



# 2019 Minerals Yearbook

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**ARMENIA [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF ARMENIA

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Armenia ranked sixth in the world in mine output of molybdenum in 2019 and accounted for an estimated 1.9% of world molybdenum output. Besides molybdenum, the country produced other metals, such as copper, gold, silver, and zinc, and industrial minerals and products thereof, which included cement, diatomite, gypsum, and limestone. The country also produced aluminum foil from aluminum imported from Russia as well as ferromolybdenum and rhenium salts (ammonium perrhenate and potassium perrhenate) from local ores. It also had developed a diamond-cutting industry based on imported diamond. Armenia possesses resources of copper, gold, iron ore, lead, molybdenum, and zinc. It also has resources of construction materials, such as basalt, granite, limestone, marble, and tuff; semiprecious stones, such as agate, jasper, and obsidian; and other nonmetallic minerals, such as bentonite, diatomite, perlite, and zeolites (table 1; Polyak, 2021).

## Minerals in the National Economy

In 2019, Armenia's real gross domestic product (GDP) increased by 7.6% compared with an increase of 5.2% in 2018. The nominal GDP in 2019 was 6.55 trillion drams (about \$13.6 billion).<sup>1</sup> The share of industrial production in the GDP was 15.0%, and the share of mining and quarrying in the industrial production component of the GDP was 19.4%. In 2019, mining of metallic ores continued to dominate the mining and quarrying sector, accounting for 96.1% of the value of production in this sector. In 2019, industrial production increased by 9.0% compared with that of 2018, mining and quarrying increased by 23.9%, mining of metallic ores increased by 24.9%, and other mining production increased by 20.7%. Production of base metals decreased by 3.5% (Harutyunyan, 2020; National Statistical Service of the Republic of Armenia, 2020a, p. 11–12; 2020b, p. 10).

## Production

In 2019, Armenia's production of bentonite increased by 54%; mined copper and mined molybdenum, by 32% each; tuff, by 29%; lime, including quicklime, by 26%; mined gold, by an estimated 16%; gypsum, by 12%; and salt, by 11%. Production of perlite and smelted copper stopped in 2019. Production of rolled aluminum decreased by 93% and remained at a very low level. Output of steel rebar decreased by 15%. Data on mineral production are in table 1.

## Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

<sup>1</sup>Where necessary, values have been converted from Armenian drams (AMD) to U.S. dollars (US\$) at the annual average exchange rate of AMD480.45=US\$1.00 for 2019.

## Mineral Trade

In 2019, Armenia's exports were valued at \$2.64 billion, and the country's imports were worth \$5.51 billion. Mineral commodities constituted a significant share of the country's export revenue. The country's main export mineral commodities in 2019 were copper ores and concentrates, for which Armenia received \$626 million in revenue, or 23% of the country's total export revenue; gold (unwrought or in powder form), \$223 million, or 8.5%; ferroalloys, \$142 million, or 5.4%; aluminum foil, \$95 million, or 3.6%; scrap of precious metals, \$87 million, or 3.4%; cut diamond, \$54 million, or 2.1%; and jewelry made of precious metals, \$42 million, or 1.6%. The main export partners of Armenia were Russia (which accounted for 27.8% of Armenia's export revenue), Switzerland (17.3%), Bulgaria (7.9%), China (7.3%), Iraq (6.7%), the Netherlands (5.8%), Iran (3.2%), Georgia and Germany (2.6% each), Italy and Canada (2.3% each), the United Arab Emirates (2.2%), and the United States (2.0%) (National Statistical Service of the Republic of Armenia, 2020a, p. 127–132; Trendeconomy.ru, 2020).

In 2019, Armenia's imports of mineral products included natural gas and petroleum and products made of them, which were worth \$765 million, or 15% of the country's total imports; rough diamond, \$300 million, or 5.9%; and aluminum and aluminum products, \$107 million, or 2.1%. The main trade partners for imports were Russia (which provided 26.8%, by value, of Armenia's imports), China (13.6%), Germany (6.9%), Iran (5.9%), the United States (5.1%), Turkey (4.9%), Italy and Japan (3.7% each), and Ukraine (2.6%) (National Statistical Service of the Republic of Armenia, 2020a, p. 127–132; Trendeconomy.ru, 2020).

## Commodity Review

### Metals

**Copper and Molybdenum.**—In 2019, Armenia had four enterprises engaged in mining copper and molybdenum—the Agarak copper-molybdenum mining and processing complex (ACMC), Chaarat Gold Holdings Ltd. (Chaarat Gold) of the United Kingdom, the Teghout copper-molybdenum complex (ZAO Teghout, which was owned by VTB Bank), and the Zangezur copper-molybdenum complex (ZCMC). ACMC and ZCMC also produced rhenium as a byproduct of copper production. In Armenia, copper production was a significant source of export revenue and jobs (table 2).

