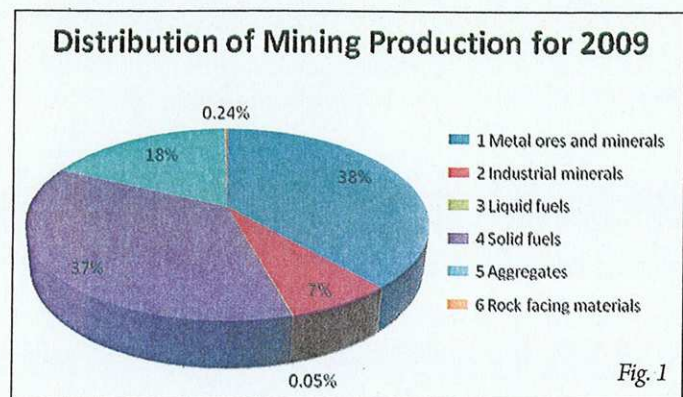


## Bulgarian Mining Industry in 2009

and-zinc, copper and polymetal ores, gypsum, limestones, bentonite, kaolin, quartz sands, fireproof clays, marbles.

The distribution of the mining industry by kind of raw materials is as follows:

1. Solid fuels – 37 %
  2. Metal ores and minerals – 38%
  3. Industrial minerals – 7%
  4. Aggregates– 18%
  5. Rock facing materials – 0,24%
  6. Liquid fuels – 0,05%
- (Fig. 1)



The enterprises operating in the sector are almost 100% private, including foreign ones, after most of the mining capacities were privatized during the first years of the transition period.

Due to the world recession, the Bulgarian economy registered also a drop of 5.1% for 2009. Mining production went down by 18.5 % in 2009, including: mining of solid fuels by 5 %; mining of metal ores by 2.4 %; mining of industrial mineral raw materials by 24.6 %; mining of construction materials by 39.4 %; mining of rock facing materials by 8.7 %.

In 2009, the total value of the production of the industrial enterprises from the mining industry amounted to 1.94 billion leva, down 15.5% year-on-year (Table 1).

### Mining Industry in Bulgarian Economy Development Context

The Bulgarian mining industry represents an annual average of about 5% of GDP of the country and provides direct employment of about 30,000, and of about 120,000 through related industries.

Under the Updated List of Underground Resources Found in the Territory of the Country, the established deposits total 595, including 206 of ores, 115 of minerals, 3 of oil and natural gas, 51 of rock facing materials, 151 of construction materials and 69 of solid fuels.

The main raw materials mined include: lignites, lead-

Code by CID - 2008	Economical activities	2009*
B	Extractive industry	1942704
05	Mining of coal – total	650724
051	Mining of anthracite and black coal	–
052	Mining of brown and lignite coal	650724
07	Mining of metal ores – total	865548
071	Mining of iron ores	–
072	Mining of uranium, thorite and non-ferrous ores	865548
08	Mining of non-metal materials and raw materials - total	393280
081	Mining of rock materials, sand and clays	365091
089	Mining of other non-metal materials and raw materials	28189
09	Additional activities to mining – total	7681
091	Additional activities to the extraction of oil and natural gas	–
099	Additional activities to the extraction, excluding the extraction of oil and natural gas	7681

\* Preliminary data – National Statistical Institute

**Table 1.** Production of Industrial Enterprises – Thousands of Leva at Current Prices

In 2009, the tendency of the significant domination of imports over exports of mineral resources was also preserved – more than twice, which demonstrated the big unused potential of the sector in favour of the balance of payments of the country. The

exported products of the mining industry totalled 306,400,168 leva, a decrease of 53,627,781 leva compared to 2009. Coal marked the most serious drop in imports and exports – of about 50% (Table 2).

