#### THE MINERAL INDUSTRIES OF

# **EUROPE AND CENTRAL EURASIA**

### By Richard M. Levine, Harold R. Newman, and Walter G. Steblez

#### Introduction

The dynamic social, political, and economic transformations in Europe and Central Eurasia that have been characteristic of this region since the late 1980's had acquired an ongoing evolutionary character by 1997. In Western Europe, the European Union (EU) developed into a major economic organization. Having gained momentum, economic integration led to the creation of a single currency union, encompassing most of the EU members. Central and Eastern Europe and Central Eurasia continued the difficult process of trying to create market economy systems and democratic political institutions.

An economic asymmetry, however, continued between Western Europe and the former centrally planned economy countries of Central and Eastern Europe, and Central Eurasia. In the minerals sphere, the interaction between the countries Western Europe and those of Central and Eastern Europe, and Central Eurasia was based on this asymmetry. Western Europe imported mineral commodities from, toll-smelted raw materials in, sold equipment and technology to, and invested in the mineral enterprises and mineral development projects in those former centrally planned economy countries, largely without reciprocal activities on the part of the latter.

Table 1 lists the mineral production for selected metals, industrial minerals, and mineral fuels by the countries in the three subregions (Western Europe, Central and Eastern Europe, and Central Eurasia) for 1997. By contrast, the previous summary table (published in the Minerals Yearbook, v. III, for Europe and Central Eurasia for 1993) displayed fewer industrial minerals and no mineral fuels. The 1997 table includes secondary aluminum, the new members to the EU, and the collateral diminution of the European Free Trade Organization.

#### Western Europe

In 1997, Western Europe remained a major world minerals processing and consuming subregion and, consequently, a major determinant of world demand for all mineral commodities. The subregion continued to account for a significant share of world production of such ferrous and nonferrous metals as refined zinc (27%), refined lead (26%), crude steel (20%), pig iron (17%), primary aluminum (14%), refined copper (14%), and alumina (11%). Mine output of such commodities as bauxite, copper ore, and iron ore, played a smaller role in world production in 1997, and that of chromite, lead, and zinc was somewhat greater, amounting to more than 4%, about 6%, and 9%, respectively, of world production.

Germany was Western Europe's dominant producer of steel,

accounting for about 30% of subregion's steel output, and primary and secondary aluminum, collectively accounting for about 19% of total primary and secondary production by the subregion. With respect to primary aluminum alone, Norway was the major Western European producer, accounting for about 30% of the subregion's total production. In addition to Germany, the subregion's major smelters, refiners, and fabricators of metals were France, Italy, Spain, and the United Kingdom.

Mineral resource development in the subregion has been encouraged by revised mining legislation, deregulation, and tax relief. Important events in the metals mining sector included the startup of major gold mining operations in Spain and in Italy (on Sardinia) and the development of two gold mines in Scotland. Lead and zinc mines were being developed in Ireland.

With respect to industrial minerals, Western Europe played an important role as a world producer of such commodities as salt (22%), potash (21%), cement (12%), nitrogen (10%), and sulfur (10%), of which Germany, as the dominant Western European producer, accounted for about 36%, 65%, 21%, 25%, and 22%, respectively, of the subregion's total production of these commodities.

Western Europe's production of coal, natural gas, and petroleum amounted to about 8%, 13%, and 8%, respectively, of total world production. Germany was the leading producer of coal, accounting for 61% of total Western European output. The United Kingdom, the Netherlands, and Norway were the subregion's largest producers of natural gas in 1997, with output measuring about 30%, 29%, and 23%, respectively, of total gas production. Norway and the United Kingdom also were Western Europe's largest producers of crude petroleum, accounting for 50% and 41%, respectively, of total petroleum output.

The main trend in mineral exploration in Western Europe was for such metals as copper, gold, lead, and zinc. Exploration for copper was mainly in France and in the Iberian Pyrite Belt of Portugal and Spain, and that for lead and zinc was conducted mainly in Ireland. Gold exploration was ongoing in several areas of Western Europe where continuing discoveries of gold mineralization have encouraged further exploration efforts. In addition, exploration for diamonds was conducted in Scandinavia.

