MINERAL INDUSTRY OF SWEDEN

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

Sweden is part of the Fennoscandian Shield, an area of crystalline and metamorphic rocks that hosts a variety of mineral deposits and is an important metallic mining district of the European Union (EU). The country's mineral resources and mineral reserves are located in three primary ore regions: the Bothnia-Skelleftea region, which is characterized by base-metal and gold deposits; the Norrbotten region, which is characterized by copper, gold, and iron deposits; and the Bergslagen region, which is characterized by copper, gold, iron, lead, and zinc deposits. In addition to these regions, minerals are also found in Sweden's Dalsland, Norrland, and Smaland regions (Swedish Trade and Invest Council, 2016; Geological Survey of Sweden, 2018a, p. 23).

In 2017, Sweden's real gross domestic product (GDP) increased by 2.4%. The nominal GDP was \$540.5 billion. Sweden was estimated to be the world's fourth-ranked producer of peat, accounting for 8% of world production, and the world's seventh-ranked producer of refined tellurium, accounting for 7% of world production. Sweden produced almost 90% of the EU's iron ore and had the largest lead and zinc production in the EU. Among the EU's producers, Sweden's silver output was the second largest, gold production was the third largest, and copper production was the fourth largest. Sweden also had deposits of minerals that are essential to the high-tech sector, such as graphite, rare-earth metals, and uranium (Swedish Trade and Invest Council, 2016; Geological Survey of Sweden, 2018a, p. 25; 2018b; 2019b; Anderson, 2019; Apodaca, 2019; World Bank, The, 2019).

## Minerals in the National Economy

In Sweden, investment in mineral exploration increased by 38%, to \$68.0 million<sup>1</sup> in 2017 from \$49.5 million in 2016. Most of the exploration took place in Dalarna, Norrbotten, Orebro, and Vasterbotten Counties. By the end of 2017, there were 608 exploration permits, including 178 new permits granted in 2017 (an increase of 59 compared with the number granted in 2016) and 73 extended permits (a decrease of 7 compared with the number granted in 2016). The number of processing concessions in operation increased by 4 compared with those in operation in 2016, to 166. In 2017, Sweden had 13 active mines, of which 9 were metal mines. In 2017, active mines in Sweden (regulated under the Mineral Act) covered 0.02% of the country's surface [90 square kilometers (km<sup>2</sup>)]; mining concessions, 0.03% (130 km<sup>2</sup>); and quarries and gravel pits, 0.07% (270 km<sup>2</sup>). The number of people employed in the Swedish mineral industry increased to 6,696 in 2017 from

6,684 in 2016. After the financial crisis of 2009, ore production reached a record level in 2014, totaling 81 million metric tons (Mt) of ore. In 2017, ore production, including that of iron and nonferrous ores, increased by 4% and reached 78 Mt. Sales in the mineral sector amounted to \$4.16 billion (Geological Survey of Sweden, 2018a, p. 23, 52, 55–57; 2019a, b).

