

THE MINERAL INDUSTRY OF

CROATIA

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In 1996, Croatia began to implement fully a program of economic recovery, following the signing of peace accords between warring sides in the former Yugoslavia in 1995. Until 1991, Croatia was the chief producer of natural gas and petroleum, a leading producer of iron and steel and industrial minerals that included bentonite, cement, and gypsum in the former Yugoslavia. From mid-1991 to early 1992, Croatia was actively involved in a military struggle for independence, which severely damaged the country's economic infrastructure. Croatia's minerals industry suffered not only extensive damage at facilities in the aluminum, petroleum, and steel sectors but also experienced the disruption of routine commercial activities within the former Yugoslav economic sphere, which led to shortages of needed raw materials. From 1991 to 1995, the country's Government focused most of its attention on maintaining Croatia's integrity and independence. Activities by the Government also were directed at maintaining mineral industry operations to support the effort to establish Croatia's independence and presumably to help maintain socially acceptable levels of employment. In 1993, an economic stabilization plan was established. The aim of this plan was to create a financial basis for actively supporting the country's independence effort and to provide care for large numbers of persons displaced by the conflict (Financial Times, 1996). In 1996, the restructuring and denationalization of the country's major industrial enterprises emerged as major issues that concerned the Government of Croatia. In 1996, the Government of Croatia expected the gross domestic product to grow by 4.5%, compared to that of 1995. Also, industrial production was expected to rise by 5% during the same period.

The production table for Croatia for 1996 was compiled from data presented in a variety of statistical publications. However, a significant portion of the country's production statistics was obtained from *Statisticki Ljetopis 1992* published by the Central Bureau of Statistics in Zagreb, Croatia, for a limited number of commodities through 1992 and the *Monthly Statistical Report No. 9, 1996*, which provided data for later years. (See table 1.)

The former domestic market of Yugoslavia was an important element in Croatia's mineral trade. With the dissolution of Yugoslavia, commerce with the country's former domestic trading partners became classified as foreign trade. Moreover, trade with Croatia's former trading partners in the former constituent republics of Yugoslavia largely had become untenable because of the civil war in Croatia during 1991-92 and in the Republic of Bosnia and Herzegovina during 1991-95. Additionally, international trade embargoes were levied against several republics of the former Yugoslav federation that were

Croatia's traditional commercial partners. Consequently, Croatia has sought to orient its trade to a greater degree toward markets in Europe.

Table 2 lists the apparent administrative bodies and subordinate production units for the main branches of the country's mineral industry in 1996.

Energoinvest of Bosnia and Herzegovina operated bauxite mines in the Republics of Bosnia and Herzegovina and Croatia. *Jadranski Aluminijum's* operations were entirely in Croatia.

At yearend 1991, Croatia reported extensive damage to the Boris Kidric aluminum smelter at Sibenik as a result of the fighting. The smelter that remained was closed, and Croatian authorities have not indicated when the operation would be restarted. Before the conflict damaged the Sibenik aluminum smelter, Croatia's primary aluminum smelting capacity was approximately 25% of the total for the former Yugoslavia.

Croatia's steel industry facilities were severely damaged in the fighting at the SP MK *Zeljezare Sisak* (Sisak) steel mill in the central part of the country and at the *Jadranska Zeljezara* at Split steel mill on the Dalmatian coast. Because of the damage sustained by the country's steel plants during the 1991-92 fighting and the loss of traditional markets in the former Yugoslavia, annual steel production at these facilities had declined by more than 50% during the 1992-96 period compared with Croatia's output of more than 400,000 tons in 1990. To modernize Sisak's steelmaking operations and to restore production to prewar levels, in 1996, Sisak's management decided to offer one of its subsidiaries, *Metaval*, for privatization (Metal Bulletin, 1996). *Metaval* has been Sisak's producer of crude steel; other subsidiaries, not involved with steel production, have been involved largely with downstream metalworking operations and other commercial activities. In 1996, crude steel production at Sisak amounted to about 96,000 metric tons, an increase of about 33% compared with that of 1995. However, prewar production of steel at Sisak reportedly amounted to 350,000 metric tons per year. Only the company's electric arc furnace has been operational in recent years; the two open-hearth furnaces were idle. At the 1996 level of crude steel production, Sisak has been able to export relatively small quantities of steel to Bosnia and Herzegovina, Macedonia, Slovenia (all former republics of Yugoslavia), as well as to France, Germany, Italy, the United States, and to several countries in the Middle East. With respect to the *Jadranska steel works* in Split, no plans for denationalization were reported in 1996.