#### **Central and Eastern Europe**

In 1997, Central and Eastern Europe, with the exception of Poland, remained a modest producer of mineral commodities. As indicated in table 1, the subregion's production of selected mineral commodities, as a percentage of world production, seldom exceeded 5%. Poland, however, was among the leading world producers of such mineral commodities as coal, copper,

salt, and sulfur and a main regional producer of such commodities as lead, steel, and zinc. The country ranked as the world's eighth largest producer of copper, accounting for about 4% of the world's output of copper in ore and 3.3% of the world's output of copper metal. It accounted for about 3.3% and 3% of the world's mine output of lead and zinc, respectively, and also was the world's seventh largest producer of silver. Among world producers of industrial minerals, it was ranked ninth in the output of salt and seventh in the output of sulfur, accounting for about 2% and 4%, respectively, of total world production. Poland's output of coal was substantial, amounting to more than 4% of world production.

In Central and Eastern Europe, the transformation to market economic systems and democratic political institutions continued. Major progress by the Czech Republic, Hungary, and Poland toward accedence to standards leading to EU and North Atlantic Treaty Organization membership was evident. The subregion, however, continued to evolve unevenly owing to the remaining political and military crises in the Balkan areas, as well as to the generally slower pace of economic and political reforms in the Balkans than in Central Europe. Consequently, foreign investment was more evident in the Central European area where, for example, EU-based commercial entities had invested heavily in more than 90% of the cement industries in the Czech Republic, Hungary, and Poland with their associated raw materials quarries. Important exploration work for gold by EU and other Western investors was underway during the year in the Czech Republic and Hungary.

#### **Central Eurasia**

In 1997, the countries of the former Soviet Union (FSU) appeared to be on a path to creating market economies, which had generated renewed faith in foreign investors, as evidenced by the doubling of share prices on Russia's equity market during the first half of the year. In the minerals sector, many enterprises also appeared to be making this market-oriented transition. Following the collapse of the Soviet Union, foreign investment interest in mineral producing enterprises other than gold and oil was slight. More recently, investors have begun to show interest in other mineral commodities if the deposits or production facilities are of sufficient quality. Although a trend of privatizing mineral industries and passing control some of the more productive enterprises to a new group of foreign and domestic investors was emerging, the fate of the majority of mineral enterprises, which were below the threshold of investor interest in terms of quality, remained uncertain. Some appeared to be trying to create new market niches through creative efforts, including mergers and changed production profiles, but many others appeared to lack a necessary base for survival. A major factor impeding the revival

of many mineral production enterprises within the FSU was the dramatically lower level of mineral consumption in this region that followed the breakup of the Soviet Union.

Despite the decline in the FSU's production and consumption of mineral commodities, the scope and scale of this subregion's mineral output is evident in table 1. The FSU continued to be a major world producer of minerals, with significant world output of such nonferrous metals as primary aluminum (14%), alumina (10%), mine and refined copper (8% each), mine and refined zinc (6% and 5%), bauxite (5%), and mine and refined lead (2% and 3%). With respect to ferrous metals, the FSU had a significant share of the world output of plant production of nickel (23%), iron ore (18%), chromite (15%), manganese ore (15%), pig iron (10%), and crude steel (10%). The subregion also produced a significant share of the total world production of such selected industrial minerals and fuels as natural gas (29%), potash (26%), nitrogen (13%), petroleum (10%), sulfur (10%), coal (7%), phosphate (7%), cement (3%), and salt (2%).

Although Kazakhstan, Ukraine, and Uzbekistan were important world producers of a number of mineral commodities, Russia, with 75% of the territory of the FSU, remained a major world producer of a broad range of mineral commodities. Russia's status as a world minerals producer in 1997 may be summarized as follows:

Aluminum 2d	Natural gas 1st
Bauxite 10th	Magnesium
Beryl4th	compounds 6th
Boron 4th	Nickel 1st
Cement 10th	Palladium 1st
Peat 4th	Chromite9th
Petroleum, crude 2d	Cobalt
Phosphate rock 4th	Copper 6th
Pig iron and	Mica 3rd
crude steel top 8	Diamonds 3d
Platinum 2d	Feldspar 12th
Rhenium 5th	Gemstones 3d
Salt 12th	Gold 5th
Silicon 5th	Sulfur 4th
Indium 4th	Tin 7th
Iodine 7th	Titanium sponge 2d
Iron ore	Tungsten 2d
Magnesium metal 4th	Vanadium 2d

For a significant number of mineral commodities, including aluminum, gold, natural gas, nickel, petroleum and petroleum products, platinum group metals and titanium metal, Russia was also one of the world's major mineral exporters.

