

THE MINERAL INDUSTRY OF SERBIA AND MONTENEGRO

By Walter G. Steblez

In 1997, Serbia and Montenegro continued to have important European facilities to produce aluminum, copper, lead, silver, and zinc. The country also produced a broad range of industrial minerals, which included clays, feldspar, magnesite, mica, sand and gravel, and stone. Serbia and Montenegro continued to preserve the Federal union, claiming continuity as the Republic of Yugoslavia, a claim that has not been fully recognized. Before 1992, Serbia and Montenegro was the former Yugoslavia's chief producer of nonferrous metals and a leading producer of iron and steel, industrial minerals, and mineral fuels.

Although Serbia and Montenegro was not directly affected by the civil war in Bosnia and Herzegovina and other regions of the former Yugoslavia, the country's economy suffered a serious downturn between 1992 and 1995, owing to the trade embargo sanctioned by the United Nations. The embargo effectively stopped all Serbia and Montenegro's foreign commercial activity, including the ability to borrow from foreign lending institutions. These circumstances also had negative consequences for the minerals industry. Many sectors showed significant declines of output during 1993 and 1994 and only began to show recovery in 1995 and 1996. (*See table 1.*)

In 1997, the economy of Serbia and Montenegro continued to show recovery and expansion following the cessation of economic sanctions by the United Nations at yearend 1995. In terms of physical production volume, total industrial production in 1997 increased by 10% compared with that of 1996. The production of energy increased by 8%. Total output by the metals sector increased by 25% compared with that of 1996. The production of iron and steel, nonferrous ores, and nonferrous metals rose by 45%, 10%, and 16%, respectively, and that of industrial mineral ores and industrial minerals, by 8% and 9% during this period (Federal Statistical Office of the Federal Republic of Yugoslavia, 1998b).

In 1997, Serbia and Montenegro's foreign commerce also registered recovery with the value of imports and exports rising by 34% and 48%, respectively. Germany, Russia, Italy, and the Republic of Macedonia were Serbia and Montenegro's major trading partners. The country's exports of fuels and lubricants and raw materials composed 7.4% of the total value of exports; imports of fuels and lubricant and raw material composed 24% of total imports (Federal Statistical Office of the Federal Republic of Yugoslavia, 1998a). A summary of minerals trade for 1997 is given in table 2.

Table 3 provides an overview of the most important enterprises, giving their names, locations of main facilities, and capacities. Major activities and issues in 1997 encompassed, among others, the aluminum, basalt, boron, iron and steel, and lead and zinc sectors.

Serbia and Montenegro's bauxite mining, alumina refining, and aluminum smelting facilities were located chiefly in Montenegro. According to spokespersons for DP Kombinat Aluminijuma Podgorica (Podgorica), the Podgorica alumina refinery and smelter was being prepared for privatization during the year (Metal Bulletin 1997a). International tenders of stock was under consideration by the Government as one way of privatizing the company. Modernization projects that have been under consideration at Podgorica included upgrading the anode plant, the foil-rolling and the rod mills, and the extrusion presses. To strengthen the company's competitiveness, the Government of Serbia and Montenegro set additional goals for the company that included the production of a wider range of value-added products, improvement of environmental protection measures, and the development of more-extensive commercial contacts with other European and Mediterranean countries (Metal Bulletin, 1997b).

Serbia and Montenegro was the former Yugoslavia's principal producer of copper. Rudarsko Tapionicki Bazen's (RTB) Bor mining, beneficiation, and smelting complex in Serbia accounted for all of Serbia and Montenegro's mine production of copper from its Bor, Majdanpek, and Veliki Krivelj open-pit mines. In 1997, total copper output continued to increase and approached 114,000 metric tons (t), the production level of 1992 (Federal Statistical Office of the Federal Republic of Yugoslavia, 1998b). In addition to domestic copper mining, smelting, and refining operations, RTB was able to reestablish some of the toll smelting and refining operations in 1996, which were interrupted during the trade embargo (Metal Bulletin, 1996).

