### THE MINERAL INDUSTRY OF

# **SWEDEN**

### By Harold R. Newman

Sweden is endowed with significant deposits of iron ore, certain base metals (copper, lead, and zinc), and several industrial minerals, including dolomite, feldspar, granite, ilmenite, kaolin, limestone, marble, quartz, and wollastonite. The country is well known for the production of high-quality steel. Sweden relies heavily on hydrocarbon imports, due to inadequate indigenous resources; as a result, the country has developed substantial nuclear and hydroelectric power. (See table 1.)

The mineral industry accounted for about 13% of Sweden's exports, about one-third of which was steel. Because Sweden lacked a zinc smelter, most zinc ore and concentrate, one of the largest mineral exports, was shipped to Norway. The country imported most of the raw material required to operate its copper and lead smelter. (*See table 2.*)

Sweden has a high recycling rate (90%) for aluminum cans because of close cooperation between its producer of can stock (Finspong), the can manufacturer (PLM Fosie), the collection companies (Returpak and PLM Fosie), and the secondary smelters (Gotthard Aluminum and Finspong). Consequently, secondary aluminum production has increased in the past few years.

After acceding to the European Union (EU) on January 1, 1995, Sweden was liberalizing its mineral policy to parallel EU standards. The new policy, based on the Swedish Minerals Act, 1992, eliminated laws requiring foreign companies to get special permission for prospecting, annulled the State's participation in mining enterprises (so-called "crown shares"), and revoked all taxes and royalties, except for a 28% corporate tax, one of the lowest in Europe. Also, some industrial minerals will no longer be the property of the landowner.

Furthermore, an exploration permit holder will not automatically have the right to an exploitation permit. Adequate financial and technical capabilities must be proven. The State Mining Property Commission was closed and previous restrictions on real estate ownership were eliminated, thus allowing foreign participation in the mining of a wide range of minerals. Domestic Swedish firms are no longer in a more favorable position than foreign investors.

Exploration interest was significant with a number of Australian, Canadian, and European mining companies applying for permits. The Swedish Parliament has ceased funding of exploration activities by domestic companies and the responsibility for exploration has been turned over completely to the private sector. Exploration is by permit that is valid for a period of 3 years. Extensions may be granted up to a maximum of 10 years.

Trelleborg AB announced it planned to sell a majority stake in its wholly owned subsidiary Boliden Mineral AB. Trelleborg was expected to sell shares representing between 51% and 56% of Boliden in an initial public offering and to list the company in Canada on the Toronto Stock Exchange.

The company is engaged in mining/milling operations in Sweden, Spain, and Saudi Arabia, and smelting/refining operations in Sweden and Norway. Trelleborg could receive up to \$660 million<sup>1</sup> from the sale (Mining Journal, 1997a).

Boliden's Aitik copper mine, near Gällivare, is also Sweden's largest gold mine. Aitik is one of the lowest grade and most northerly copper mines in the world and is one of Europe's largest open pit mines. The ore occurs in a shear zone which can be followed from Kiruna, Sweden, to Lake Ladoga in Russia. Aitik is primarily a copper mine. However, gold and silver byproducts contribute substantially to the profitability of the Aitik copper mine. In 1996, the company planned to mine about 33 million tons of material and process 17 million tons of ore with head grades of 0.32% copper, 0.18 grams per ton (g/t) of gold, and 3.57 g/t silver (Mining Magazine, 1996).

Western Europe's largest gold mine, Terra Mining AB's open pit Bjorgdal Mine, increased production to almost 2,600 kilograms (kg) in 1996. A plant upgrade was completed that will allow planned production in 1997 to further increase to more than 3,000 kg. Large scale processing was helping to keep production costs down. Terra was continuing its exploration activities. The company reported that this has increased estimated proven plus probable reserves to 19,265,000 metric tons (t) grading an average of 2.21 g/t gold. Terra was taken over by Williams Resources Inc. of Canada in December, 1996 (Williams Resources Inc.1997, William Resources announces updated reserves and exploration results from Terra Mining, accessed February 24, 1997, on the World Wide Web at URL http://www.info-mine.com/william/February 20, 1997).

Terra was continuing exploration on the Barsele gold project. The project was reported to host estimated resources of 17.6 million tons of ore averaging 1.8 g/t gold. Mineralization occurs within a granodiorite intrusive that ranges from 50 to 200 meters in width and extends for an east-west strike length of 8 kilometers (km). The orebody is considered to be potentially amenable to open pit mining methods (Northern Miner, 1997).

