

# 2016 Minerals Yearbook

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## SERBIA

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# THE MINERAL INDUSTRY OF SERBIA

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In 2016, Serbia produced metals, such as aluminum, copper, gold, lead, pig iron, platinum-group metals, selenium, silver, raw steel, and zinc, and industrial minerals, which included cement, chalk, gypsum, kaolin, lime, limestone, marble, salt, sand and gravel, and silica (common sand). The country also produced mineral fuels and related materials, including coal, natural gas, crude petroleum, and refinery products (table 1).

## Minerals in the National Economy

In 2016, Serbia's real gross domestic product (GDP) increased by 2.8% compared with an increase of 0.8% in 2015. The nominal GDP was \$38.3 billion. Serbia's industrial production increased in value by 4.7% compared with an increase of 8.3% in 2015; mining and quarrying production increased by 4.0% in 2016 compared with an increase of 10.6% in 2015; and manufacturing production increased by 5.3%, or at the same rate as in 2015. In 2016, the exports totaled \$14.8 billion compared with \$13.4 billion in 2015, and imports totaled \$19.2 billion compared with \$18.2 billion in 2015. Exports of mining and quarrying increased by 21% to \$63 million from \$52 million in 2015, and metal ore exports, by 32% to \$45 million from \$34 million in 2015. In 2016, mining and quarrying imports decreased to \$14.9 million from \$14.2 million; imports of crude petroleum and natural gas decreased to \$1.0 million from \$1.3 million, and imports of coal decreased to \$40 million from \$65 million. The imports of metal ores increased to \$265 million from \$202 million (Statistical Office of the Republic of Serbia, 2017a, p. 276; 2017b, p. 123–124; 2017c, p. 337, 343, 344; World Bank, 2017).

## Government Policies and Programs

The Law on Mining and Geological Exploration was adopted on December 16, 2015. The law stipulates the establishment of the Geological Institute of Serbia and formulates a Strategy of Mineral Resources Management. According to the law, such minerals as boron, coal, copper, gold, lithium, natural gas, crude petroleum, shale oil, zinc, as well as other mineral resources to be determined later by the Government, were considered to be minerals of strategic importance to the country (Serbia Energy, 2016).

## Production

In 2016, the production of lead (mine production, Pb content) was estimated to have increased by 275%; silver (refinery production, Ag content), by 107%; hot-rolled steel products, by 83%; copper (refinery production, Cu content), by 37%; copper (smelter production, Cu content), by 29%; gold (refinery production) and pig iron, by 28% each; raw steel, by 23%; selenium (Se content), by 22%; petroleum refinery production, by 20%; kaolin, by 17%; copper (concentrate production, Cu content), by 13%; and hydraulic cement and industrial sand

and gravel, by 9% each. Production of dimension stone (block marble, including granite) decreased by 52%; construction sand and gravel (unspecified, but excluding glass sand), by 29%; lime, by 26%; silica (mine production of common sand), by 21%; bituminous coal, by 19%; and nitrogen (N content of ammonia), by 18%. Data on mineral production are in table 1.

## Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

## Commodity Review

### Metals

**Copper and Gold.**—In 2016, the Government began the open bidding process for consulting services in managing the Government-owned Rudarsko Topionicki Bazen Bor (RTB Bor). The company operated all the country's copper mines, as well as the only copper refinery and gold refinery. The intended goal of the consulting services was (1) to prepare and to implement the procedures to attract investors for RTB Bor, (2) to increase profitability, and (3) to implement the reorganization plan (table 1; eKapija, 2016; Rudarsko Topionicki Bazen Bor, 2016).

In 2016, Dundee Precious Metals Inc. (DPM) of Canada announced the acquisition of the remaining shares in Avala Resources Ltd. of Canada (Avala) and increased its ownership from 50.1% to 100% of Avala's exploration assets, which were the Lenovac gold project, the Timok gold project, and the Tulare copper and gold project, as well as other early stage projects in Serbia. In 2016, DPM continued with exploration activity at its exploration assets adjacent to the Timok Magmatic Complex project; however, its focus was more on exploration activity at its Tulare copper-gold and other projects in Serbia (Dundee Precious Metals Inc., 2016, p. 8–9, 51–53).