In 2017, the total value of mineral exports increased by 21.9% (by 3.9% in terms of volume) compared with that of 2016; the export value of iron ore and concentrates increased by 41.4% (the percentage in terms of volume was not reported), nonferrous metals increased by 24.3% (6.3% in terms of volume), and iron and steel increased by 18.6% (3.4% in terms of volume). The total value of mineral fuels and electricity exports increased by 26.1% (2.4% in terms of volume); the export value of petroleum products increased by 21% (a 3.9% decrease in terms of volume). The total value of mineral imports increased by 19.2% (4.8% in terms of volume); the import value of iron and steel increased by 24.7% (8% in terms of volume), metalliferous ores and metal scrap increased by 20.7% (a 4.8% decrease in terms of volume), and nonferrous metals increased by 18.1% (2.8% in terms of volume). The total value of mineral fuels and electricity imports increased by 23.0% (a 0.2% decrease in terms of volume); the import value of crude petroleum oils increased by 26.9% (a 1.1% decrease in terms of volume) and the value of petroleum products increased by 21.8% (4.6% in terms of volume). In total, Sweden's exports and imports of goods, in terms of value, increased by 9.6% and 8.7%, respectively, compared with that of 2016. Sweden exported mostly machinery, followed by motor vehicles, paper products, pulp and wood, iron and steel products, and chemicals. Its leading export partners included Germany (which received 11.0% of Sweden's total exports), Norway (10.2%), Denmark, Finland, and the United States (6.9% each), the United Kingdom (6.2%), and the Netherlands (5.5%). Sweden imported mostly machinery, followed by petroleum and petroleum products, chemicals, motor vehicles, iron and steel, foodstuffs, and clothing. The leading import partners were Germany (which supplied 18.7% of Sweden's total imports), the Netherlands (8.9%), Norway (7.7%), Denmark (7.2%), and China (5.5%) (Geological Survey of Sweden, 2018a, p. 32; Statistics Sweden, 2018a; U.S. Central Intelligence Agency, 2018).

## Government Policies and Programs

The Swedish Minerals Act of 1991 (No. 45), which came into force on July 1, 1992, is the main law in Sweden that regulates the mineral industry and sets procedures for acquiring exploration and mining permits. The Mining Inspectorate of Sweden, which is a unit of the Geological Survey of Sweden, is responsible for issuing permits for exploration and mining. The Mining Inspectorate is headed by the Chief Mining Inspector,

<sup>1</sup>Where necessary, values have been converted from Swedish Krona (SEK) to U.S. dollars (US\$) at an annual average exchange rate of SEK8.894=US\$1.00 for 2017.

who makes decisions on matters related to the Swedish Minerals Act. The extraction of minerals also must be in accordance with the environmental requirements of the Swedish Environmental Code of 1998 (No. 808) and the Swedish Planning and Building Act of 2010 (No. 900) (Mining Inspectorate of Sweden, 2018).

## Production

In 2017, the most significant increases in mineral commodity production were reported for the following commodities: dolomite, by 38%; copper (mine, Cu content), 32%; granite, 29%; gold (mine, Au content), 22%; iron ore (Fe content), 18%; limestone, 15%; copper (smelter, primary), 14%; and ferrochromium, 13%. The most significant decrease was reported in the production of peat (fuel use), by 23%. Data on mineral production are in table 1.

## Structure of the Mineral Industry

The Swedish mineral industry consisted mostly of privately owned companies. The Government owned 100% of the shares in major mining operator Luossavaara-Kiirunavaara AB (LKAB), which was the leading iron ore producer in Europe. The Government also owned 48% of the SSAB AB (SSAB) steel operation. Boliden AB (Boliden) was Sweden's leading privately owned mineral producer, in terms of the value of production. Boliden produced copper, gold, lead, and silver, along with sulfuric acid, zinc clinker, and several other metals as byproducts. Its main operations were the Aitik and the Kankberg Mines and a smelter and refinery at Ronnskar. Lundin Mining Corp., which was a Canadian base-metals mining company, managed the Zinkgruvan Mine located in south-central Sweden. The company produced lead, silver, and zinc. Cementa AB, which was wholly owned by HeidelbergCement AG of Germany, was the only cement producer in Sweden. The company had three plants located in Degerhamn, Skovde, and Slite. Nordkalk AB, which was part of the Rettig Group of Germany, was a leading international producer of concentrated calcite, dolomite, limestone, quicklime, and slaked lime as well as wollastonite. In Sweden, Nordkalk had five quarries located in Ignaberga, Koping, Orsa, Storugns, and Uddagarden (Boliden AB, 2018, p. 27; HeidelbergCement Group, 2018; Lundin Mining Corp., 2018; Luossavaara-Kiirunavaara AB, 2018a; Nordkalk Corp., 2018). Table 2 is a list of Sweden's major mineral industry facilities.