Luossavaara-Kiirunavaara AB (LKAB) operated mostly at full capacity in 1996. Experience with the new concentration

<sup>&</sup>lt;sup>1</sup>Where necessary, values have been converted from Canadian dollars (C\$) to U.S. dollars (\$) at the rate of C\$1.00=US\$1.36.

and pelletizing plants in Kiruna has been positive. The concentrator was LKAB's first use of primary autogenous grinding. The new grate kiln-type pellet plant has a capacity of 4 million metric tons per year (Mt/yr). This increased LKAB's previous capability of 10.5 to 14.5 Mt/yr of pellets. The Kiruna mining complex consisted of three open pit mines, Kiirunavaara, Leveaniemi, and Luossavaara (Engineering and Mining1996a).

LKAB's Malmberget operations started a major project with construction of a new main level at 1,100 m, some 250 m below the present level at 815 m. In addition, there are projects to increase pellet production, to start production and processing of hematite ores, and to build new facilities for loading and servicing the trains that transport the products to Luleå (Engineering and Mining Journal, 1996b).

Svenskt Stal AB (SSAB) is Scandinavia's leading manufacture of commercial steel. Most production consisted of steel sheets and plates, produced mainly in three SSAB subsidiaries at Luleå, Borlänge, and Oxelösund. The SSAB Oxelosund AB complex consisted of a coking plant, blast furnaces, a steel mill, and a continuous casting line for slabs and heavy plate of up to 155 millimeters in thickness. The 2-Mt/yr SSAB Tunnplant AB was an integrated steel company with a coking plant, blast furnaces, and continuous casting line for the manufacture of slab and heavy plate.

In midyear 1995, the Zinkgruvan Mine, the largest zinc mine in Sweden, operated by Ammeberg Mining AB, was sold by its owner, Union Minière (UM) of Belgium, to North Mining Svenska AB, a subsidiary of the Australian company, North Limited. Currently the operation is producing about 60,000 metric tons per year (t/yr) of zinc in concentrate. The company reported that it plans to increase this to 80,000 t/yr over the next three years (Mining Journal, 1997b).

There have been extensive changes in ownership reported during the last 5 to 6 years in the industrial minerals area. This has been an expanding sector in Sweden and a significant number of deposits were owned or controlled by international owners.

Woxna Graphite AB has obtained the mining rights to four graphite deposits near Edsbyn, central Sweden. Woxna started production in 1996 in a new 140,000 t/yr capacity plant. The estimated initial production would be 10,000 t/yr to 14,000 t/yr of flaky graphite with a carbon content of 94% (Industrial Minerals, 1996b).

Limestone occurs in layers of different geologic ages and is found throughout the country. About one-half of the industrial mineral value was contributed by limestone. A significant amount of limestone production was by Kalproduktion Storugns AB, owned by Nordkalk AB, a company within the Finnish Partek OY Group. The company mined about 2.8 million tons at Storugns on the Baltic Island of Gotland. About 40% of this was consumed by the metallurgical industry while 30% ended up as burnt lime. Other uses included the chemical and sugar industries and environmental applications. About 55% of total production was exported.

Borghamnsten AB has quarries and a factory equipped to saw raw blocks of marble. The company opened up a new quarry at Askersund near the famous Glanshamar locality from where it mines its raw marble. Annual quarry production is 14,000 cubic meters (m<sup>3</sup>) which gives about 2,000 m<sup>3</sup> of marble as raw blocks. About 26% of the marble is lost in the sawing process (Industrial Minerals, 1996b).

Swedish peatland covers 6.4 million hectares (ha) which is about 15% of the country's total land area. About 865,000 ha were considered suitable for commercial production. In 1996, almost 8,000 ha was in production, most of which was used for fuel: the remainder was used for agriculture. The 80% used for fuel purposes was mainly in cogeneration plants for electric power and district heating. Some local authorities and industrial enterprises used peat as fuel to produce power and heat.

Sweden has a well-developed transportation system, especially in the southern part of the country. There were 97,400 km of highway and 12,000 km of railroads. About 65% of waterborne cargo was handled by the five biggest ports, Goteborg, Helsingborg, Luleå, Stockholm, and Malmo. Truck ferries have become an important form of transportation.

