THE MINERAL INDUSTRY OF

GEORGIA

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Georgia has a diverse mineral industry, producing fuels, ferrous and nonferrous metals, ferroalloys, and industrial minerals. Georgia was a major producer of manganese from the Chiatura deposit. The manganese was used in Georgia for ferroalloy production at the Zestafoni ferroalloys plant. A small amount of iron ore also was mined. At the Madneuli complex in Georgia, a copper-barite polymetallic ore deposit was exploited for copper, barite, and a range of byproduct minerals, including gold and silver. Lead and zinc were mined at the Kvaisi lead-zinc deposit, and arsenic was mined from the Lukhumi and the Tsansa deposits. The steel mill in Rustavi had the capacity to produce 1.5 million metric tons per year (Mt/yr) of crude steel, as well as the capacity to produce, coke, pig iron, sinter, and rolled products. Georgia produced a range of industrial minerals, including bentonite, diatomite, talc, and zeolites and also mined semiprecious stones. It also produced some coal, gas, and oil, and has an oil refinery at Batumi.

In 1997, Georgia's gross domestic product (GDP) increased by 11.3% compared with 1996, continuing a trend in GDP growth that started in 1995. Industrial output in 1997 increased by 8.1% compared with 1996. Because Georgia's economic transition problems have been exacerbated by civil war and separatist struggles, Georgia's GDP in 1997 was only 29% of its peak in 1988, and its industrial output, only 18% of its peak in 1989. GDP measurements and other macroeconomic assessments, however, do not necessarily present a complete measure of economic activity because it is estimated that one-third or more of the GDP is produced through unrecorded activities in what is termed the "shadow economy" (Interfax Statistical Report, 1997).

Regarding mineral production, performance was mixed. According to the Ministry of the Economy, reported mineral production was far below Georgia's mineral production capacity (Ministry of Economy, 1998)

Georgia must address its growing foreign debt problem, much of which was for energy and fuel payments to Russia and Turkmenistan. Georgia had not formally rescheduled payments to either country. Russia and Turkmenistan cut off natural gas supplies in 1997 for lack of payment. Gas imports had been used mainly by the Rustavi steel mill and the Tbilisi power station (U.S. Department of Energy, Energy Information Administration, November 1997, Georgia—Economy, accessed March 25, 1998, at URL http://www.eia.doe.gov.emeu/cabs/georgia.html).

During the economic downturn in the years following the breakup of the Soviet Union, the environment became less polluted because the reduction in industrial production caused less energy consumption, resulting in less air pollution and a corresponding reduction in industrial waste. The industrial waste that was generated, however, could not be properly disposed of because funds were lacking and water filtering devices were not maintained. Also, forests were cut down for fuel, which increased soil erosion and created conditions more prone for landslides and avalanches (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Environmental protection, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/ Environment.HTM).

According to the Georgian Investment Center, the "concept of the need for environment protection is being gradually formed in the consciousness of the population." A legislative base concerning environmental protection and natural resources was worked out, and the law on "Environmental Protection" was adopted by the Parliament of Georgia in 1997. The Ministry of Natural Resources and Environmental Protection exercised full control over the environment and natural resources (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Environmental protection, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/Environment.HTM).

Manganese mined at the Chiaturamarganets (Chiatura manganese) complex, which mines the Chiatura manganese deposit, was one of Georgia's major mineral products. The Chiatura deposit is located in western Georgia and it is connected to the Black Sea coast by a 132-kilometer (km)-long railway and to Tbilisi by a 145-km-long railway. Ore was extracted to a maximum depth of 150 meters. The deposit contains three main types of ore: oxide ore, averaging 26% manganese (Mn); carbonate ore, averaging 17% to 18% Mn; and mixed oxide and carbonate ore, averaging 21% to 22% Mn. In 1996, 76% of the ore was mined underground, and 24% from open pits (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998 at URL http://www. georgia.net.ge/gic/Sector/Mining.HTM). As can be seen in table 2, there has been a great decrease in manganese extraction. The reduction in manganese production volume was the result of the economic crisis and political instability that followed the breakup