## Commodity Review

### Metals

**Copper.**—In 2017, copper production (mine output, Cu content) in the country totaled 104,594 metric tons (t), which was an increase of about 32% compared with 79,247 t (revised) in 2016, making it the highest annual production on record. The Aitik Mine, which was owned and operated by Boliden, continued to be Sweden's largest open pit copper mine. The mine also produced gold and silver. The production of copper concentrate (Cu content) at the Aitik Mine increased to 97,573 t in 2017 from 70,682 t in 2016. The increase was attributed to improved crusher availability, an increase in the

milled volume to 39 Mt in 2017 from 36 Mt in 2016, and an increase in the copper grade to 0.28% from 0.22% in 2016. In 2017, Boliden started expansion projects to increase ore production at the Aitik Mine. Production was expected to increase by 25% to 45 million metric tons per year (Mt/yr) starting in 2020. The company was building a new crusher station, which would come online in 2018. Having a facility with two spindle crushers would increase the availability and stability of production. The company also reported production increases at all its mines located in Vasterbotten (the Boliden Area)—the Kankberg, the Kristineberg, and the Renstrom underground mines, and the Mauriliden open pit mine, where more than 1.8 Mt of ore at an average grade of 0.38% copper was processed in 2017 (Boliden AB, 2018, p. 27–29, 33; Geological Survey of Sweden, 2018a, p. 41, 42).

**Gold.**—In 2017, the production of gold in Sweden totaled 7,858 kilograms (kg), which was an increase of 22% compared with 6,463 kg (revised) in 2016. The increase was primarily owing to higher production at the Aitik Mine, which produced 39 Mt of ore at an average grade of 0.13 gram per metric ton (g/t) gold. Mines in the Boliden Area processed more than 1.8 Mt of ore at an average grade of 1.9 g/t gold (Boliden AB, 2018, p. 33; Geological Survey of Sweden, 2018a, p. 41, 42).

Mandalay Resources Corp. of Canada (Mandalay) acquired the Bjorkdal gold mine in 2014. In 2017, the mine recorded the highest gold production under the new ownership, which amounted to 1,929 kg of gold—a 28.9% increase compared with the 1,497 kg of gold produced in 2016. The increase was attributed to larger quantities of high-quality ore delivered to the processing plant as a result of continued grade control and debottlenecking the operation. Plant recovery increased by 1.2% as the development of the flotation circuit in the plant was completed. Bjorkdal was a combined open pit and underground mine located in northern Sweden; approximately 50% of the plant feed was delivered from underground. The average gold grade was 1.75 g/t in 2017 compared with 1.38 g/t in 2016 (Mandalay Resources Corp., 2018a, p. 3; 2018b, p. 1-1).

**Iron Ore and Iron and Steel.**—In 2017, LKAB produced 27.2 Mt of iron ore and continued with its planned 5% per year production increase until 2021, with a starting point of 24.5 Mt in 2015. The company remained Europe's leading producer of iron ore, and its production represented 78% of all iron ore production in Europe. LKAB's mines and processing plants were located inside the Arctic Circle in Kiruna, Malmberget, and Svappavaara. Following several years of environmental litigation, the Mertainen Mine—one of the three mines in Svappavaara, Norrbotten County—was granted permission to operate and started production in 2016. In December 2016, however, LKAB announced that the mine would be mothballed until market circumstances improve. In 2017, the Mertainen Mine remained closed (Geological Survey of Sweden, 2018a, p. 23; Luossavaara-Kiirunavaara AB 2018a, b).

SSAB started a new research project in September 2017. According to the company, replacing parts of black coal with biocoal in blast-furnace-based manufacturing of steel could reduce CO<sub>2</sub> emissions by up to 30%. The implementation of operational testing was planned for 2018 and 2019 (SSAB AB, 2018, p. 62).