In June 2019, ZAO Teghout announced the reopening of its Teghout copper-molybdenum mine that had not been in operation since January 2018. In October 2018, VTB Bank of Russia announced that it had taken control of the Teghout Mine after the Vallex Group (the mine's owner at the time) failed to pay off its \$380 million in debts. Previously in 2018, the Vallex Group had stated that, to reopen the mine, the tailings

dump (which posed a threat to the environment) would need to be refurbished. In addition, the Vallex Group risked losing its Alaverdi copper smelter, which had been used as collateral for the loan received from VTB Bank for the Teghout Mine. The Vallex Group planned to challenge the takeover in court (Mirrorspectator.com, 2018; Aysor.am, 2019; Gareginyan, 2019).

In October 2018, the Alaverdi copper smelter, which at the time was owned by the Vallex Group, temporarily stopped operations because its sulfur emissions exceeded the Government-mandated limit. The violation of the environmental regulation was caused by the outdated technology, and the company indicated that the only possible solution to reduce emissions was to build a new modern smelter that would comply with the environmental regulations. The Vallex Group tried to obtain a temporary permit to operate the plant but was unable to do so. In July 2019, the Alaverdi smelter laid off 210 workers and expected to lay off more workers later in the year. Also, the dispute about the plant ownership between Vallex Group and VTB Bank was not resolved by yearend (Ukrmet.dp.ua, 2018; Paremuzyan, 2019).

In December 2019, it was announced that an old glass plant in the city of Armavir had been modernized and repurposed for processing and beneficiation of molybdenum ore. As of yearend 2019, the plant employed about 70 people. In November 2018, the Armavir plant signed a contract with ZAO Teghout for shipments of ore from the Teghout Mine. As of December, the plant was producing about 50 metric tons per month of ferromolybdenum and exporting it to Russia. Prior to November, the processing plant imported batches of copper-molybdenum concentrate, and its operations were not stable (Finport.am, 2019).

**Gold.**—In 2019, the Amulsar gold deposit, which is located in southeastern Armenia between the Arpa and the Vorotan Rivers, was under development by Lydian International Ltd. of the United Kingdom (table 2; Gold.lprime.ru, 2017). Originally, environmental approval had been issued in April 2016, and the company had planned to begin mining in 2018 or in the beginning of 2019. However, in August 2018, a Government inspection of the project suggested that ZAO Geoteam Armenia (a subsidiary of Lydian International engaged in developing the Amulsar deposit) abstain from any further activity at Amulsar until a second round of environmental testing was complete. When the testing was completed, the inspectors suggested to the Ministry of the Environment that the environmental approval issued in April 2016 be annulled because of the new environmental information. Lydian International was also accused of mining a significant body of ore without a mining license. An independent environmental audit was then conducted by Earth Link and Advanced Resources Development, and their report was published in the beginning of August 2019. The report found no reasons for the court cases against Lydian International. Following the publication of this report, the Prime Minister of Armenia approved mining at Amulsar. At the end of August 2019, however, the Government banned the development of the Amulsar deposit until a more thorough investigation of the environmental effects of mining the deposit could be done (Newsarmenia.am, 2018; Gazagyan, 2019; Gold.lprime.ru, 2019; Roks, 2019).

According to the most recent estimates, the proved and probable mineral reserves of Amulsar were reported to be 70.3 metric tons (t) of gold and 300 t of silver, the measured and indicated resources of gold were estimated to be 74.6 t, and the inferred resources were estimated to be 53 t. Lydian International planned to invest a total of \$370 million in the project and create 700 permanent jobs. Geoteam Armenia (the operator) was planning to produce about 7,000 kilograms per year of gold for about 10 years. Among the shareholders of Lydian International were the International Financial Corp. (IFC) and the European Bank for Reconstruction and Development (EBRD) (Vestikavkaza.ru, 2016; Armbanks.am, 2017; Kirsanova, 2017; Lydian International Ltd., 2017).

### *Industrial Minerals*

**Cement.**—In 2019, Armenia produced 591,000 t of cement, which was an 8.2% increase compared with the production in 2018. Armenia had two cement plants—ZAO Ararat Cement Factory and the Hrazdan Cement plant—which were both owned by VTB Bank (tables 1, 2).