In 1996, the Zestafoni ferroalloy plant, located near the Chiatura deposit and a producer of manganese ferroalloys, was signed over to the Russian-Georgian Bank for Reconstruction and Development and North Atlantic Research of the United States for a 10-year trusteeship. In 1997, output at Zestafoni was more than 20,000 metric tons (t), which was an approximately 150% increase compared with that of 1996. Plans called for Zestafoni to produce between 80,000 and 90,000 t of silicomanganese in 1998. Production costs were reduced considerably in 1997, and the trustees reduced debts totaling 21 million lari (1.3 lari = US\$1 at yearend 1997) to just 3 million lari. But the Zestafoni plant still suffered from raw material and electricity supply problems. Ore

of the Soviet Union.

was supplied mainly from the nearby Chiatura manganese deposit, at which production had fallen sharply. Also, the plant was receiving only 40 to 45 megawatts (MW) of a required 70 MW of electricity. The plant consumed about 250 MW in the 1970's and 1980's, when it operated at 90% of capacity and produced about 400,000 metric tons per year (t/yr) of ferroalloys. As early as summer, Zestafoni intended to start making ferrochrome, which should bring annual revenues of \$88 million in the short term; these revenues would be equivalent to the plant's combined receipts from the sale of silicomanganese and ferromanganese. Zestafoni intended to finance ferrochrome production through foreign investment. One potential investor was a consortium of Japan's Nissho Iwai and an Israeli division of Bateman of the United States (Interfax Mining and Metals Report, 1998e).

Copper extraction was of great importance for Georgia. Copper is extracted from the Madneuli massive sulfide deposit, which also contains barite, zinc, and precious metals. The ore reportedly averages 1.5% copper with some ore sections grading between 2% and 4%. The central part of the deposit contains gold, and outlying parts contain barite and zinc. Mining was by open pit (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

According to reporting from Georgia based on the reserve classification system that was in effect in the Soviet Union, total reserves of copper are 390,000 t in the B and C1 reserve categories (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

The main reserves of lead and zinc are located in the Kvaisi deposit. The country's lead and zinc reserves reportedly total 5.278 million metric tons (Mt) in categories B and C1. The quantity of lead in the ore is 83,400 t, and the average lead content of the ore is 1.58%; the quantity of zinc contained in the ore is 229,500 t, and the average zinc content of the ore is 4.35%. In the C2 category, there is 4.478 Mt of ore, in which the amount of contained lead is 85,100 t and that of zinc is 168,800 t. An ore-dressing plant operated at the site. Madneuli reportedly had the capacity to extract and process 100,000 t/yr of ore (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

Georgia also produced some gold. In 1991, gold extraction totaled 1.9 t. It was planned to increase the amount to 4 t by 1997. To meet this goal, the Quartzite joint venture was founded in 1993 by the Madneuli mining and ore-dressing enterprise and an Australian company Resources Consortium. Georgia listed the following reserves for certain gold deposits: the Sakdrisi deposit with 15 t in categories C1 and C2, the Madneuli deposit with 23 t in categories B, C1, and C2. Besides gold, Georgia has a number of silver deposits, the largest of which is Madneuli with 200 t of reserves in categories C1 and C2 (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

Regarding other metals, Georgia produced arsenic at the

Lukhumi deposit, containing 8,700 t of arsenic in 112,000 t of ore, and at the Tsana deposit, containing 30,000 t of arsenic in 167,000 t of ore (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998, at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

Barite is a major ore constituent at the Madneuli deposit, which produced about 30,000 t/yr of barite. High-quality bentonite clays are produced in Georgia at the Gumbra and the Askana deposits. Extraction and processing started in the 1930's in Gumbra with 75% of extraction from underground mining; at Askana, extraction was by open pit. Diatomite is extracted at the Kisatibi deposit in Akhaltsikhe where mining started at the end of the 19th century. Zeolite has been extracted at the Tedzami deposit since 1981. About 25,000 t/yr of talc is mined at the Chorchana talc deposit (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998 at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

Also, there are a large number of deposits of decorative stone used as building materials, with mining occurring at more than 100 deposits. There are many clay deposits used in the production of bricks and ceramic products, as well as high-quality quartz sand and sand and gravel deposits. Along with decorative stones, Georgia has deposits of semiprecious stones and produced 20 t/yr of agate and 170 t/yr of obsidian (Georgian Investment Center, 1998, Overview of the economic sectors of Georgia—Mining, accessed July 2, 1998 at URL http://www.georgia.net.ge/gic/Sector/Mining.HTM).