In 2016, SRK and Reservoir Minerals Inc. of Canada and Nevsun Resources Ltd. of Canada released a preliminary economic assessment report. The National Instrument (NI) 43–101 report contained an updated estimate for inferred and indicated resources at the newly discovered Cukaru Peki copper-gold deposit, which is located in the Bretovac-Metovnica exploration licensed area. The inferred resources were estimated to be 35.0 million metric tons (Mt) grading 2.9% copper and 1.7 grams per metric ton (g/t) gold, and the indicated resources were estimated to be 1.7 Mt grading 13.5% copper and 10.4 g/t gold (Markewired, 2015; Reservoir Minerals Corp., 2015, p. 5, 15; SRK Consulting (UK) Ltd., 2016b, p. 4).

### Industrial Minerals

**Boron and Lithium.**—Rio Tinto plc of the United Kingdom held 100% interest, through its wholly owned subsidiary Rio Sava Exploration d.o.o., in the Jadar lithium-borate project, which is located about 100 kilometers from Belgrade in

western Serbia. As of yearend 2016, the total mineral resources at Jadar were estimated to be 136 Mt at an average grade of 1.9% lithium oxide and the total borate resources were estimated to be 21 Mt, including 10 Mt of indicated resources and 11 Mt of inferred resources. Rio Tinto was obligated to submit its study on reserves to the Ministry of Mining and Energy at the beginning of 2017, and the company expected to start mining once the Ministry of Energy accepts the study (Serbia Energy, 2015; Rio Tinto plc, 2016, p. 228, 230).

Erin Ventures Inc. of Canada held 100% interest in the Piskanja boron deposit, which is located within the Jarandol basin in southern Serbia, through its subsidiary Balkan Gold d.o.o. The Jarandol basin forms the eastern part of the Gradac-Baljevac Graben, which is located in the Varder Zone. The indicated mineral resources of the Piskanja deposit were estimated to be 7.8 Mt at an average grade of 31.0% boron trioxide ( $B_2O_3$ ) with a cutoff grade of 12%  $B_2O_3$ , and the inferred mineral resources were estimated to be 3.4 Mt at an average grade of 28.6%  $B_2O_3$  with a cutoff grade of 12%  $B_2O_3$ . In 2016, Erin Ventures continued with its drilling program at the Piskanja and the Jarandol boron projects (Balkan Gold Corp., 2016; Erin Ventures Inc., 2016a, b; SRK Consulting (UK) Ltd., 2016a, p. v, 52).

## Outlook

Serbia's economy was expected to continue to grow, with a projected 3.0% increase of real GDP in 2017. Serbia heavily relies on foreign investment and loans for infrastructure development and mineral production. Serbia has the potential to become a lithium and boron producer in the future if the Jadar lithium-borate project can be developed as planned. There are many copper and gold projects at the exploration stage in Serbia; however, copper and gold production was not expected to increase in the near term, as these projects are still in the early stages of development (International Monetary Fund, 2017, p. 246).