TABLE 1 EUROPE AND CENTRAL EURASIA: PRODUCTION OF SELECTED MINERALS IN 1997 1/2/

(Thousand metric tons, unless otherwise specified)

								Meta	als								
	Iron and steel Ferroalloying materials						Aluminum										
	Iron ore		Crude	Chromite Manganese Nickel,		Nickel,	el, Bauxite	Alumina	Meta	Metal,		Copper		Lead		Zinc	
	(metal	Pig iron	steel (gross	(gross	ore (gross	plant			primary so	econdary	(metal co	ontent)	(metal c	ontent)	(metal	content)	
Country	content)	Ü	weight)	weight)	weight)	production					Mine I		Mine	Refined	Mine	Refined	
Western Europe:	-					-											
European Community (EU):																	
Austria	500	3,965	5,196			2				52		76		23			
Belgium		8,077	10,738							2		390		111		244	
Denmark-Greenland			787							14							
Finland		2,780	3,687	589		30					9	116			31	175	
France	145	13,424	19,773			11	164	350	399	232		29		301		317	
Germany	28	30,939	45,009					750	572	432		674		252		318	
Greece	700		950	12	12	18	2,211	602	141	4			19		18		
Ireland			337					1,273						11	195		
Italy		11,348	25,537		6			850	188	443		86	12	212	8	268	
Luxembourg		437															
Netherlands		5,804	6,640						233	148				20		201	
Portugal			860								107			6		4	
Spain	58	3,926	13,644					1,110	360	154	38	292	24	88	172	364	
Sweden	13,912								99	18	87	117	146	86	158		
United Kingdom	(3/)		,			37		100	248	257		60	2	391		108	
Total EU	15,343			601	18	98	2,375	5,035	2,240	1,756	241	1.840	203	1.501	582	1.999	
European Free Trade							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,	, ,	,		7					
Association (EFTA):																	
Iceland									104								
Norway	1,100	70	510			63			978		7	26	3		5	137	
Switzerland e/	-,	100							33					6			
Total EFTA	1,100					63			1,115		7	26	3	6	5	137	
Total Western Europe	16,443			601	18	161	2,375	5,035	3,355	1,873	248	1,866	206	1,507	587	2,136	
Central and Eastern Europe:							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,	- ,	,,,,,,,		,					
Albania		10	5	157			1				1	1					
Bosnia and Herzegovina e/	35				2		75	40	4	10			(3/)		(3/)		
Bulgaria	242				47					5	109	35	30	73	20	70	
Croatia		,								18							
Czech Republic	10	5,195	6,495							45		20		20		1	
Hungary					72		743	76	33	65		12					
Macedonia	1	20		5		3				4	7			25	15	20	
Poland									51	3	470	445	103	66	185	172	
Romania	146				100		127	282	165		23	23	17	24	29	25	
Serbia and Montenegro	35					3	470	200	66		83	114	27	24	5	29	
Slovakia	250							100	110	17	(3/)	25	1		3	1	
Slovenia	230	3,300						15	72	2	(3/)			7			
Total Eastern and	719			162	221	6	1,416	713	501	169	693	675	178	239	257	318	
Central Europe	,1)	23,722	54,550	102	221	O	1,710	,13	301	10)	0,5	015	170	23)	231	510	

See footnotes at end of table.