#### **References Cited**

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#### **Major Source of Information**

Geological Survey of Sweden, Mineral Resources Information Office, Skolgatan 4 93070 Malå, Sweden

# TABLE 1 SWEDEN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1992	1993	1994	1995	1996 e/
METALS						
Aluminum metal:						
Primary		77,210	82,363	83,900	94,000 r/	100,000
Secondary		16,500	19,000	33,000	49,000 r/	47,000 2/
Copper:						
Mine output, Cu content		89,145	88,909	79,384	83,600	71,700 2/
Metal:						
Smelter:						
Primary		77,804	76,298	79,080	80,000 r/	100,000
Secondary		20,596	22,102	19,620	30,000 r/	25,000
Total		98,400	98,400	98,700	110,000 r/	125,000
Refined:						
Primary		71,634	76,300	77,300	78,000 r/	90,000
Secondary		30,000 e/	22,486	25,750	27,100 e/	37,000
Total		101,634	98,786	103,050	105,100 r/	127,000
Gold:		,	*	,	,	,
Mine output, Au content	kilograms	6,164	6,548	6,364	6,500 r/	6,100
Metal, primary 3/	do.	5,366	7,278	7,998	8,200 r/	10,100
Iron and steel:		-,	.,	.,	-,=	.,
Iron ore concentrate and pellets:						
Gross weight	thousand tons	19,277	18,728	19,663	21.634	21,020 2/
Fe content	do.	12,337	11,901	12,587	13,880	14,714 2/
Metal:		,	,	,		,,
Pig iron and sponge iron	do.	2,740	2,850	3,040	3,020	3,255 2/
Ferroalloys:	<u>uo.</u>	2,710	2,000	5,010	3,020	3,235 2/
Ferrochromium		133,300	127,543	134,076	130,170 r/	138,000
Ferrosilicon		15,500	20,400	22,000	20,000 e/	21,000
Total		148,800	147,943	156,076	150,170 r/	159,000 2/
Steel, crude	thousand tons	4,356	4,591	4,952	4,953 r/	4,910 2/
Semimanufactures, rolled e/	do.	4,000	4,000	4,000	4,529 r/ 2/	4,457 2/
Lead:	<u>uo.</u>	4,000	4,000	4,000	4,527 1/2/	4,437 2/
Mine output, Pb content		106,657	111,709	112,787	137,200 r/	136,200 2/
Metal:		100,037	111,707	112,707	137,200 1/	130,200 2/
Smelter: e/						
Primary		56,000	50,000	41,200	42,200 r/	42,100 2/
Secondary		26,000	37,500	42,500	42,000	42,100 2/
Total smelter		82,000	87,500	83,700	84,200 r/	84,100
Refined:		82,000	87,500	85,700	04,200 1/	84,100
Primary		54,100	46,752	46,600	39,700 r/	33,000 2/
Secondary		37,100	37,764	40,000 36,000	51,500 r/	52,000 2/
Total refined		91,200	84,516	82,600	91,200 r/	85,000
Molybdenum, oxide, roasted, Mo content e/		4,280 2/	4,000	4,000	4,000	4,000
Nickel, metal: e/		4,280 2/	4,000	4,000	4,000	4,000
Unwrought, secondary		250	250	250	250	100
Primary		500	500	100	230 r/	2/
Selenium, elemental, refined		300	50 e/	30 r/	1/ 26 r/	20
Silver:		52	50 e/	50 1/	20 1/	20
	Irilo oromo	284.067	255 257	276 042	268 200	272.000.2/
Mine output, Ag content	kilograms	284,967 269,755	255,257	276,042	268,200 261,000 r/	272,000 2/
Metal, primary 3/	do.	209,733	293,700	295,000	261,000 r/	301,000 2/
Tin, metal:		20	20	10 r/	/	
Unwrought		32	30	10 r/ 500 r/	r/	
Alloy Zinc, mine output, Zn content		1,000	1,040		r/	160 205 07
		171,539	168,617	159,858	167,090 r/	160,325 2/
INDUSTRIAL MINERALS	th our 1 +	2 200	2 200	2 200	2 520/	2 4 47 21
Cement, hydraulic	thousand tons	2,290	2,200	2,300	2,539 r/	2,447 2/
Clays, kaolin e/	do.	100	100	100	460 r/ 2/	460
Feldspar, salable, crude and ground		34,600	30,000 e/	40,000 e/	51,000 r/	55,000
Fertilizer, manufactured: e/						10.5
Nitrogenous	thousand tons	448 2/	450	450	450	400
Phosphatic	do.	3	10	10	10	10
Mixed	do.	312 2/	300	300	300	300

See footnotes at end of table.