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016
<b>METALS</b>					
Aluminum metal, secondary	64,543	65,666	63,511	65,957	36,000
Copper:					
Mine production:					
Ore:					
Gross weight thousand metric tons	14,346	16,673	16,714	17,108	17,845
Cu content	41,460	44,453	45,296	47,218	48,958
Concentrate, Cu content	34,400	35,500 <sup>r</sup>	35,843	36,410	41,312
Refinery production:					
Primary	32,229	32,606	31,584	42,729	60,300
Secondary	2,473	3,234	1,591 <sup>r</sup>	1,917 <sup>r</sup>	1,000
Total	34,702	35,840	33,175 <sup>r</sup>	44,646 <sup>r</sup>	61,300
Smelter production:					
Primary	32,200 <sup>r</sup>	33,300 <sup>r</sup>	30,700 <sup>r</sup>	50,000 <sup>r</sup>	70,000
Secondary	2,500 <sup>r</sup>	3,200 <sup>r</sup>	2,500 <sup>r</sup>	5,000 <sup>r</sup>	1,000
Total	34,700 <sup>r</sup>	36,500 <sup>r</sup>	33,200 <sup>r</sup>	55,000 <sup>r</sup>	71,000
Gold, refinery production kilograms	900	866	1,310	628	805
Iron and steel:					
Pig iron thousand metric tons	312	365	550	904	1,154
Raw steel do.	346	396	583	955	1,173
Hot-rolled products do.	155	130	315	820	1,503
Lead:					
Mine production, ore, Pb content	2,500	3,100	3,700	2,400	9,000
Refinery production, primary and secondary	13,000	15,000	15,000	15,000	15,000
Magnesite <sup>c</sup>	80,000 <sup>r</sup>	80,000 <sup>r</sup>	75,000 <sup>r</sup>	75,000 <sup>r</sup>	75,000
Platinum-group metals, mine production, primary:					
Palladium, Pd content kilograms	22	25 <sup>r</sup>	23 <sup>r</sup>	31 <sup>r</sup>	31
Platinum, Pt content do.	3	2 <sup>r</sup>	3	4	4
Selenium, Se content do.	13,200	15,727 <sup>r</sup>	17,255 <sup>r</sup>	14,950 <sup>r</sup>	18,300
Silver, refinery production do.	5,224 <sup>r</sup>	5,764 <sup>r</sup>	7,360 <sup>r</sup>	5,470 <sup>r</sup>	11,345
Zinc, mine production, Zn content <sup>c</sup>	6,000 <sup>r</sup>	5,800 <sup>r</sup>	6,200 <sup>r</sup>	10,000 <sup>r</sup>	11,000
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic thousand metric tons	1,831	1,592	1,605	1,654	1,801
Clay and shale, kaolin	155,000	156,000	214,000	216,210	253,000
Lime	239,000	279,000 <sup>e</sup>	215,000 <sup>r</sup>	189,000 <sup>r, e</sup>	140,049
Nitrogen, ammonia, N content <sup>c</sup>	170,000 <sup>r</sup>	202,000 <sup>r</sup>	109,000 <sup>r</sup>	89,000 <sup>r</sup>	73,000
Salt, all sources	16,506 <sup>r</sup>	13,704 <sup>r</sup>	12,994	13,202	13,000 <sup>e</sup>
Stone, sand, and gravel:					
Sand and gravel, construction, sand thousand metric tons	7,925	6,331	7,752	9,826	6,986
Sand and gravel, industrial, sand do.	1,797	1,013	740	168	183
Silica, mine production, common sand do.	1	633	462	259	205
Stone, crushed, limestone, including gypsum and chalk do.	2,467	2,459	2,623	2,878	2,933
Stone, dimension, marble, block, including granite do.	182	241	226	271	131
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal:					
Bituminous thousand metric tons	148	160	126	129 <sup>r</sup>	105
Lignite do.	38,024 <sup>r</sup>	40,094 <sup>r</sup>	29,694 <sup>r</sup>	37,659 <sup>r</sup>	38,289
Natural gas million cubic meters	672	661	630	626	595

See footnotes at end of table.

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	8,246	8,532	8,151	7,528	6,846
Refinery production:						
Distillate fuel oil	do.	4,774	8,131	8,422	9,422 <sup>r</sup>	9,526
Gasoline	do.	3,446	4,419	4,615	4,820 <sup>r</sup>	4,930
Kerosene	do.	564	564	843	835 <sup>r</sup>	943
Lubricants	do.	59,304	74,683	107,254	90,500 <sup>r</sup>	112,022
Residential fuel oil	do.	2,637	2,611	2,444	1,865 <sup>r</sup>	1,985
Total	do.	70,725	90,408	123,578	107,442	129,406

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto.

<sup>1</sup>Table includes data available through January 9, 2018. All data are reported unless otherwise noted. 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, crude gypsum, mangensium (mined magnesite, byproduct of mined dolomite), secondary magnesium metal, and other mineral commodities may have been produced in Serbia, but available information was inadequate to make reliable estimates of output.