The steel industry showed major recovery in 1996 and 1997. The production of pig iron and steel in 1996 increased by 496% and 376%, respectively, compared with that of 1995, and in 1997, output of pig iron and steel rose by 170% and 144%, respectively. The recovery in the steel sector was largely based on increased production at the Sartid AD—Smederevo steel works at Smederevo. The company planned to import 200,000 t of slabs for processing in 1997 in addition to domestically produced steel slabs. According to the Yugoslav Iron & Steel Federation, the slow rate of postsanctions industrial recovery had continued to depress domestic demand for steel, which resulted in more than 64% of the production in 1997 being exported (Metal Bulletin, 1997c, d).

The position of Serbia and Montenegro's lead and zinc industry generally appeared to be less favorable than that of the country's other producers of ferrous and nonferrous metals. Owing to production difficulties, Rudarsko Metalursko Hemijski Kombinat Olova I Cinka Trepca, Serbia and Montenegro's major mine and smelter producer of lead and zinc, was not able to meet its 1997 output target of 60,000 t for lead (Carnac, 1997). Compared with

levels of 1996, the country's output of refined lead in 1997 declined by 22%, and that of refined zinc remained about constant.

Major activities in the industrial minerals sector in 1997 included the start of drilling at the Piskanja boron deposit in the Jaradnol Basin. The exploratory drilling program was started by Ras-Borati Ltd., a joint venture between Elektroprivredna, Serbia's national power company, and Erin Ventures Inc. of Canada. The company planned to complete a 15,000-meter drilling program, which was aimed at establishing an indicated reserve (35%-39% B₂O₃) of a 7-million-metric-ton (Mt) block as a proven reserve. The completion of the drilling program was expected by February 1998. Reportedly, Erin Ventures Ltd. agreed to allocate CAD\$2.6 million to fund the drilling program. Preliminary studies indicated that the room-and-pillar method would be the most appropriate mining system. According to laboratory tests, marketable colemanite concentrates and sodium borates could be used to produce a 99.6% boric acid (Industrial Minerals, 1997b). Ras Borati also reported holding additional exploration rights in the Jaradno Basin at the Pobrđjski deposit where underground bulk samples and drilling outlined proven and probable reserves, grading an average 37% B₂O₃ and amounting to 140,000 t.

Basalt mining was planned to begin in 1997 at Mount Kopaonik in Vrelo. Reportedly, the Institute for Rare Ores in Kiev, Ukraine, expressed interest in a joint venture arrangement to develop the deposit. Reserves at the site were estimated to be

15 Mt (Industrial Minerals, 1997a). Serbia and Montenegro continued to produce coal, natural gas, and petroleum. Production of coal and natural gas showed gains in 1997, increasing by about 12% and 3%, respectively, compared with that of 1996. Petroleum output in 1997 declined by about 5%. The country's energy infrastructure included pipelines for crude petroleum that were 415 kilometers (km) in length, and those for refinery products and natural gas were 130 and 2,110 km, respectively.

References Cited

- Carnac, Rachel, 1997, Problems still affect Trepcia: *Metal Bulletin*, no. 8215, September 29, p. 5.
- Federal Statistical Office of the Federal Republic of Yugoslavia, 1998a, INDEX—Monthly review of economic Statistics: Federal Statistical Office, January, no. 1, p. 24.
- 1998b, INDEX—Monthly review of economic statistics: Federal Statistical Office, February, no. 2, p. 7.
- Metal Bulletin*, 1996, Serbian smelter reemerges: *Metal Bulletin*, February 12, p. 6.
- 1997a, Montenegro's AI sector looks ahead: *Metal Bulletin*, June 19, p. 6.
- 1997b, Privatization on agenda for Podgorica: *Metal Bulletin*, no. 8180, May 22, p. 3.
- 1997c, Yugoslav production surges: *Metal Bulletin*, June 23, p. 29.
- 1997d, Yugoslavs push towards pre-war production levels: *Metals Bulletin*, February 3, p. 25.
- Industrial Minerals, 1997a, Serbian investment in basalt: *Industrial Minerals*, June, p. 97.
- 1997b, Drilling begins on Piskanja boron deposit: *Industrial Minerals*, December, p. 13-14.