## TABLE 1--Continued EUROPE AND CENTRAL EURASIA: PRODUCTION OF SELECTED MINERALS IN 1997 1/2/

(Thousand metric tons, unless otherwise specified)

		_							
			Industria	al minerals				Natural gas	Petroleum,
		Nitrogen	Phosphate	Potash				(gross weight)	crude
	Hydraulic	(N content	rock (gross	(K2O		Sulfur		(million cubic	(million 42-
Country	cement	of Ammonia)	weight)	equivalent)	Salt	(all forms)	Coal	meters)	gallon barrels)
Western Europe:									
European Community (EU):									
Austria	3,852	400			401	9	1,098	1,400	7
Belgium	7,001	500				300			
Denmark-Greenland	2,683	2			600	11		7,929	84
Finland	960	6	650			760			
France	18,600	1,800		700	6,760	1,107	6,979	3,000	13
Germany	37,000	2,471		3,423	15,787	1,160	223,891	22,473	20
Greece	12,000	83			200	70	58,000		3
Ireland	2,000	465						2,417	
Italy	33,721	445			3,510	300	203	19,500	37
Luxembourg	580								
Netherlands	3,300	2,500			5,500	288		88,000	21
Portugal	7,400	196			600	8			
Spain	27,632	497		605	3,600	832	26,455	283	3
Sweden	2,320					160			
United Kingdom	12,900	642		565	6,600	205	47,983	91,800	901
Total EU	171,949	10,007	650	5,293	43,558	5,210	364,609	236,802	1,089
European Free Trade									
Association (EFTA):									
Iceland	88	9			4				
Norway	1,700	279				110	260	70,300	1,106
Switzerland e/	3,800	30			300	5			
Total EFTA	5,588	318			304	115	260	70,300	1,106
Total Western Europe	177,537	10,325	650	5,293	43,862	5,325	364,869	307,102	2,195
Central and Eastern Europe:	_	<u> </u>				·			<u> </u>
Albania	200	10	1		10		40		2
Bosnia and Herzegovina e/	200	1			50	(3/)	2,000		
Bulgaria	2,100	1,200			1,600	100	30,566		(3/)
Croatia	2,134	331			17		49	1,717	12
Czech Republic	4,877	251				40	78,989	·	1
Hungary	2,811	250				30	15,565	4,513	9
Macedonia	500					6	6,500	·	
Poland	14,910	1,700			3,968	1,973	201,121	4,725	2
Romania	7,298	1,000			2,623	252	33,307	34,078	49
Serbia and Montenegro	2,011	250			28	102	42,917	688	8
Slovakia	2,500	250			101	6	3,942	286	(3/)
Slovenia	900				5		5,000		14
Total Eastern and	40,441	5,243	1		8,402	2,509	419,996	46,007	97
Central Europe	10,771	3,243	1		0,102	2,507	117,770	10,007	71

See footnotes at end of table.

### TABLE 1--Continued EUROPE AND CENTRAL EURASIA: PRODUCTION OF SELECTED MINERALS IN 1997 1 / 2 /

(Thousand metric tons, unless otherwise specified)

								Metals								
	Iron and steel			Ferro	alloying ma	terials	Aluminum									
	Iron ore		Crude	Chromite	Manganese	Nickel,					Cop	per	Lea	ad	Zi	inc
	(metal		steel (gross	(gross	ore (gross	plant			Me	etal	(metal c	content)	(metal c	ontent)	(metal o	content)
Country	content)	Pig iron	weight)	weight)	weight)	production	Bauxite	Alumina	Primary	Secondary	Mine	Refined	Mine	Refined	Mine	Refined
Central Eurasia:																
Armenia											9					
Azerbaijan	NA		25					10	5							
Belarus			1,220													
Estonia																
Georgia			104		30						6		(3/)		2	
Kazakstan e/	7,500	3,000	3,900	1,800	400		3,100	1,050			316	301	31	76	225	170
Kyrgyzstan																
Latvia			300													
Lithuania																
Moldova			255													
Russia	70,800	37,327	48,441	150		230	3,350	2,300	2,906		505	610	20	52	121	185
Tajikistan		·							206				1			
Turkmenistan																
Ukraine	29,200	20,561	25,600		3,040			1,000	101	40				18		2
Uzbekistan			381							3	80	115				50
Total Central Eurasia	107,500	60,888	80,226	1,950	3,470	230	6,450	4,360	3,218	N/A	916	1,026	52	146	348	407
Total Europe and	124,662	182,228	275,679	2,713	3,709	397	10,241	10,108	7,074	N/A	1,857	3,567	436	1,892	1,192	2,861
Central Eurasia																
Total United States	40,022	50,110	98,500			16	NA	5,093	3,603	N/A	1,940	2,450	459	1,449	632	367
Total World	592,501	583,873	796,474	13,398	22,799	1,001	122,928	45,251	23,617	N/A	11,892	13,560	3,099	5,771	6,289	7,872
Western Europe as a	2.78	16.68	20.20	4.49	0.08	16.08	1.93	11.13	14.21	N/A	2.09	13.76	6.65	26.11	9.33	27.13
percentage of world total																
Central and Central	0.12	4.10	4.35	1.21	0.97	0.60	1.15	1.58	2.12	N/A	5.83	4.98	5.74	4.14	4.09	4.04
Europe as a percentage																
of world total																
Central Eurasia as a	18.10	10.40	10.10	14.60	15.20	23.00	5.20	9.60	13.60	N/A	7.70	7.60	1.70	2.50	5.50	5.20
percentage of world total																
Europe and Central	21.04	31.21	34.61	20.25	16.27	39.66	8.33	22.34	29.95	N/A	15.62	26.31	14.07	32.78	18.95	36.34
Eurasia as a percentage																
of world total																