Croatia has produced sufficient quantities of cement, clays, lime, nitrogen, pumice, stone, and other industrial minerals to

meet most of the needs of the country's construction and construction materials industries, as well as some of the requirements of the domestic chemical industry. The demand for industrial minerals in Croatia's building materials and construction sectors is expected to increase because of post-war reconstruction requirements and the rationalization of the country's economy and infrastructure. Croatia's cement industry in 1996 consisted of seven plants with combined capacities to produce clinker and cement amounting to 2.68 million metric tons per year (Mt/yr) and 2.194 Mt/yr, respectively. Facility modernization at these plants is a necessary component of the country's postwar development of infrastructure (International Cement Review, 1996). Croatia's cement works that had obtained foreign investment by 1996 included Tvornica Cementa Koromacno, Dalmacija Cement, operating three plants in the southern coastal part of the country; and Istracement-International D.D. Swiss and German companies were major investors in this sector.

Croatia's natural gas and petroleum industry apparently did not suffer sustained damage during the fighting in 1991-92. The production of both natural gas and petroleum reportedly has continued, but at somewhat lower levels of output: in 1996, Croatia's output of petroleum was about 25% less than that in 1990. Domestic production of natural gas and petroleum was sufficient to meet only about one-half of the country's needs for these fuels. Foreign activities in the mineral fuels sector included discussions between Industrija Nafta (INA) Croatia's petroleum company, and Agip of Italy to explore Croatia's possible offshore natural gas reserves in the Adriatic Sea.

The transition of Croatia's economy to a market-based system has required a reevaluation of the country's mineral resources from a market perspective. Mineral resources in Croatia were assessed according to the Soviet classification system, which is

not comparable to the system used in the United States. The economic criteria used in this system were designed for a centrally planned economic system that did not account for production costs in the same way as a market economy system. For a full explanation of the Soviet reserve classification system, refer to the reserve section in the USGS Minerals Yearbook Vol.III (International) report on Russia.

Croatia's inland system of transportation included 35,554 kilometers (km) of railroads, highways, and inland waterways. The railroad system consisted of 2,698 km of 1.435-gauge track, of which about 930 km was electrified. The highway and road system amounted to a total of 32,071 km of surface, of which paved surfaces amounted to 23,305 km, 8,439 km was gravel, and 327 km was earth surfaced. The country's merchant marine fleet consisted of 35 ships totaling 181,565 deadweight tons. Pipelines for crude petroleum were 670 km in length, while those for refinery products and natural gas were 20 km and 310 km, respectively.

The future composition of Croatia's mineral industries will depend on the final resolution of the political and territorial dispute between the Government of Croatia and the leadership of largely Serbian enclaves in the eastern part of the country and on the extent to which policies of the Government of Croatia will effect a full transition of the country's economy to a market-based system.

References Cited

- Financial Times, 1996, Supplement—Croatia: London, Financial Times, May 30, p. I-VI.
- International Cement Review, 1996, [Untitled]: International Cement Review, May, p. 64-69.
- Metal Bulletin, 1996, [Untitled]: Metal Bulletin, July 18, p. 18.