#### TABLE 1--Continued SWEDEN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Commodity		1992	1993	1994	1995	1996 e/
Olivine of         Olivine of <tholivine of<="" th="">         Olivine of         Olivine</tholivine>							
Pyrite. gross weight         do.         37         - <td>Lime</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>540</td>	Lime						540
Quartz and quartzite e'         60.         500         500         501         518         2'         52.           Boner         Some				120	100	50 r/	
Sadian suffar, synthesic e'         dot         100         100         100         100		do.					
Stone:         Immension:           Mody unfinished         do,           Granite         do,           State c'         do,           State c'         do,           Ober         do,           Dolomite c'         do,           Ober         do,           Dolomite c'         do,           Ober         do,           Crushed:         do,           Por centeert manufacture         do,           Por construction and industrial uses         do,           Total         do,           Total         do,           Total         do,           Total         do,           Subter c'         do,           Sandstone c'         do,           Subter c'         do,           Total         do,           Sandstone c'         do,           Subter c'         do,           Subter c'         do,           Subter c'         do,           Subter c'         do,           Total         do,           Subter c'         do,           Subter c'         do,           Subter construction and industrial uses         do,<	Quartz and quartzite e/	do.		500		518 2/	525
$\begin{array}{  c                                  $	Sodium sulfate, synthetic e/	do.	100	100	100	100	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Stone:						
Granie         do.         82         80         80         e'         90         v'         100           Limestone         do.         2 //         5         5         5         5           Silac e'         do.         20 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Immestone e'         do. $22'$ 5         5         5         5           State e'         do. $22'$ $20$ $20''$ $20''$ $20''$	Mostly unfinished	do.	100	100	150	150	160
Sile e/         do.           Other         do.           Other         do.           Other         do.           Crushed:         do.           Dolomite c'         do.           Granie         do.           Limestone:         do.           For centent manufacture         do.           For centent construction and industrial uses         do.           Total         do.           Total         do.           Total         do.           Sandsone e'         do.           Scontent of pyrite         do.           From metallurgy         do.           From metallurgy         do.           Total         do.           Scontent of pyrite         do.           Total         do.           Prom metallurgy         do.           Total         do.           Total         do.           Scontent of pyrite         do.           Total         do.           Total         do.           Total         do.           Total         do.           Agricultural use         thousand cusi           Total         do	Granite	do.			80 e/		100
Other         do.         20 <t< td=""><td>Limestone e/</td><td>do.</td><td>2 2/</td><td>5</td><td>5</td><td>5</td><td>5</td></t<>	Limestone e/	do.	2 2/	5	5	5	5
$ \begin{array}{c} \mbox{Cmshed:} &$	Slate e/		22 2/	20	20	20 r/	20
Dolmite $c'$ 60.         631 $2'$ 700         700         700         700         600           Gramite         do.         5,000 $e'$ 5,000 $e'$ 3,200 $r'$ 3,500           Hor time manufacture         do.         1,027         1,000 $e'$ 1,000 $v'$ 4,000 $v'$ 4,000           For time manufacture         do.         1,560         1,500 $e'$ 1,000 $v'$ 1,000 $v'$ 1,000 $v'$ 1,000 $v'$ 1,000 $v'$ 2,000 $v'$ 4,000 $v'$ 2,000         2,000 $v'$	Other	do.	20	20 e/	20 e/	10 r/	10
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Crushed:						
Linestone:         -           For cement manufacture         do,           For three manufacture         do,           For other construction and industrial uses         do,           1,560         1,500 e'         1,000 e'         1,000 t'         1,000 t'           For other construction and industrial uses         do,         1,560         1,500 e'         1,000 t'         2,000 t'         3,00 t'         3,00 t'         3,000 t'         3,000 t'         3,000 t'         3,000 t'         4,000 t'	Dolomite e/	do.	631 2/	700	700	700	600
For cement manufacture         do.           For comment manufacture         do.           For line manufacture         do.           For line manufacture         do.           For agricultural uses         do.           For agricultural uses         do.           Tor other uses         do.           Tor other uses         do.           Tor other uses         do.           Stadistone e'         do.           Stadistone e'         do.           Stadistone e'         do.           Stomet of pyrite         do.           Byproduct: e'         do.           From metallurgy         do.           Toral         do.           Byproduct: e'         do.           From metallurgy         do.           Toral         do.           Toral         do.           Tora tal         do.           Tora tal         do.           Tora tal co gastone e'         do.           Toral         do.           MiNERAL FUELS AND RELATED MATERIALS         do.           Cash antractic and bituminous e'         do.           Coke oren gas         million cubic meters           Agricolural use	Granite	do.	4,447	5,000 e/	5,000 e/	3,200 r/	3,500