In 2019, Armenia's cement producers complained about imports of cement from Iran that amounted to about one quarter of domestic consumption. They argued that the cost of natural gas and electricity—components that accounted for 60% of the cost of making cement—was much lower in Iran and that Armenia's cement plants were unable to compete with cement imported from Tebriz, which is a city in northwestern Iran where a cement plant had recently been built. The cement producers in Armenia advised the Government that unless the Government protects domestic cement producers, the companies would have no choice but to lay off about 1,500 workers employed in the production of cement (Armeniasputnik.am, 2019; Eadayly.com, 2019).

In response to the concerns of cement producers, in April 2019, the Government suggested a new tariff on imports of cement in the amount of 22,000 drams (about \$45.80) per metric ton to be in effect for 1 year. In June 2019, however, the Parliament adopted the tariff of 14,000 drams (about \$29.10) per metric ton of cement. In the second part of 2019, the Government realized that the new tariff, although it somewhat improved the situation in the cement industry, was insufficient in helping local producers. The imposed tariff turned out to be too low to make domestic producers more competitive, and the imported clinker was not subject to any tariffs at all. The Ministry of the Economy computed that the cost of producing 1 t of cement at Ararat Cement was 36,200 drams (about \$75.30) per metric ton, and the cost of producing the same amount at Hrazdan Cement was 39,500 drams (about \$82.20) per metric ton. At the same time, the cost of cement imported from Iran was about 18,000 drams (about \$37.50) per metric ton, and the cost of cement produced from imported clinker was about 26,000 drams (about \$54.10) per metric ton. The Ministry of the Economy suggested raising the tariff to 18,000 drams (about \$37.50) per metric ton and imposing a tariff on imported clinker in the amount of 10,000 drams (about \$20.80) per metric ton. The cement producers said that to provide competitive conditions, the tariff on cement should be set at 30,000 drams (about \$62.40) per metric ton. At yearend, it was not known which proposal was likely to prevail (Avanesov, 2019; Cement.cmpro.ru, 2019; Danielyan, 2019).

## Outlook

In the next few years, Armenia is likely to continue its copper, molybdenum, and rhenium production at stable levels, and potentially to increase its gold production if the Amulsar project begins production in 2020 or 2021. On the other hand, the country's mineral production also could slow down as environmental considerations continue to factor more strongly in decisions regarding mineral production in the country, and because of the high dependence of the country's export revenues on the world market demand for and the prices of nonferrous and precious metals.

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2015	2016	2017	2018	2019
<b>METALS</b>					
<b>Aluminum, products:</b>					
Foil	29,642	29,011	33,181	28,359	30,547
Rolled	11	6	543	164	11
<b>Copper:</b>					
Mine, concentrates, Cu content	75,700	95,079	95,793	68,928	91,214
Smelter, primary, blister	11,601	12,920	12,051	8,831	--
Ferroalloys, ferromolybdenum	5,576	6,526	6,588	7,292 <sup>r</sup>	7,712
Gold, mine, Au content	3,100 <sup>e</sup>	3,732	4,270 <sup>e</sup>	5,000 <sup>e</sup>	5,800 <sup>e</sup>
Iron and steel, products, rebar	13,000	15,725	17,968	17,458 <sup>r</sup>	14,810
<b>Molybdenum:</b>					
Mine, concentrate, Mo content	6,300	5,771	5,038	5,422	7,137
Metal	748	367	--	--	--
Rhenium, Re content	350 <sup>e</sup>	281	260	281	280 <sup>e</sup>
Silver, mine, Ag content	14,346	16,000 <sup>e</sup>	15,500 <sup>e</sup>	18,700 <sup>e</sup>	20,300 <sup>e</sup>
Zinc, mine, Zn content	6,790	4,730	5,780	6,500	6,740
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic	417	267	356	546	591
Clay, bentonite	1,592	5,543	11,724	21,029	32,434
Diamond, products, cut	81,288	125,431	204,102	229,396	239,000
Diatomite <sup>3</sup>	16,200	21,900	20,100	20,000 <sup>e</sup>	20,000 <sup>e</sup>
Gypsum, mine	19,392	14,831	14,336	20,387	22,907
Lime, including quicklime	23,063	23,143	37,803	41,813	52,787
Perlite	57,657	44,820	78	8 <sup>r</sup>	--
Salt	27,400	32,250	32,551	22,583	24,975
Sodium, compounds, caustic soda	29	--	--	--	--
Stone, crushed, tuff	32,700	30,990	30,736	61,175 <sup>r</sup>	78,923

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

<sup>1</sup>Table includes data available through October 21, 2020. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

<sup>2</sup>In addition to the commodities listed, barite and limestone may have been produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Converted from cubic meters assuming a density of 2 metric tons per cubic meter.