Regarding specific enterprises, Chiaturamarganets had worked at far below capacity for the past 7 years. The Georgian Ministry of State Property was planning to hold an investment tender for 75% of the shares in Chiaturamarganets. Bids were to be invited from Georgian and foreign entities in which the Georgian Government owns at least a 25% share. The winner would have to invest at least \$30 million in the complex within 10 years; of that, \$3 million should be invested annually in the first 2 years and at least \$15 million during the first 5 years. The winner would also have to settle the complex's debts, which totaled \$7.5 million. Tender rules also stated that the winner must raise output to at least 50,000 t/yr of manganese concentrate in the first year, 100,000 t/yr from the second through the fourth year, and 150,000 t/yr starting from the fifth year. The future owner would not be able to transfer or mortgage any of the shares or fixed assets without the consent of the Government at any time during the 10 years. Potential investors included British Steel, a consortium of Nissho Iwai of Japan, and the Israeli division of Bateman (Interfax Mining and Metals Report, 1998c).

Enterprises, including the Rustavi metallurgical complex, the largest iron and steel producer in the Caucasus region, were being privatized in the mineral sector. At the beginning of 1996, Rustavi was to be incorporated, with the Government owning 98% of the shares and the employees, 2%. In January 1998, the Georgian Government signed 51% of its Rustavi shares over to a trustee, the limited liability company Metallurgoilgazinvest, for 10 years. This company is a subsidiary of the Metallurginvest joint venture, which is owned by a Russian-Spanish joint venture and an Israeli citizen. The trustee was required to invest up to \$90 million in the Rustavi complex during a 10-year period; of that amount, at least \$24 million had to be invested in 1998.

Plans called for Rustavi to increase output from 80,000 t/yr to between 300,000 and 400,000 t/yr of crude steel and between 200,000 and 250,000 t/yr of pipes and to restart pig iron production. About one-quarter of Rustavi's fixed assets were out of commission. Original design capacity at Rustavi was 1.5 Mt/yr of crude steel.

The Georgian Ministry of State Property announced a special auction for the sale of the remaining 47% of the Government-owned shares in Rustavi. The first block of 49,316,890 shares would be offered in spring 1998. The shares would be distributed in proportion to the size of the bids from the auction. Bids were invited from private individuals and legal entities in which the Georgian Government owns not more than a 25% share. The Georgian Ministry of State Property later extended the auction to August 1, 1998 (Interfax Mining and Metals Report, 1998a, b). Rustavi was hoping to base its revival, in part, on supplying pipes for oil and gas transport in conjunction with oil and gas development in the Caspian Sea (Interfax Mining and Metals Report, 1998d).

In the copper production sector, the Swiss metals trader Glencore International was adjudged to be the winner of an international tender for the right to manage the Madneuli copper mining and metallurgical complex for a 5-year period. The tender, in which Trapigure, another Swiss firm, also bid, was held in accordance with a decree signed at the end of 1996. Glencore must invest at least \$10 million in the Madneuli plant and in the settlement of Kazreti during a 3-year period. It must also increase mining capacity to extract at least 1 Mt/yr of copper ore and 250,000 t/yr of barite ore. In 1996, Madneuli produced 6,000 t of copper concentrate from about 150,000 t of ore. Glencore also received the exclusive right to buy copper and barite concentrates produced at Madneuli during the 5-year management period. Glencore planned to recoup its investment from the sale of these concentrates. Also, Glencore and Georgian representatives were to start negotiating the formation of a joint venture at the Madneuli plant, in which Glencore is expected to own a 51% interest (Interfax Mining and Metals Report, 1997b).

Georgia was not a large producer of precious metals. The Georgian Geology Department estimated that the country's overall proven reserves at lode deposits totaled 260 t of gold and more than 1,500 t of silver. The Geology Department estimated that there are another 250 t of undiscovered gold resources at deposits where exploratory work was still ongoing. Only the Georgian-Australian company Quartzite was mining gold. In 1997, the company commissioned the first stage for producing dore alloy from gold- and silver-bearing quartzites from the Madneuli deposit. The company expected to reach design capacity for producing 2 t/yr of gold in 1998 (Interfax Mining and Metals Report, 1997a).