For lime manufacture         do. $712$ $700 e'$ $700 e'$ $700 e'$ $1,000 r'$ $1,000$ Gravitation and industrial uses         do. $1,560$ $1,500 e'$ $1,700 r'$ $2,000$ Chalk         do. $335$ $350 e'$ $350 e'$ $450 r'$ $475$ For other uses         do. $335$ $350 e'$ $350 e'$ $450 r'$ $475$ Standstone e'         do. $3,740$ $3,680 e'$ $3,680 e'$ $8,200 r'$ $8,500$ Other e'         do. $50$	Limestone:						
For other construction and industrial uses         do.         1,560         1,500         c'         1,700         t'         2,000           Chalk         do.         28         30         c'         30         c'         50         t'         25           For other uses         do.         378         100         c'         1000         t'         1,000         t'	For cement manufacture	do.	1,027	1,000 e/	1,000 e/	4,000 r/	4,000
Chalk         do.         28         30 $c'$ 50 $r'$ 25           For agricultural uses         do.         335         30 $c'$ 50 $r'$ 475           For other uses         do.         3,740         3,860 $c'$ 1,000 $r'$ 1,000         1,000         1,000 $r'$ 1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000         1,000	For lime manufacture	do.	712	700 e/	700 e/	1,000 r/	1,000
For agricultural uses         do.         335         350 e'         450 r'         4450 r'         475           For other uses         do.         78         100 e'         100 e'         1,000 r'         1,010 r'         1,017 r'         - r'         - r'         - r'         - r	For other construction and industrial uses	do.	1,560	1,500 e/	1,500 e/	1,700 r/	2,000
For other uses         do.         78         100 e'         100 e'         1,000 t'         1,000           Total         do.         3,740         3,680 e'         8,200 t'         10,500 t'         10,500 t'         10,500 t'         11,50         10,51 t'         11,55 t'         11,50         1,000 t'         1,000 t'         1,000 t'         1,000 t'         1,000 t'         1,01t'         1,147 t'         1,147 t'         1,145 t'         1,145 t'         1,5	Chalk	do.	28	30 e/	30 e/	50 r/	25
Total         do. $3,740$ $3,680 e'$ $3,280 e'$ $8,200 t'$ $8,500$ Sandstone e'         do. $50$	For agricultural uses	do.	335	350 e/	350 e/	450 r/	475
Sandstone e/         do.         50         50         50         50         50         50         100           Undrifterentiated e/         do. $30,000$ $500$ $500$ Store triange $0$ $0$ $0$ $40$ $40$ $40$ $40$ $40$ $40$ $25$ Total $0$ $0$ $1125$ $125$ $125$ $125$ $125$ $125$ $120$ $125$ $120$ $120$ $12$ $120$ $120$ $12$ $120$ $120$ $120$ $120$ $120$ $120$ $120$	For other uses	do.	78	100 e/	100 e/	1,000 r/	1,000
Undifferentiated e/       do,         Other e/       do,         Other e/       do,         S content of pyrite       do,         S content of pyrite       do,         Byronduct: e/       -         From metrallurgy       do,         Total       do,         Mineratic and bituminous e/       do,         Carbon black       thousand tons         Code, metrallurgic ad       do,         Code, metrallurgic ad       do,         Case, metallurgical       do,         Agricultural use       thousand tons         Crude e/       thousand 42-gallon barels         Curde e/       thousand 42-gallon barels         Liquefied petroleum gas       do,         Agricultural use       thousand 42-gallon barels         Liquefied petroleum gas       do,         Liquefied petroleum gas       do,         Liquefied petroleum gas       do,         Agricultural use       thousand 42-gallon barels         Liquefied petroleum gas       do,         Liquefied petroleum gas       do,         So 50       50       50         So 50       50       50         Liquefied petroleum gas       do,	Total	do.	3,740	3,680 e/	3,680 e/	8,200 r/	8,500
Other e/         do.         749 2/         700         700         500           Suffar:	Sandstone e/	do.	50	50	50	50	100
Sulfur:       Image: Subset of pyrite       Im	Undifferentiated e/	do.	30,000	30,000	30,000	30,000	25,000
S content of pyrite       do.         Byroduct: $e'$ $17 r'$ $-r'$ <t< td=""><td>Other e/</td><td>do.</td><td>749 2/</td><td>700</td><td>700</td><td>700</td><td>500</td></t<>	Other e/	do.	749 2/	700	700	700	500
Byproduct: e'         Instant and the second s	Sulfur:						
Byproduct: e'         Instant and the second s	S content of pyrite	do.	17 r/	r/	r/	r/	