See footnotes at end of table.

### $TABLE \ 1-- Continued \\ EUROPE \ AND \ CENTRAL \ EURASIA: \ PRODUCTION \ OF SELECTED \ MINERALS \ IN \ 1997 \ 1 \ / \ 2 \ / \ AND \ AND$

(Thousand metric tons, unless otherwise specified)

			T 1 1					Mineral fuels	D . 1
		Nitro	Industrial m			Natural gas	Petroleum, crude		
	II-d1:-	Nitrogen	Phosphate rock (gross	Potash (K2O		Sulfur		(gross weight) (million cubic	(million 42-
Country	Hydraulic	(N content of Ammonia)	weight)	equivalent)	Salt	(all forms)	Coal	meters)	gallon barrels)
Central Eurasia:	cement	of Allinonia)	weight)	equivalent)	San	(an forms)	Coai	meters)	ganon barreis)
Armenia	325				26				
Azerbaijan	315				15			5,947	66
Belarus	1,876	590		3,247	13			283	9
Estonia	400	169		3,247				263	9
Georgia	400 91	84					18		1
	661	75				945		8,100	
Kazakstan e/			1,700				7,260	8,100	
Kyrgyzstan	658						1,524		1
Latvia	246								3
Lithuania	600	385							1
Moldova	122						36		6
Russia	26,600	7,150	7,500	3,400	1,400	3,750	244,000	571,151	2,180
Tajikistan	35	20					27		(3/)
Turkmenistan	450	61				9		25,485	
Ukraine	5,100	3,400		100	2,500	100	76,300	18,100	
Uzbekistan	3,500	950				415	3,130	51,200	
Total Central Eurasia	40,979	12,884	9,200	6,747	3,942	5,219	332,295	680,266	2,579
Total Europe and	258,957	28,452	9,851	12,040	56,206	13,053	1,117,160	1,033,375	4,871
Central Eurasia									
Total United States	84,225	14,300	43,280	1,400	41,475	12,020	988,768	535,188	3,143
Total World	1,511,760	102,887	134,667	25,676	199,693	54,034	4,742,089	2,366,248	26,616
Western Europe as a	11.74	10.04	0.48	20.61	21.96	9.85	7.69	12.98	8.25
percentage of world total									
Eastern and Central	2.68	5.10	(4/)	(4/)	4.21	4.64	8.86	1.94	0.36
Europe as a percentage									
of world total									
Central Eurasia as a	2.70	12.50	6.80	26.30	2.00	9.70	7.00	28.70	9.70
percentage of world total									
Europe and Central	17.13	27.65	7.32	46.89	28.15	24.16	23.56	43.67	18.30
Eurasia as a percentage									
of world total									

NA Not available.

<sup>1/</sup> Some of the individual entries in this table may differ from those appearing in individual country production tables elsewhere in this volume owing to the inclusion in this table of data received at a later date.

<sup>2/</sup> Includes data available through May 5, 1998. Data in country chapters may be of later origin and not correspond to data listed above.

<sup>3/</sup> Less than 1/2 unit.

<sup>4/</sup> Less than 0.01 percentage.