TABLE 1
CROATIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/
METALS					
Aluminum:					
Bauxite	6,878	1,690	1,400 e/	1,500 e/	1,500
Metal, ingot, primary and secondary	20,406	25,956	25,993	30,944	38,000
Iron and steel: Metal:					
Ferrous alloys:					
Ferromanganese	56,500	27,300	31,704 r/	26,081 r/	25,000
Ferromanganese e/	10,000	10,000	562 r/ 3/	--	--
Ferrosilicomanganese	15,000	40,000	22,071 r/	-- r/	--
Steel, crude, from electric furnaces	101,942 r/	73,815 r/	63,357 r/	45,373 r/	43,000
Silver e/ kilograms	800	500	637 r/ 3/	75 r/ 3/	-- 3/
INDUSTRIAL MINERALS					
Barite concentrate e/	1,500	1,500	-- r/	-- r/	--
Cement thousand tons	1,768	1,683	2,055 r/	1,708 r/	1,900 3/
Clays: e/					
Bentonite	10,000	10,000	10,391 r/ 3/	7,327 r/ 3/	8,000
Ceramic clay	10,000	10,000	10,000	10,000	10,000
Fire clay, crude	30,000	30,000	4,143 r/ 3/	2,475 r/ 3/	5,000
Gypsum: e/					
Crude	50,000	20,000 r/	-- r/	-- r/	--
Calcined	7,000	7,000	-- r/	-- r/	--
Lime thousand tons	144	156	169 r/	81 r/	100
Nitrogen, N content of ammonia do.	426	345	311 r/	299 r/	350
Pumice and related materials, volcanic tuff e/	600	300 r/	53 r/ 3/	39 r/ 3/	50
Quartz, quartzite, glass sand	39,592	23,344	31,031 r/	31,765 r/	8,000
Salt, all sources	28,585	29,643	21,655 r/	21,784 r/	10,000
Sand and gravel, excluding glass sand e/ thousand cubic meters	2,000	2,000	1,845 r/ 3/	1,925 r/ 3/	2,000
Stone, excluding quartz and quartzite: Dimension stone, crude:					
Ornamental square meters	1,178,622	1,133,873	1,111,271 r/	1,108,655 r/	1,100,000
Crushed and brown, n.e.s. thousand cubic meters	3,280	4,160	4,955 r/	5,492 r/	5,700
Other e/ cubic meters	25,000	20,000	20,000	20,000	20,000
Sulfur, byproduct of petroleum e/	2,000	2,000	-- r/	-- r/	--
MINERAL FUELS AND RELATED MATERIALS					
Carbon black	13,479	17,123	21,468 r/	27,187 r/	27,000
Coal: Bituminous thousand tons	120	105	96 r/	75 r/	70
Coke do.	409	421	219 r/	-- r/	--
Natural gas, gross production million cubic meters	1,820	2,068	1,792 r/	1,966 r/	1,700
Petroleum, crude:					
As reported thousand tons	1,743	1,729	1,576 r/	1,500 r/	1,400
Converted e/ thousand 42-gallon barrels	14,100	12,800	12,000	12,000	11,000

e/ Estimated. r/ Revised.

1/ Table includes data available through May 1997.

2/ In addition to commodities listed, common clay also was produced, but available information was inadequate to make reliable estimates of output levels.

3/ Reported figure.

TABLE 2
CROATIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Aluminum		Boris Kidric, Tvornica Lakhir Metala	Smelter at Sibenik, Croatia	75
Bauxite		Jadral, Jadranski Aluminijum	Mines in at Obrovac, Drnis, and other locations	450
Coal, Bituminous		Istarski Ugljenokopi Rasa	Mines at Labin and Potpican.	500
Cement		Dalmacija Cement	Partizan plant at Kasel Sucurac	1,525
Do.		do.	Prvoborac plant at Solin	884
Do.		do.	10 Kolovoz plant at Solin Majdan	440
Do.		Istra Cement-International D.D.	Renko Spèrac plant at Omis	140
Do.		Tvornica Cementa Koromacno	Plant at Pula	70
Do.			Plant at Koromacno	420
Natural gas	million cubic feet	do.	Natural gasfields in Bogsic Lug, Molve, and others	70,000
Petroleum:			Oilfields in Croatia and Slovenia:	
Crude	thousand barrels per day	Industrija Naftè (INA)	Benicanci, Zutica, Struzec, Ivanic Grad, Lendava, and others	70
Do.	do.	do.	Refineries at Urinj and Rijeka	160
Do.	do.	do.	Refinery at Sisak	150
Pig iron		Metalurski Kombinat Zeljezara Sisak	2 blast furnaces at Sisak	235
Salt	cubic meters	Solana Pag, Solana Ante Festin	Marine salt: Pag Island	13
Steel, crude		SP MK Zeljezare Sisak	Plant at Sisak	401
Do.		Jadranska Zelejazara Split	Plant at Split	120