From metallurgydo.From metallurgydo.From petroleumdo.Totaldo.Talc, soapstone e'do.Stalc, soapstone e'165 r/Carbon blackthousand tonsCarbon blackthousand tonsCoal, anthracite and bituminous e/do.Coal, anthracite and bituminous e/do.Coke oven gasmillion cubic metersRefinery products: e/545 2/Crude e/thousand cubic metersPetroleum:thousand 42-gallon barrelsCrude e/thousand 42-gallon barrelsLiquefied petroleum gasdo.Naphthado.Liquefied petroleum gasdo.Jet fueldo.Jet fueldo.Liquefied petroleum gasdo.So to to to50Distillate fuel oildo.Kerosenedo.So to to50Distillate fuel oildo.Refinery fuel and lossesdo.Naphthado.Lique fiery fuel and lossesdo.Lique fiery fuel and lossesdo.Lique fiery fuel and lossesdo.Corde of the colido.							
From petroleumdo. Total4040404025Totaldo.182 r/165 r/165 r/125125Talc, soapstone e/20,00020,00025,00025,00030,000MINERAL FUELS AND RELATED MATERIALS2420 e/20 r/ $- r/$ $-$ Coal, anthracite and bituminous e/do.3010 r/10 r/ $- r/$ $-$ Coke, metallurgicaldo.3010 r/10 r/ $- r/$ $-$ Gas, manufactured: e/1,1501,200 e/1,147 r/1,145Coke oven gasmillion cubic meters545 2/500500500Blast furnace gasdo.4,200 2/4,0004,0004,0003,500Peat: e/1,2001,2001,1001,0521,084Crude e/thousand 42-gallon barels2,4002,4002,6002,6242,278Liquefied petroleum gasdo.4,620 2/3,0003,0003,500500Gasoline, motordo.31,50031,50031,50032,0003,500Jet fueldo.2,5002,5002,5002,5002,5002,500Distillate fuel oildo.505050505050Distillate fuel oildo.81,00081,00081,00080,00075,000Refinery fuel and lossesdo.40,004,0004,0004,00030,00Outerdo.2010 r/10 r	¥1	do.	125	125	125	125	100
Total         do.           Tale, soapstone e/         182 r/         165 r/         165 r/         165 r/         125           Zabon black         thousand tons         20,000         20,000         25,000         25,000         30,000           Carbon black         thousand tons         24         20 e/         20 r/         - r/         -           Cole, anthracite and bituminous e/         do.         30         10 r/         10 r/         - r/         -           Coke oven gas         million cubic meters         545 2/         500         500         500         500           Blast furnace gas         do.         1,200         1,100         1,052         1,084         2,208         2,240         2,400         2,400         3,000         3,500         500 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>25</td>							25
Tale, soapstone e/         20,000         20,000         25,000         25,000         30,000           MINERAL FUELS AND RELATED MATERIALS         thousand tons         24         20 e/         20 r/         - r/         - </td <td><b>!</b></td> <td></td> <td>182 r/</td> <td>165 r/</td> <td>165 r/</td> <td>165 r/</td> <td>125</td>	<b>!</b>		182 r/	165 r/	165 r/	165 r/	125
MINERAL FUELS AND RELATED MATERIALS           Carbon black         thousand tons           Carbon black         thousand tons           Coal, anthracite and bituminous e/         do.           Coal, anthracite and bituminous e/         do.           Gas, manufactured: e/         0.           Coke oven gas         million cubic meters           Blast furnace gas         do.           Peat: e/         -           Agricultural use         thousand cubic meters           Fuel         do.           Petroleum:         -           Crude e/         thousand 42-gallon barrels           Refinery products: e/         -           Liquefied petroleum gas         do.           Gasoline, motor         do.           Jet fuel         do.           Jet fuel         do.           Stop 31,500         31,500         31,500         32,000           Jet fuel         do.         -         r/         -           Crude e/         do.         -         r/         500         500         500           Jet fuel         do.         -         r/         500         300         3000         32,000         32,000         32,000							30,000 2
Carbon black         thousand tons         24         20 e/         20 r/ $-r/$ $-$ Coal, anthracite and bituminous e/         do.         30         10 r/         10 r/ $-$ r/ $-$ Coal, anthracite and bituminous e/         do.         30         10 r/         10 r/ $-$ r/ $-$ Gas, manufactured: e/          1,150         1,200 e/         1,147 r/         1,145           Coke oven gas         million cubic meters         do.         545 2/         500         500         500           Peat: e/          4,200 2/         4,000         4,000         4,000         3,500           Petroleum:          1,200         1,200         1,100         1.052         1,084           Crude e/         thousand 22-gallon barrels         2,000         2,400         2,600         2,624         2,278           Liquefied petroleum gas         do.         - r/         500         500         300         3,000         3,000         3,000         3,000         3,000         3,500           Jet fuel         do.         - r/         500         50         50         50         50         50         <		MATERIALS	,	,	,	,	