## **Mineral Fuels and Other Sources of Energy**

**Peat.**—The quantity of production of fuel peat in 2017 was one of the lowest in 30 years. Production decreased by 23% compared with that of 2016 owing primarily to weather conditions in the summer, which were less favorable to peat harvesting than in the several previous years. (Hot and dry weather is favored for harvesting peat.) There were 69 peat fields in production in 2017 compared with 79 in 2016. The largest peat energy reserves are located in Jamtland and Kronoberg Counties. In 2017, 1.86 million cubic meters (about 2.4 Mt) of peat was harvested, of which 1.1 million cubic meters (about 957,000 t) was used for energy conversion. In Sweden, the harvesting and use of peat for energy purposes became popular in the early 1980s as a consequence of the increase in energy prices (Geological Survey of Sweden, 2018a, p. 69; Rülcker, 2018; Statistics Sweden, 2018b).

### **MINERAL INDUSTRY HIGHLIGHTS IN 2018**

In 2018, Sweden's real GDP increased by 2.2%. The nominal GDP was \$556.1 billion. Sales in the Swedish mineral industry increased by 5% and amounted to \$6.7 billion, which was the highest since 2012, and resulted in increased profit, as the production costs stayed about the same. The total profit in the mineral industry in 2018 increased by 7% to \$1.2 billion. Whereas exports of all mineral commodities decreased slightly in terms of volume, exports in terms of value increased by 7% and amounted to \$13.8 billion as a result of increased prices for metals and ores. The leading exported mineral commodity was iron ore. Other major exported mineral commodities included steel products, base and precious metals, and industrial and building minerals. Imports increased both in terms of volume and value, by 19% and 16%, respectively, and amounted to \$10.0 billion. The major imported mineral commodities included aggregates, aluminum, cement, clay, coal, coke, copper ore, fertilizer, iron, kaolin, lime, nickel, peat, phosphorus, and steel. Imports of mineral commodities used in building increased the most owing to strong Swedish construction activity (Geological Survey of Sweden, 2019c, p. 38, 39, 86; World Bank, The, 2019).

In 2018, investment in mineral exploration increased by 22%, to \$88.7 million.<sup>2</sup> Approximately 20% of this amount was invested in exploration for iron ore. A significant amount of the investment in mineral exploration went to base metals and gold. Most exploration took place in Vasterbotten County and Norrbotten County. Boliden and LKAB accounted for 64% of the total Swedish exploration investment. The number of people employed in the Swedish mineral industry increased to 6,996 in 2018, or by 4.5% compared with that of 2017. By the end of 2018, 623 exploration permits had been issued compared with 608 by the end of 2017; of this number, 152 were newly granted permits, which was an increase of 15 compared with those granted in 2017, and 86 were permit extensions, which was a decrease of 4. The number of mineral mining concessions

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<sup>2</sup>Where necessary, values have been converted from Swedish krona (SEK) to U.S. dollars (US\$) at an annual average exchange rate of SEK8.703=US\$1.00 for 2018.

increased by 1, to 167. In 2018, Sweden had 14 active mines, of which 13 were metal mines (Geological Survey of Sweden, 2019c, p. 32, 55).

In 2018, the most significant increases were reported in the production of the following commodities: peat (for fuel use), by 71%; refined tellurium, 28%; feldspar, 27%; cement, 18%; and iron (Fe content), 13%. The most significant decreases were reported in the production of dolomite (crushed), by 19%; and granite (dimension), 11%. Data on mineral production are in table 1.

In 2018, production of iron ore amounted to about 35.8 Mt, and that of nonferrous ore, to about 45.4 Mt. The total ore production, including iron and nonferrous ores, increased by 4% to 81.2 Mt, reaching a new record. Previously, ore production had reached a record in 2014 with 80.8 Mt of ore produced (Geological Survey of Sweden, 2019c, p. 25, 29).