TABLE 1
SERBIA AND MONTENEGRO: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
METALS					
Aluminum:					
Bauxite, gross weight	102,000	--	60,000	323,000	470,000 4/
Alumina, calcined, gross weight	12,000	--	35,312	186,354	200,000
Metal, ingot, primary and secondary	25,778	6,850	16,991	37,436	65,743 4/
Antimony, metal	(3/)	(3/)	(3/)	(3/) e/	--
Bismuth, metal kilograms	30	88	86	21	20
Cadmium do.	6,301	3,000	11,079	79,195	80,000
Copper:					
Mine and concentrator output:					
Ore, gross weight thousand tons	18,189	17,935	20,206	20,026	20,507
Cu content of ore	68,007	84,843	87,575	82,526	82,500 4/
Concentrate, gross weight	297,878	354,916	363,332	337,861	350,000
Metal:					
Blister and anodes:					
Primary	44,112	69,111	70,074	59,940	60,000
Remelted	13,286	17,440	17,336	65,287	60,000
Total	57,398	86,551	87,410	125,227	120,000
Refined:					
Primary	43,410	66,308	71,304	59,940	70,534
Remelted	7,890	5,841	7,147	44,060	43,000
Total	51,300	72,149	78,451	104,000	113,534 4/
Gold, refined kilograms	3,330	2,504	3,040	3,000 e/	3,500
Iron and steel:					
Ore and concentrate, agglomerate	106,301	32,000	110,113	110,000 e/	110,000
Metal:					
Ferroalloys, ferronickel	1,283	1,763	2,414	6,501	6,500
Pig iron	62,490	16,763	107,836	535,000	907,000 4/
Crude steel	183,383	136,962	180,496	679,000	979,000 4/
Semimanufactures	174,000	174,000	242,000	860,000	1,460,000 4/
Lead:					
Mine and concentrate output:					
Ore, gross weight (Pb, Zn ore)	337,000	272,208	510,942	856,468	1,049,000 4/
Pb content of ore	9,229	6,651	11,689	22,327	27,000
Concentrate, gross weight	10,672	7,500	16,720	29,009	31,000
Pb content of concentrate	3,510	2,667	3,342	10,000 e/	11,000
Metal:					
Smelter, primary and secondary	8,593	12,274	19,231	44,600	32,000
Refined, primary and secondary	6,393	4,458	11,468	30,317	23,632 4/
Magnesium, metal	--	--	2,560	2,500 e/	2,500
Nickel, metal, Ni content of Fe Ni	443	663	962	2,556	2,500
Platinum-group metals:					
Palladium kilograms	72	47	46	56	55
Platinum do.	10	7	6	3	3
Selenium do.	27,677	27,340	39,810	37,840	38,000
Silver do.	25,144	18,298	31,054	68,805	42,640 4/
Zinc:					
Zn content of Pb, Zn ore	9,704	6,794	11,515	21,765	25,000
Concentrator output, gross weight	14,944	7,500	21,297	37,012	35,000
Zn content of concentrate	1,910	1,609	3,195	5,500 e/	5,000
Refined	6,985	3,895	5,976	29,954	29,454 4/
INDUSTRIAL MINERALS					
Asbestos fiber, all grades	314	498	497	450	250
Cement thousand tons	1,088	1,612	1,696	2,205	2,011 4/

See footnotes at end of table.