Coal, anthracite and bituminous e/       do.         Coal, anthracite and bituminous e/       do.         Coke, metallurgical       do.         Gas, manufactured: e/       1,150       1,200 e/       1,200 e/       1,147 r/       1,145         Coke oven gas       million cubic meters       545 2/       500       500       500       500         Blast furnace gas       do.       4,000       4,000       4,000       4,000       3,500         Peat: e/        1,200       1,200       1,100       1,052       1,084         Fuel       do.       2,400       2,400       2,600       2,624       2,278         Petroleum:       20       10 r/       10 r/       - r/       -         Liquefied petroleum gas       do.       4,620       2/       3,000       3,000       3,000         Jet fuel       do.       - r/       500       50       50       50       50         Jet fuel oil       do.       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500       2,500			24	20 e/	20 r/	r/	
Coke, metallurgical         do.           Gas, manufactured: e/ $()$ $()$ $()$ $()$ $()$ $()$ $()$ $()$ $($							
Gas, manufactured: $e/$ State furnace gas       million cubic meters       545 2/       500       500       500         Blast furnace gas       do.       4,200 2/       4,000       4,000       4,000       3,500         Peat: $e/$					/		1.145.2
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	<b>X</b>	401	1,100	1,200 0,	1,200 0/	1,1	1,110 2
Blast furnace gas       do.         Pat: e/       Agricultural use       thousand cubic meters         Fuel       do.         Petroleum:		million cubic meters	545 2/	500	500	500	500
Peat: e/       Image: product of the state							
Agricultural use         thousand cubic meters         1,200         1,100         1,052         1,084           Fuel         do.         2,400         2,400         2,600         2,624         2,278           Petroleum:         20         10 r/         10 r/         - r/         -           Refinery products: e/         20         10 r/         10 r/         - r/         -           Magnitude         do.         4,620 2/         3,000         3,000         3,000         3,500           Magnitude         do.         - r/         500         500         300         500           Gasoline, motor         do.         2,500		40.	1,200 2	1,000	1,000	1,000	5,500
Fuel         do.           Petroleum: $Crude e/$ thousand 42-gallon barrels           Refinery products: e/ $2,400$ $2,400$ $2,600$ $2,624$ $2,278$ Liquefied petroleum gas         do. $10 r/$ $10 r/$ $-r/$ $-r/$ Maphtha         do. $-r/$ $500$ $3,000$ $3,000$ $3,000$ $3,000$ $3,000$ $3,500$ Gasoline, motor         do. $-r/$ $500$ $500$ $300$ $500$ Jet fuel         do. $2,500$ $2,600$ <td></td> <td>thousand cubic meters</td> <td>1 200</td> <td>1 200</td> <td>1 100</td> <td>1.052</td> <td>1 084 2</td>		thousand cubic meters	1 200	1 200	1 100	1.052	1 084 2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	,
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		<u>u0.</u>	2,400	2,400	2,000	2,024	2,276 2
Refinery products: $e'$ Liquefied petroleum gasdo.Naphthado.Gasoline, motordo.Jet fueldo. $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $2,500$ $500$ $31,000$ $31,000$ $81,000$ $81,000$ $81,000$ $81,000$ $81,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $28,000$ $3000$ $3000$ $3000$ $4,000$ $4,000$ $4,000$ $4,000$ $10,000$ $10,000$ $10,000$ $5,000$		thousand 42-gallon barrels	20	10 r/	10 r/	<b>r</b> /	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		thousand 42-ganon barrens	20	10 1/	10 1/	1/	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		do	4 620 2/	3 000	2 000	2 000	2 500
Gasoline, motor         do.         31,500         31,500         31,500         32,000         32,500           Jet fuel         do.         2,500							
Jet fuel         do.         2,500         50							
Kerosene         do.         50         50         50         50         50           Distillate fuel oil         do.         81,000         81,000         81,000         80,000         75,000           Residual fuel oil         do.         28,000         28,000         28,000         28,000         28,000         28,000         25,000           Other         do.         4,000         4,000         4,000         3,000           Refinery fuel and losses         do.         10,000         10,000         10,000         5,000							
Distillate fuel oil         do.         81,000         81,000         81,000         80,000         75,000           Residual fuel oil         do.         28,000         28,000         28,000         28,000         28,000         25,000           Other         do.         4,000         4,000         4,000         4,000         3,000           Refinery fuel and losses         do.         10,000         10,000         10,000         5,000							
Residual fuel oil         do.         28,000         28,000         28,000         28,000         28,000         25,000           Other         do.         4,000         4,000         4,000         4,000         3,000           Refinery fuel and losses         do.         10,000         10,000         10,000         5,000							
Other         do.         4,000         4,000         4,000         4,000         3,000           Refinery fuel and losses         do.         10,000         10,000         10,000         5,000							
Refinery fuel and losses         do.         10,000         10,000         10,000         5,000							
•							
Total         do.         161,670         160,550         159,850         147,050							
	Total	do.	161,670	160,550	160,550	159,850	147,050