	2009					
	Imports/Arrivals			Exports/Departures		
	Net weight in kg	Value in BGN	Value in USD	Net weight in kg	Value in BGN	Value in USD
28 Metal ores and metal waste – total	1 125 328 756	1 470 178 426	1 049 428 532	742 773 135	761 462 488	545 736 056
281 Iron ores and their concentrates	18 940 953	1 077 981	773 207	20 124 549	17 020 124	12 362 271
289 P Ores of precious metals and their concentrates; residues and waste of precious metals (exc. gold)	347	21 260	13 983	1 249 603	201 769 304	144 687 371
32 Coal, coke and briquettes – total	3 158 011 629	481 121 761	334 648 044	17 744 399	4 437 864	3 206 350
321 Anthracite and black coal, even in dust, but not agglomerated	3 068 142 778	458 830 794	318 853 603	11 510 853	3 682 994	2 652 418
322 Briquettes; brown and lignite coal; peat	16 918 710	4 626 247	3 207 732	6 073 006	670 096	490 912
66 Products of other non-metal mineral resources - total	1 415 530 990	579 026 763	409 488 621	798 639 323	468 116 073	331 837 625
661 Limestone, cement and processed building materials (exc. glass and ceramics)	601357543,81	123362097	87192711	162995271,67	32614930	23029699
662 Refractory ceramic and other articles for construction	480928023,40	153098505	108202344	79398806,43	38982649	27817297
663 Products of non-metal minerals, n. a.	207570469,766	107323937	75815891	123617485,49	42348877	29962763

Preliminary data – National Statistical Institute

**Table 2.** Information about Imports and Exports of Mineral Raw Materials in 2008

The number of employed in mining industry in 2009 was 26,762, 1,627 less than in 2008. This included 616 less in metal ores mining, 1,180 less in mining of mineral supplies and raw

materials. The number of employed in coal mining increased by 449 (Table 3).

CIA 08	Sectors	2009
B	Mining Industry	26762
05	Mining of coal	13715
05.20	Mining of brown and lignite coal	..
07	Mining of metal ores	6147
07.10	Mining of iron ores	-
07.21	Mining of uranium and thorium ores	-
07.29	Mining of ores of non-ferrous metals	6147
08	Mining of non-metal supplies and raw materials	6101
08.1	Mining of rock materials, sand and clay	5535
08.11	Mining of construction and decorative rock materials, limestone, raw gypsum, chalk, dolomite and schist	1014
08.12	Mining of crushed stone, gravel and sand, mining of clay and kaolin	4521
08.9	Mining of other non-metal supplies and raw materials	566
08.93	Mining of salt	253
08.99	Mining of other non-metal supplies and raw materials, not classified elsewhere	107
09	Auxiliary activities in mining	226
09.10	Auxiliary activities in mining of oil and natural gas	-
09.90	Auxiliary activities in mining, excluding the mining of oil and natural gas	226

. confidential data

- there are no cases

Preliminary data – National Statistical Institute

**Table 3.** Average Number of Employed under Employment Contracts in 2009

Besides the status of economy, the imperfect statutory framework, the adopted in 1999 Subsoil Resources Act in particular, has also a strong effect on the development of the Bulgarian mining industry. The Bulgarian Chamber of Mining and Geology participated in the preparation of a draft amending and supplementing the Subsoil Resources Act, which was adopted by the Council of Ministers. The draft envisages the establishment of a unified body on subsoil resources management by September 2010, which will unburden significantly the procedures for prospecting, research and concession of the subsoil resources. Work on the development of national policy and strategy in the field of subsoil resources started in June, and the working group included also experts of the Bulgarian Chamber of Mining and Geology.

The mining sector of the country expects the strategic documents under preparation to increase the investors' interest in the sector and to lead to launching of new mining projects.

## Energy Resources

### Oil and Natural Gas

An enormous number of geological works for oil and gas deposits prospecting and research have been carried out in the territory of Bulgaria, localized mainly in the territory of North Bulgaria, and in recent years they have also covered part of the Bulgarian aquatory of the Black Sea. As a result, 6 oil and gas-oil deposits, 8 gas deposits and a few deposits of semi-industrial local importance were found.

The main quantities of natural gas for the needs of the users in Bulgaria are from imports, and the only source of supply is the Russian Federation.

The production of oil in Bulgaria is in insignificant quantity. It is carried out by the Oil and Gas Exploration and Production Company in Dolni Dubnik town, privatized in 2004. The company is a concessionaire under 12 concession contracts for the production of oil and/or natural gas in the territory of Bulgaria. The annual output of the developed deposits is about 25,000 tonnes of crude oil and 6.7 million cu m natural gas, which are completely sold out in the domestic market.

The country's needs of oil are met mainly by imports.

### Coal Mining

The coal supplies in the Republic of Bulgaria are slightly over 2 billion tons; the relative share of the supplies in operation is 86%. The lignite supplies are predominant in the country – 91%, and the most of the studied deposits have geological and mining and technical conditions that allow open-pit mining.