The iron ore mine in Kaunisvaara (Pajala), Norrbotten County, reopened in 2018 after being closed for 3 years. Northland Resources AB started mine operation in 2012, but in December 2014, the company announced that it had failed to refinance its mining business and filed for bankruptcy. In 2017, Kaunis Iron AB bought Northland Resources' assets and Kaunis company restarted operations on July 18, 2018. Kaunis was expecting to reach full production capacity in the spring of 2019, and the annual production was expected to be 2.0 Mt of finished ore. According to the company, known mineralized material in the deposits amounted to 130 Mt with an average iron content of 34% (Barents Observer, 2014; Geological Survey of Sweden, 2019c, p. 40; Kaunis Iron AB, 2019).

In 2018, Boliden processed 1.7 Mt of ore containing about 48 g/t of tellurium from the Kankberg gold mine. The production of tellurium content in concentrate amounted to 45 t, which was a 28% increase compared with that of 2017 (table 1; Boliden AB, 2019, p. 110; Geological Survey of Sweden, 2019c, p. 44).

To expand its operations and increase milled volume output to 45 Mt/yr from 39 Mt/yr at the Aitik Mine, Boliden acquired nine new haul trucks, and in April, after almost 2 years of construction, completed the new crusher. In 2018, the Aitik Mine milled about 38.5 Mt of ore, which was a slight decrease from that of 2017 owing to a decline in the availability of the new crusher at the beginning of the year. The company was expecting to reach its new production capacity by the end of 2020 (Boliden AB, 2019, p. 52, 61, 112; International Mining, 2019).

The total peat production increased by almost 40% in 2018 compared with that of 2017. Although the production of fuel peat increased by approximately 71% compared with that of 2017, the production was in line with the average production of the 2000s. The land area used for the extraction of peat in 2018 increased by 25%, and there were 77 peat fields in production compared with 69 in 2017 (Geological Survey of Sweden, 2019c, p. 75).

### **Outlook**

The Swedish GDP is predicted to increase by 1.2% in 2019. Although mining contributes only a small part of the country's GDP, the mineral industry's share of the GDP is expected to increase and to contribute more to Sweden's economy in the medium and long terms. Significant ore mineral reserves together with leading mining companies and a well-developed



mining equipment industry create positive conditions for future growth. The Swedish Government's goal is to strengthen its position as the EU's leading mining country, as expressed in Sweden's strategy for the mineral sector, called "Sweden's Minerals Strategy—For Sustainable Use of Sweden's Mineral Resources That Creates Growth Throughout the Country." Sweden's standing as a significant supplier of iron ore in the EU will be further solidified with the reopening of the iron ore mine in Kaunisvaara and the increase in the milled volume output at the Aitik Mine. Exploration permits covered only approximately 4% of the land surface as of 2018. New advanced technologies and continued increases of investment in mineral exploration will provide opportunities for exploration and new discoveries in the country in the future (Ministry of Enterprise, Energy and Communications, 2013; International Monetary Fund, 2019).