The lack of electric power was one of the biggest obstacles to economic growth in Georgia. Long power outages were a daily occurrence in much of the country, and parts of Georgia did not receive any electricity. The situation worsened in 1997, because the water level in hydropower reservoirs was low. Hydroelectric power accounted for more than 80% of electric power generation in 1995; this percentage had been increasing yearly because much thermal capacity lay idle owing to the cessation of subsidized fuel deliveries that followed the collapse of the Soviet Union. Also, system to operate. Georgia was actively privatizing its power sector and was seeking foreign equity participation for installing new capacity and rehabilitating projects. Georgia had an estimated 100 billion kilowatts of untapped hydroenergy, as well as untapped coal resources, that could be exploited (U.S. Department of Energy, Energy Information Administration, November 1997, Georgia—Electricity, accessed March 25, 1998, at URL http://www.eia.doe.gov.emeu/cabs/georgia.html).

nonpayment for power continued to hinder the ability of the

Georgia had one refinery in Batumi with a capacity to process 5 Mt/yr of crude oil. The Batumi refinery, built in the 1930's, mainly processed crude oil from Russia and Azerbaijan. Most of the equipment at Batumi was worn out and obsolete, and the cost of production was twice that of imported refinery products (Interfax Petroleum Report, 1998b). The refinery at Batumi had been running at less than capacity because of a lack of crude oil supplies. This situation was expected to change with the completion of the pipeline carrying crude oil from Azerbaijan through Georgia to the Black Sea. Georgia was modernizing its refinery at Batumi and awarded a \$250 million contract in August to Japan's Marubeni Corporation, which was working with another Japanese firm, the JGC Corporation, and an Austrian firm, Transandia, to expand and modernize the refinery (Interfax Petroleum Report, 1998b).

In June, Georgia awarded Frontera Resources of the United States exclusive rights to explore and develop hydrocarbon resources in the Kakhetin oilfields, which had produced 1.211 Mt of oil since production began in the 1930's. Frontera planned to achieve minimum production levels of 24 metric tons per day within 18 months. Frontera started its work in Georgia in a joint venture with the Georgian oil company Gruzneft to revive production at the Mirzaani, the Patar Shiraki, and the Tarabani fields, which cover an area of more than 5,000 square kilometers south to southwest of Tbilisi. There were 174 wells in these fields, but most had been idle for several years (Interfax Petroleum Report, 1998a).

Georgia possesses limited domestic oil reserves, and its importance for the world energy market is as a potential oil transit center between the energy-rich Caspian Sea countries and Western markets. Nevertheless, Georgia was taking steps to increase domestic oil production and had negotiated several production-sharing agreements and joint ventures in the Kura Basin east of Tbilisi, as well as in the Black Sea region in western Georgia. Georgia has small undeveloped gas resources and must import its natural gas (U.S. Department of Energy, Energy Information Administration, November 1997, Georgia—Oil, accessed March 25, 1998, at URL http://www.eia.doe.gov.emeu/ cabs/georgia.html).

In March 1996, Georgia and Azerbaijan signed an agreement to pump a portion of the initial oil flows from the Azerbaijan International Operating Company (AIOC), an international consortium that is developing offshore Caspian Sea oil, along a western route to the Georgian Black Sea port of Supsa. The Georgian International Oil Company, a subsidiary of AIOC, will repair, expand, and modernize the pipeline and port facilities for the initial oil, and plans were to have facilities ready by yearend 1998. Work began in spring 1997 on constructing the Georgian section of the pipeline to transport the initial oil from Azerbaijan and was scheduled to be completed by October 1998 (Summary of World Broadcasts, 1997).

The Chevron Corp. of the United States signed a protocol of intent with Georgia to expand oil shipments from the Tengizchevroil joint venture in Kazakstan across Georgia to Batumi. Shipments were running at about 25,000 barrels per day (bbl/d) via a complicated system of barges, pipeline, and rail. Under the new agreement, the oil would be shipped to Georgia via barge and then through the to-be-rebuilt Kashuri-Batumi oil pipeline to Batumi. If a final agreement were reached, then the joint venture Tengizchevroil would receive the exclusive right to transport oil through this pipeline for the next 25 years. When rebuilt, the 290-km pipeline could carry between 140,000 and 160,000 bbl/d (U.S. Department of Energy, Energy Information Administration, November 1997, Georgia—Oil, accessed March 25, 1998, at URL http://www.eia.doe.gov.emeu/cabs/georgia.html).