TABLE 2  
SERBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity			Major operating companies and major equity holders	Location of main facilities	Annual capacity <sup>e</sup>
Aluminum metal, secondary			Nissal A.D.	Nis smelter	2
Do.			Impol Seval A.D.	Sevojno smelter	45
Do.			Industrium d.o.o.	Sremska Mitrovica smelter	75
Cement			Beocinska Fabrika Cementa (LafargeHolcim Ltd., 100%)	Plant at Beocin	2,000
Do.			Holcim (Srbija) a.d. (CHR Group, 100%)	Plant at Novi Popovac	1,400
Do.			Titan Cementara Kosjerić Ltd. (Titan Group, 100%)	Plant at Kosjeric	500
Clay and shale, kaolin			Jugo-Kaolin d. o. o. (Quarzwerte GmbH., 87%)	Slatina Mine	NA
Coal:					
Bituminous			JP PEU Resavica	Ibarski Rudnici Mines near Baljevac and Vrska Cuka Mines	70
Lignite			do.	Underground mines near Resavica, Bogdinac, Bogovina, Krepoljin, and Stavalj	400
Do.	thousand metric tons		MB Kolubara Ltd. (Electric Power Industry of Serbia)	Opencast mines: Field B, Field D, Veliki Crljeni, and Tamnava West near Vreoci	31
Do.			TPPs-OCMs Kostolac Ltd. (Electric Power Industry of Serbia)	Opencast mine at Drmno near Kostolac	8,500
Do.			JP PEU Resavica	Underground mine at Lubnica	60
Copper:					
Mine production, Cu content of concentrate			Rudarsko Topionicki Bazen Bor (RTB Bor) (Government owned)	Mine Cerovo at Bor	36
Do.			do.	Jama Mine and mill at Bor	8
Do.			do.	Mine and mill at Majdanpek	30
Do.			do.	Mine and mill at Veliki Krivelj	20
Metal			do.	Smelter and refinery at Bor	80
Gold	kilograms		Rudarsko Topionicki Bazen Bor (RTB Bor) (Government owned)	do.	1,300
Iron and steel:					
Pig iron			Zelezara Smederevo d.o.o.	Two blast furnaces at Smederevo	NA
Raw Steel			do.	Plant at Smederevo	2,200
Lead metal, secondary			Farmakom M.B.	Smelter at Zajaca	NA
Lead-zinc ore			Contango d.o.o.	Mine and mill at Rudnik	250
Do.			NA	Grot Mine near Vranje	300
Do.			Farmakom M.B.	Mines at Rajiceva Gora, Ravnaja, and Veliki Cip	350
Do.			MINECO Ltd.	Rudnik, Rudnik village, central part of Serbia	50
Lime			Jelen Do a.d. (Nexe Grupa)	Plant in Jelen Dol, west of Cacak	90
Do.			Zelezara Smederevo d.o.o.	Plant at Kucevo	NA
Do.			Ravnaja AD	Plant at Mali Zvornik	NA
Magnesite, concentrate			Magnohrom d.o.o.	Mines near Kraljevo	NA
Magnesium:					
Mine (byproduct of dolomite mining)			MG Serbien d.o.o.	Bela Stena, near Baljevac	NA
Metal:					
Primary			do.	do.	2
Secondary			do.	do.	2
Natural gas	million cubic meters		Naftna Industrija Srbije a.d. (NIS) (JSC Gazprom Neft, 56.15%, and Government, 29.87%)	Wells throughout northern Serbia	600
Petroleum:					
Crude	42-gallon barrels per day		do.	Northeastern Serbia	24
Refined			do.	Refinery at Pancevo	4,800
Do.			do.	Refinery at Novi Sad	2,500

See footnotes at end of table.

TABLE 2—Continued  
SERBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity holders	Location of main facilities	Annual capacity <sup>e</sup>
Platinum-group metals	Rudarsko Topionicki Bazen Bor (RTB Bor) (Government owned)	Mine Cerovo at Bor	NA
Silica	Jugo-Kaolin d. o. o. (Quarzwerte GmbH., 87% )	Cucuge, Avala, Slatina, Dokmir	NA
Silver, refined	Rudarsko Topionicki Bazen Bor (RTB Bor) (Government owned)	Mine Cerovo at Bor	NA
Zinc, mine production, Zn content	MINECO Ltd.	Rudnik, Rudnik village, central part of Serbia	11

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.