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TABLE 1  
SWEDEN: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2014	2015	2016	2017	2018
<b>METALS</b>					
Aluminum, metal, primary	113,000	116,000	124,000	123,000	125,000
<b>Copper:</b>					
Mine, Cu content	79,681	75,113 <sup>r</sup>	79,247 <sup>r</sup>	104,594	106,140
<b>Smelter:</b>					
Primary	145,300 <sup>r</sup>	137,400 <sup>r</sup>	131,500 <sup>r</sup>	150,000	150,000
Secondary	65,200 <sup>r</sup>	61,800 <sup>r</sup>	62,200 <sup>r</sup>	60,000	60,000
<b>Refinery:</b>					
Primary	152,100 <sup>r</sup>	144,200	145,100	153,600	157,100
Secondary	65,200 <sup>r</sup>	61,800	62,200	65,800	67,300
Ferroalloys, ferrochromium	67,000 <sup>e</sup>	90,480 <sup>r</sup>	81,900 <sup>r</sup>	92,390	86,910
Gold, mine, Au content kilograms	6,849	6,030	6,463 <sup>r</sup>	7,858	7,866
<b>Iron ore, mine:</b>					
Gross weight thousand metric tons	25,700 <sup>r</sup>	24,500 <sup>r</sup>	26,900	31,764	35,774
Fe content do.	15,900 <sup>r</sup>	15,200 <sup>r</sup>	16,700 <sup>r</sup>	19,694	22,200
<b>Iron and steel:</b>					
Pig iron do.	3,078	2,865	3,078	3,111	3,172
Raw steel do.	4,540 <sup>e</sup>	4,370 <sup>e</sup>	4,617	4,926	4,654
<b>Lead:</b>					
Mine, Pb content	70,848	79,354	76,066 <sup>r</sup>	71,112	64,751
<b>Refinery:</b>					
Primary	69,000 <sup>e</sup>	79,354	75,830	71,112	64,751
Secondary	44,000 <sup>r</sup>	44,800 <sup>r</sup>	46,000	50,200	47,200
<b>Silver:</b>					
Mine, Ag content kilograms	382,611	479,700	515,039	488,135	471,325
Refinery, metal, primary do.	440,000	539,000	498,686 <sup>r</sup>	467,500	443,624
Tellurium, refinery do.	30,917	33,000	38,680 <sup>r</sup>	34,979	44,641
Zinc, mine, Zn content	221,882	246,983 <sup>r</sup>	258,264 <sup>r</sup>	250,960	234,321
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic <sup>e</sup> thousand metric tons	2,500	2,800	2,800	2,800	3,300
Feldspar, mine, crude and ground, marketable do.	27 <sup>e</sup>	21	22 <sup>r</sup>	22	28
Lime <sup>e</sup> do.	650	640	649	649	649
<b>Stone:</b>					
<b>Crushed:</b>					
Dolomite do.	379	379	344 <sup>r</sup>	473	385
Limestone do.	6,791	6,715 <sup>r</sup>	6,949 <sup>r</sup>	6,757	6,649
<b>Dimension:</b>					
Granite do.	88	88	89 <sup>r</sup>	115	102
Limestone do.	22	22	26 <sup>r</sup>	30	33
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
<b>Peat:</b>					
Fuel use thousand metric tons	1,934	992 <sup>r</sup>	1,240 <sup>r</sup>	957	1,639
Horticultural use do.	1,331 <sup>r</sup>	1,115 <sup>r</sup>	1,476 <sup>r</sup>	1,464	1,412
<b>Petroleum, refinery:</b>					
Distillate fuel oil thousand 42-gallon barrels	54,750	54,700 <sup>e</sup>	54,700 <sup>e</sup>	54,700 <sup>e</sup>	54,700 <sup>e</sup>
Gasoline do.	40,880	40,800 <sup>e</sup>	40,800 <sup>e</sup>	40,800 <sup>e</sup>	40,800 <sup>e</sup>
Jet fuel do.	1,971	1,970 <sup>e</sup>	1,970 <sup>e</sup>	1,970 <sup>e</sup>	1,970 <sup>e</sup>
Liquefied petroleum gas do.	4,745	4,700 <sup>e</sup>	4,700 <sup>e</sup>	4,700 <sup>e</sup>	4,700 <sup>e</sup>
Residual fuel oil do.	20,440	20,400 <sup>e</sup>	20,400 <sup>e</sup>	20,400 <sup>e</sup>	20,400 <sup>e</sup>
Other do.	25,915	25,900 <sup>e</sup>	25,900 <sup>e</sup>	25,900 <sup>e</sup>	25,900 <sup>e</sup>
Total do.	149,000 <sup>r</sup>	148,000 <sup>r,e</sup>	148,000 <sup>r,e</sup>	148,000 <sup>e</sup>	148,000 <sup>e</sup>

See footnotes at end of table.

TABLE 1—Continued  
SWEDEN: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

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<sup>6</sup>Estimated. <sup>7</sup>Revised. do. Ditto.