Georgia was one of several contenders for routing the main 1million-barrel-per-day AIOC export pipeline. Two potential routes would cross Georgia with one going though Georgia to the Black Sea and the other through Georgia and Turkey to the Turkish port of Ceyhan on the Mediterranean Sea (U.S. Department of Energy, Energy Information Administration, November 1997, Georgia—Oil, accessed March 25, 1998, at URL http://www.eia.doe.gov.emeu/cabs/georgia.html).

Ukraine was also interested in a project to transport Azerbaijani oil across Georgia to Ukraine. Ukraine had created a pilot project to ship oil via rail across Georgia to Poti and then to the Ukrainian port of Odessa where an oil terminal was under construction. If the pilot succeeded, then about 20,000 bbl/d would be shipped through Georgia to Ukraine (U.S. Department of Energy, Energy Information Administration, November 1997, Georgia—Oil, accessed March 25, 1998, at URL http://www.eia.doe.gov.emeu/cabs/georgia.html). Georgia's plans to become an oil transit center are conditional upon a number of external political factors involving the struggle between Azerbaijan and Armenia and also on such internal factors as the proposed pipeline routes pass within a few miles of two separatist regions in Georgia, South Ossetia and Abkhazia, where tensions still remain.

It appears that Georgia will attempt to revive and expand production at its existing mineral-production enterprises and will vie to become a major transport corridor for oil from the Caspian Sea.

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TABLE 1 GEORGIA: REPORTED PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1993	1994	1995	1996	1997
Cement		30,000	100,000	100,000	84,708	90,600
Coal		100,000	40,000	40,000	6,100	4,200
Manganese, marketable ore				100,000	70,395	35,112
Natural gas	billion cubic meters	0.020	0.010	0.003	0.003	NA
Petroleum, crude		100,000	70,000	40,000	100,000	100,000
Steel, rolled		100,000	100,000	70,000	60,000	60,000
Zeolites		NA	NA	NA	1,700	6,000
NTA NT 4 1111						

NA Not available

1/ Table lists only those commodities for which reported multi-year production data exist and includes data available through December 10, 1998.

TABLE 2 GEORGIA: REPORTED MANGANESE ORE EXTRACTION AT CHIATURA

(Million metric tons)

	1980	1985	1990	1991	1992	1993-94	1995	1996
						No		
	5.37	2.7	1.2	0.52	0.41	Output	0.1	0.06-0.07
Source	Georgian Investo	ent Center 1998 (Dverview of the ec	onomic sectors of	Georgia accesse	d July 2, 1998, at II	RI http://www.	peorgia net ge/

Source: Georgian Investment Center, 1998, Overview of the economic sectors of Georgia, accessed July 2, 1998, at URL http://www.georgia.net.ge//gic/sector/mining.htm.

TABLE 3 GEORGIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Metric tons unless otherwise specified)

	Major operating	Location of main	Annual
Commodity	entities	facilities	capacity e/
Arsenic, mine output	Lukhumi deposit	Upper Racha region	2,000 total.
	Tsana deposit	Lower Svanetiya region	
Arsenic, metal and compounds	Racha mining and chemical plant	Racha region	NA.
Do.	Tsana mining and chemical plant	Tsana	NA.
Barite	Chordskoye deposit	Onskiy rayon	70,000.
Bentonite	Gumbrskoye and Askanskoye deposits	Gumbra, Askana regions	200,000.
Cement	Rustavi cement plant	Rustavi	1,500,000.
Coal	Tkibuli-Shaorskoye, Tkvarchelskoye,	Tkibuli, Tkvarcheli, Akhaltsikhe	300,000 total.
	deposits	regions	
Copper, copper content of ore	Quartzite company	Madneuli region	12,000.
Diatomite	Kisatibskoye deposit	Kisatibi region	150,000.
Ferroalloys	Zestafoni plant	Zestafoni (now Zestap'oni)	100,000 (ferromanganese).
Do.	do.	do.	250,000 (silicomanganese).
Do.	do.	do.	250,000 (manganese sinter).
Gold	Madneuli complex	Madneuli region	2.
Lead-zinc	Kvaisi deposit	Kvaisi region	1,200 (lead).
Do.	do.	do.	3,000(zinc).
Manganese, ore	Chiatura complex	Chiatura region	2,000,000.
Petroleum, crude	About 60 wells accounting for 98%	Mirzaani, Teleti, Supsa regions	200,000.
	of output		
Steel, crude	Rustavi steel mill	Rustavi	1,500,000.
/ Thu:			

e/ Estimated. NA Not available.