TABLE 1--Continued
 SERBIA AND MONTENEGRO: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/	
INDUSTRIAL MINERALS--Continued						
Clays:						
Bentonite	110	215	192	95	100	
Ceramic clay	23,367	22,092	28,095	36,021	35,000	
Fire clay:						
Crude	18,481	34,080	20,988	43,053	45,000	
Calcined	4,825	5,376	4,091	8,000 e/	8,000	
Kaolin:						
Crude	37,627	69,927	56,926	60,000 e/	60,000	
Washed	4,800	7,110	4,900	6,000 e/	6,000	
Feldspar, crude	2,679	3,256	5,441	4,801	5,000	
Gypsum, crude	--	40,411	40,342	44,257	45,000	
Lime	thousand tons	318	156	418 r/	456 r/	460 4/
Magnesite:						
Crude	do.	55	53	75 r/	89 r/	98 4/
Caustic calcined		7,812	5,896	4,078	1,061	1,100
Mica, all grades		68	158	199	200 e/	200
Nitrogen, N content of ammonia		99,900	158,518	135,401	235,070	250,000
Pumice and related volcanic materials, volcanic tuff		74,230	154,188	117,664	120,135	120,000
Quartz sand	thousand tons	270	280	195	239	200
Salt, all sources		38,867	32,086	13,500	21,646	28,000 4/
Sand and gravel excluding glass sand	thousand cubic meters	1,669	1,814	2,070	3,291	2,351 4/
Sodium compounds:						
Caustic soda		4,086	4,748	7,252	20,214	64,713 4/
Sodium sulfate		3,668	2,870	7,178	7,000 e/	7,000
Stone, excluding quartz and quartzite, dimension, crude:						
Ornamental	square meters	212,581	213,000	237,000 r/	219,000 r/	206,000 4/
Crushed and broken, n.e.s.	thousand cubic meters	1,157	1,571	2,136	2,468	2,500
Other e/	cubic meters	5,000	5,000	5,000	5,000	5,000
Sulfur: e/						
Sulfur content of pyrite	thousand tons	1 4/	1	1	1	1
Byproduct:						
Metallurgy		110	110	110	110	100
Petroleum		1	1	1	1	1
Total		114	112	112	112	102
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand tons	73	82	57	63 r/	92 4/
Brown	do.	531	529	560	539	512 4/
Lignite	do.	36,829	37,740	39,939	37,828	42,313 4/
Total		37,433	38,351	40,556	38,430	42,917
Natural gas, gross production	million cubic meters	962	824	906	671	688 4/
Petroleum:						
Crude:						
As reported	thousand tons	1,148	1,078	1,066	1,030	979 4/
Converted	thousand 42-gallon barrels	8,520	8,000	8,000	7,600	7,500
Refinery products e/	do.	15,000	13,800	13,000	12,500	12,000

e/ Estimated. r/ Revised.

1/ Table includes data available through June 1998.

2/ In addition to commodities listed, common clay and diatomite also are produced, and tellurium may be recovered as a copper refinery byproduct, but available information is inadequate to make reliable estimates of output levels.

3/ Less than 0.25 metric ton.

4/ Reported figure.

TABLE 2
SERBIA AND MONTENEGRO: EXPORTS AND IMPORTS OF SELECTED MINERAL COMMODITIES

(Metric tons)

Commodity	Exports		Imports	
	1996	1997	1996	1997
METALS				
Aluminum:				
Crude	34,634	55,451	--	--
Alloyed	4,505	7,974	--	--
Foil	--	--	2,044	2,164
Copper:				
Ore and concentrate	--	--	190,000	164,000
Blister	--	--	5,023	1,932
Anodes/cathodes	67,000	73,000	--	--
Wire, refined	10,342	13,390	--	--
Brass	6,863	6,698	--	--
Ferronickel	6,471	6,785	--	--
Iron and steel:				
Ore and concentrate	--	--	988,000	1,067,000
Semimanufactures	210,000	636,000	108,921	141,922
Lead:				
Ore and concentrate	--	--	28,213	36,607
Refined	25,140	17,605	--	--
Magnesium, unwrought	2,928	3,713	--	--
Silver, unwrought	58	35	--	--
Zinc, unalloyed	21,812	20,232	--	--
INDUSTRIAL MINERALS				
Cement, portland	99,000	40,000	--	--
Fertilizer	83,000	114,000	101,000	55,000
MINERAL FUELS				
Coke and semicoke	--	--	409,000	553,000
Petroleum:				
Crude	--	--	1,321,000	2,292,000
Refinery products:				
Kerosene	--	--	247,000	111,000
Gasoline	24,713	61,905	--	--
Diesel fuels	25,918	35,518	--	--
Fuel oils	64,402	42,506	--	--

Source: Federal Statistical Office of the Federal Republic of Yugoslavia, 1998, INDEX--Monthly Review of Statistics: Federal Statistical Office, January, no. 1, p. 27-28.