e/ Estimated. r/ Revised. 1/ Table includes data available through June 1997.

2/ Reported figure.3/ Includes only that recovered from indigenous ores excluding scrap.

# TABLE 2 SWEDEN: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

		Major operating companies		Annual
Commod	ity	and major equity owners	Location of main facilities	capacity
Aluminum		Granges AB (Electrolux 100%)	Sundsvall smelter at Kubikenborg	98
Cement		Cementa AB (Euroc 100%)	Plants at Degerhamn, Skovde, and Slite	3,400
Copper:				
Ore, copper content		Boliden Mineral AB (Trelleborg AB 100%)	Mines at Aitik, Garpenberg, Kankberg, Kristineberg,	
		-	Langdal, Petiknas, and Renstrom	68
Do.		Outokumpu Oy	Mine at Viscaria/Pahtohavare	22
Metal		Boliden Mineral AB (Trelleborg AB 100%)	Smelter and refinery at Ronnskar	100
Feldspar		Berglings Malm & Mineral AB (Omya GmbH)	Mines at Beckegruvan, Hojderna, and Limbergsbo	50
Do.		Forshammar Mineral AB (Omya GmbH)	Mines at Limberget and Riddarhyttan	30
Do.		Larsbo Kalk AB (Omya GmbH)	Mines at Glanshamar and Larsbo	20
Ferroalloys		Vargon Alloys AB	Plant at Vargon	175
Gold:				
Ore, gold content	kilograms	Terra Mining AB (William Resources Inc. 100%)	Bjorgdal Mine at Skellefta	3,000
Do.	do.	Boliden Mineral AB (Trelleborg AB 100%)	Mines at Aitik, Akerberg, Kankberg, Kristineberg,	
			Langdal, Petiknas, and Renstrom	2,000
Metal		Boliden Metals AB (Trelleborg AB 100%)	Smelter and refinery at Ronnskar	9
Iron ore		Luossavaara-Kiirunavaara AB (Government 98%)	Mines at Kiruna and Malmberget	28,500
Iron and steel		Svenskt Stal AB (Government 48%)	Steelworks at Lule, Oxelosund, and Domnarvet	3,500
Kyanite		Svenska Kyanite AB (Svenska Mineral 100%)	Quarry at Halskoberg	10
Lead:		× ` ` ´		
Ore, lead content		Boliden Mineral AB (Trelleborg AB 100%)	Mines at Garpenberg, Laisvall, Langdal,	
			Petiknas, and Renstrom	110
Do.		North Mining Svenska AB	Zinkgruvan Mine at Ammeberg	20
Metal		Boliden Metals AB (Trelleborg AB 100%)	Smelter and refinery at Ronnskar	115
Lime		Euroc Mineral AB	Plants at Limham, Koping, and Storugns	250
Do.		Svenska Mineral AB	Plants at Rattvik and Boda	250
Petroleum, refined	barrels per day	Skandinaviska Raffinaderi AB	Refinery at Lysekil	210,000
Do.		BP Raffinaderi AB	Refinery at Goteborg	100,000
Do.		Shell Raffinaderi AB	Do.	82,000
Do.		AB Nynas Petroleum	Refineries at Goteborg, Malmo, and Nynashamn	54,000
Silver, metal	kilograms	Boliden Metals AB (Trelleborg AB 100%)	Smelter and refinery at Ronnskar	300,000
Do.	do.	North Mining Svenska AB	Zinkgruvan Mine at Ammeberg	25,000
Zinc, ore, zinc content		Boliden Mineral AB (Trelleborg AB 100%)	Mines at Garpenberg, Laisvall, and Langdal	112
		Č <i>Č ′</i>	Zinkgruvan Mine at Ammeberg	60