<sup>1</sup>Table includes data available through September 25, 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.

<sup>2</sup>In addition to the commodities listed, secondary aluminum, clay, synthetic diamond, manufactured fertilizer, manufactured gas, molybdenum, quartzite, selenium, slate, steel semimanufactures, and unspecified dimension stones may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2  
SWEDEN: 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		Kubikenborg Aluminium AB (KUBAL) (United Company RUSAL, 100%)	Smelter at Sundsvall	134
Cement		Cementa AB (HeidelbergCement Group, 100%)	Plants at Degerhamn, Skovde, and Slite	3,400
Copper:				
Ore, Cu content		Boliden AB	Mines at Aitik, Garpenberg, Kankberg, Kristineberg, Maurliden, Ostra, and Renstrom	NA
Metal		do.	Smelter and refinery at Ronnskar	240
Feldspar		Berglins Malm & Mineral AB (Omya GmbH)	Mines at Beckegravan, Hojderna, and Limbergsbo	50
Do.		Silbelco Nordic AS	Mines at Forshammar	30
Ferroalloys		Vargon Alloys AB (Yildrim Group 100%)	Plant at Vargon	255
Gold:				
Mine, Au content	kilograms	Mandalay Resources Corp.	Björkdal Mine, Skelleftea District	1,200
Do.	do.	Boliden AB	Mines at Aitik, Akerberg, Kankberg, Kristineberg, and Renstrom	4,000
Metal	do.	do.	Smelter and refinery at Ronnskar	15,000
Iron ore		Kaunis Iron AB	Mine at Kaunisvaara	15,000
Do.		Luossavaara-Kiirunavaara AB (LKAB) (Government, 100%)	Mines at Kiruna, Malmerget and Svappavaara <sup>1</sup>	50,000
Iron and steel		SSAB AB (Government, 48%)	Steelworks at Lulea and Oxelosund	3,900
Kyanite		Svenska Kyanite AB (Svenska Mineral AB, 100%)	Quarry at Halskoberg	10
Lead:				
Ore, Pb content		Boliden AB	Mines at Garpenberg and Renstrom	100
Do.		Lovisagravan AB	Lovisa Mine	3
Do.		Lundin Mining Corp.	Zinkgruvan Mine at Ammeberg	20
Metal		Boliden AB	Smelter and refinery at Ronnskar	30
Do.		do.	Smelter at Bergsoe	50
Lime		Svenska Minerals AB	Plants at Rattvik and Boda	250
Petroleum, refined	42-gallon barrels per day	AB Nynas Petroleum	Refineries at Gothenburg and Nynashamn	50,000
Do.	do.	Preem AB (Corral Petroleum Holdings AB, 100%)	Refineries at Lysekil and Goteborg	345,000
Do.		St1 Group Oy	do.	82,000
Silver:				
Ore, Ag content	kilograms	Lundin Mining Corp.	Zinkgruvan Mine at Ammeberg	25,000
Metal	do.	Boliden AB	Smelter and refinery at Ronnskar	408,000
Stone:				
Limestone		Kalproduction Storugns AB (Rettig Group, 100%)	Mines at Gotland Island	3,000
Do.		Nordkalk AB	Quarries at Ignaberga, Koping, Orsa, Storugns, and Uddagarden	3,200
Marble	cubic meters	Borghamnsten AB	Quarry at Askersund	15,000
Tellurium	kilograms	Boliden AB	Refinery at Kankberg	50,000
Zinc, ore, Zn content		do.	Mines at Garpenberg, Laisvall, Langdal, and Renstrom	112
Do.		Lovisagravan AB	Lovisa Mine	3
Do.		Lundin Mining Corp.	Zinkgruvan Mine at Ammeberg	78

Do., do. Ditto. NA Not available.

<sup>1</sup>In December 2016, LKAB suspended operations at the Mertainen Mine in Svappavaara.