TABLE 3
SERBIA AND MONTENEGRO: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand of metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Alumina	Kombinat Aluminijuma Titograd	Plant at Titograd, Montenegro	200.
Aluminum	do.	Smelter at Titograd, Montenegro	100.
Antimony, ores and concentrates	Zajaca, Rudarsko Tapioncarski Bazen	Mines and mills near Zajaca, Serbia	80.
Do.	do.	Mines and mill at Rajiceva Gora, Serbia	300.
Antimony, metal	do	Smelter at Zajaca, Serbia	4.
Bauxite	Rudnici Boksita, Niksic	Mines in Montenegro at Kutsko Brdo, Zagrad, Biocki Stan, Durakov Dol, and other locations	650.
Coal:			
Bituminous	Ibarski Rudnici Kamenog Uglja	Mines at Jarando and Usce, near Baljevac na Ibru, Serbia	250.
Lignite	SOUR Kolubara, Rudarsko Energetsko Industrijski Kombinat, RO	Opencast mines: Polje B and Polje D	10,000.
Do.	Kolubara Povrsinski Kopovi	Tamnaski Kopovi (also known as Kolubarski Rudnici Lignita), near Vreoci, Serbia	14,000.
Do.	SOUR Elektroprivreda Kosova, RO Kosovo, Proizvodnja Separacija i Transport Uglja	Opencast mines: Dobro Selo and Belacevac, near Obilic, Serbia	2,000.
Cement	Becinska Fabrika Cementa	Plant at Beocin, Serbia	2,031.
Do.	Fabrika Cementa Novi Popovac	Plant at Popovac, Serbia	1,613.
Copper	Rudarsko Topionicki Bazen Bor	Smelter at Bor, Serbia	180.
Do.	do.	Electrolytic refinery at Bor, Serbia	180.
Do.	do.	Mine and mill at Bor, Serbia	5,000 ore.
Do.	do.	Mine and mill at Majdanpek, Serbia	15,000 ore.
Do.	do.	Mine and mill at Veliki Krivelj, Serbia	8,000 ore.
Lead-zinc ore	Rudarsko-Metalursko-Hemijski Kombinat za Olovo i Cink Trepca	Mines at Ajvalija, Kopanaonik, Badovac; Trepca, Blagodot, Lece; Veliki Majdan, Tisovak; and Ksbnica, Rudnik, Suplja Stijena	5,000.
Do.	do.	Mills at Kriva Feja, Lece, Rudnik, Badovac, Leposavic, Zvecan, and Maravce, Suplja Stijena	3,160.
Do.	Hemijska Industrija Zorka: Brskovo, Rudnici Olova i Cinka	Mine at Brskovo, Montenegro	500.
Do.	Veliki Majdan Rudnik Olova i Cinka	Mine at mill near Krupanj, Serbia	250.
Lead, metal	Rudarsko Metalursko Hemijski Kombinat za Olovo i Cink Trepca	Smelter at Zvecan, Serbia	180.
Do.	do.	Refinery at Zvecan, Serbia	90.
Magnesite, concentrate	Rudnici Magnezita "Sumadija"	Mine and plant at Sumadija, 20 kilometers northwest of Cacak, Serbia	120.
Do.	Rudnik i Industrija Magnezita "Strezovce"	Opencast mine at Beli Kamen, Strezovce, near Itiova Metrovica, Serbia	300.
Do.	do.	Sinter plant at Strezovce	40.
Do.	Magnohrom, Rudnik Magnezita "Magnezit"	Mine at Bela Stena, Baljevac na Ibru, Serbia	30.
Natural gas	million cubic feet Naftaplin (Naftagas), RO za Istrazivanje, i Proizvodnju Nafte i Gasa	Natural gas fields in Serbia Kinkinda and others	30,000.
Petroleum:			
Crude	thousand barrels per day Naftagas, Naftna Industrija	Oilfields in Serbia: Kikinda and others	30.
Refined	do. Naftagas, Naftna Industrija:		
Do.	do. Rafinerija Nafte Pancevo	Refinery at Pancevo, Serbia	110.
Do.	do. Rafinerija Nafte Novi Sad	Refinery at Novi Sad, Serbia	28.
Pig iron	Metalurski Kombinat, Smederevo	Blast furnace at Smederevo, Serbia	720.
Steel, crude	do.	Plant at Smederevo, Serbia	600.
Zinc metal	Rudarsko Metalursko Hemijski Kombinat Olova i Cinka Trepca, Metalurgija Cinka	Electrolytic plant at Titova Metrovica, Serbia	40.
Do.	Hemijska Industrija Zorka	Electrolytic plant at Sabac, Serbia	40.