TABLE 2  
ARMENIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit name	Annual capacity <sup>c</sup>
Aluminum, rolled and foil	ARMENAL (formerly Kanaker aluminum plant) (United Company RUSAL, 100%)	Plant in Kanaker	31,000
Caustic soda	OOO Nairit (Government, 100%) <sup>2</sup>	Plant in Yerevan	100
Cement	thousand metric tons ZAO Ararat Cement Factory	Plant in Ararat Region	1,200
Do.	do. ZAO Hrazdan Cement (VTB Bank, 100%)	Plant in Hrazdan	1,200
<b>Copper:</b>			
Mine output, Cu content	Agarak copper-molybdenum mining and processing complex (ACMC) [GeoProMining Ltd. (GPM)]	Agarak	NA
Do.	Chaarat Gold Holdings Ltd.	Shahumian deposit, Kapan	NA
Do.	Zangezur copper-molybdenum complex (ZCMC) [Cronimet Mining GmbH, 60%; OAO Yerevan Pure Iron Plant, 15%; Armenian Molybdenum Production LLC (AMP), 12.5%; Zangezur Mining LLC, 12.5%]	Kajaran	NA
Do.	Ownership is being disputed <sup>3</sup>	Teghout Mine, Lori Martz	60,000 <sup>4</sup>
Bliester	Ownership is being disputed <sup>3</sup>	Alaverdi	15,000
Diamond, cut stones	Aghavni diamond-cutting works <sup>3</sup>	Nor Geghi	NA
Do.	Amma group diamond-cutting works <sup>3</sup>	Artashat	NA
Do.	Andranik-Dashk diamond-cutting works	Nor Hachyn	NA
Do.	Arevakn diamond producing plant	do.	NA
Do.	Diamond Company of Armenia (DCA)	Plant in Yerevan	NA
Do.	Diamond Tech	Plant in Talin	NA
Do.	Lori diamond-cutting works	Nor Hachyn	NA
Do.	Lusampor <sup>3</sup>	Plant in Melik'gyugh	NA
Do.	Punji diamond-cutting works <sup>3</sup>	Yerevan	NA
Do.	Sapphire diamond-cutting works	Nor Hachyn	NA
Do.	Shoghakan gem-cutting plant	do.	NA
Ferroalloys, ferromolybdenum	Armenian Molybdenum Production LLC (AMP) (Cronimet Mining GmbH, 51%, and Armenian residents, 49%)	Plant in Yerevan	3,600
Do.	OAO Yerevan Pure Iron Plant	do.	NA
Gold, mine, Au content	kilograms Ararat Gold Recovery Co. (AGRC) [GeoProMining Ltd. (GPM)]	Mine at Sotk (Zod) deposit	5,000
Do.	do. Chaarat Gold Holdings Ltd.	Mine at Shahumian deposit, Kapan	1,500
Molybdenum, mine, Mo content	Agarak copper-molybdenum mining and processing complex (ACMC) [GeoProMining Ltd. (GPM)]	Agarak	2,000
Do.	Zangezur copper-molybdenum complex (ZCMC) [Cronimet Mining GmbH, 60%; OAO Yerevan Pure Iron Plant, 15%; Armenian Molybdenum Production LLC (AMP), 12.5%; Zangezur Mining LLC, 12.5%]	Kajaran	8,000
Do.	ZAO Teghout (VTB Bank)	Teghout Mine, Lori Martz	NA
Perlite	OAO Aragats Perlit <sup>2</sup>	Aragats deposit	NA
Rhenium	Agarak copper-molybdenum mining and processing complex (ACMC) [GeoProMining Ltd. (GPM)]	Agarak	NA
Do.	Zangezur copper-molybdenum complex (ZCMC) [Cronimet Mining GmbH, 60%; OAO Yerevan Pure Iron Plant, 15%; Armenian Molybdenum Production LLC (AMP), 12.5%; Zangezur Mining LLC, 12.5%]	Kajaran	NA
Silver, mine	Ararat Gold Recovery Co. (AGRC) [GeoProMining, Ltd. (GPM)]	Mine at Sotk (Zod)	NA
Do.	Chaarat Gold Holdings Ltd.	Shahumian deposit, Kapan	NA
Steel, rebar	Armenian Steel Casting Enterprise (ASCE) Group	Plant in Charentsavan	18,000
Zinc, mine output, Zn content	Chaarat Gold Holdings Ltd.	Shahumian deposit, Kapan	7,000

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

<sup>1</sup>Many location names have changed since the breakup of the Soviet Union. Many enterprises, however, are still named or commonly referred to based on the former location name, which accounts for discrepancies in the names of enterprises and the names of locations.

<sup>2</sup>Not in operation in 2019.

<sup>3</sup>Current existence of enterprise cannot be confirmed.

<sup>4</sup>The ownership is disputed between Vallex Group and VTB Bank.