Under preliminary data for 2009, a total of 27 million tons of coal were mined, including lignite, bituminous and brown coal. During the year 13,715 were employed by the sector.

Six mines, producing brown coal: Bobov Dol, Oranovo, Chernovo (Black Sea), Otkrit Vugledobiv (Open-Pit Coal Mining), Fundamental and Vitren; four producing lignite coal – Maritza East, Chukurovo, Beli Breg, Stanyantsi, as well as one for bituminous coal – Balkan 2000 - operate in the subsector.

The lignite coal of the Eastern Maritsa basin represents the main local resource. It was formed during the Neozoic Tertiary period.

The state-owned enterprise Maritza East Mines operates in the

Eastern Maritsa basin, where it develops three open-pit mines – Troyanovo-1, Troyanovo-North and Troyanovo-3, which supply three thermal power plants for production of electricity and a briquette factory, producing briquettes, with coal and provide resources for the next 50 years.

In 2009, the enterprise produced 24 million tons of lignite coal.

The consumption of coal is mainly for the production of electricity and heat – 97%. After two of the units of Kozloduy Nuclear Plant, providing 35% of the production of electricity in the country, were closed down in 2007 as a precondition for the accession of Bulgaria to the European Union, the big thermal power plants using coal dominate in the structure of production of electricity (55% in 2009).

The short transition period under Directive 2001/80/EC dated October 23 2001 on the requirements for limitation of emissions of certain pollutants into the air from large combustion plants creates uncertainty regarding the future of the Bulgarian energy sector and the coal mining in the country as well as a real threat for loss of hundreds of thousands of jobs.



## Mining of Metal Resources

In 2009, 27 million tons of copper ores and their concentrates as well as 545,000 tons of lead and zinc ores and their concentrates were produced, a year-on-year reduction of 1% and 15%, respectively. A total of 6,147 were employed in the sector last year.

Currently, copper ores are mined by 3 companies – by Assarel-Medet and Elatsite-Medet by an open-pit method, and by Chelopech Mining by an underground method. Lead and zinc ores are mined underground by 4 mining companies – Rudmetal, Gorubso-Zlatograd, Gorubso-Luki and Gorubso-Madan.

Assarel-Medet AD Mining and Processing Complex is an open-pit mining and copper ore-dressing company providing an average annual of over 50% of the national production of the essential for the human development metal. The ore mining started in 1964.

The hydrothermal copper deposit Assarel is of copper porphyry type and it is located 12 km away from the Medet deposit in the ore region of Panagyurishte. It was formed in the late Cretaceous period and the main ore minerals are chalcocite, pyrite, chalcopyrite, bornite and coveline. A total of 1,600 are employed by the company and its subsidiaries.

The company has been certified under the three international standards: for quality, ISO 9001, for environment protection, ISO 14001, and for health and safety at work, OHSAS 18001.

In the recent years it has received many awards, such as of a most socially responsible company of the country (2009), investor of the year in mining industry (2007), best employer (2007), among others.

Elatsite-Med AD is a private joint stock company with a field of activity of mining and dressing of copper and gold-containing ores.

The company employs a total of 1,834. Elatsite-Med AD is among the big tax-payers and one of the biggest investors and concessionaires in Bulgaria.

Elatsite Mine is one of the biggest open-pit mines in Bulgaria and the biggest local producer of copper-gold concentrate. The ore mining started in 1983. The mine is planned to be exploited until 2021.

In 2009, Elatsite-Med posted a year-on-year increase of the total volume of production of 8.83%.

Chelopech Mining EAD is a subsidiary of Dundee Precious Metals Inc. It is a copper-gold mining and processing operation at the Chelopech deposit that ultimately produces copper-gold concentrate.

Chelopech is one of the biggest copper and gold deposits in Europe. It is located West of Chelopech village, in the Northern part of the Zlatitza valley at the foot of the Balkan Range. The deposit comprises a number of discrete ore bodies within an andesitic to dacitic volcanic complex of hostrocks on the Northern side of a North-Easterly trending jog in the regional, East-West trending Balkan fault. The hostrocks in turn comprise a portion of an Upper Cretaceous magmatic and sedimentary assemblage preserved within a North to East trending graben. Basement rocks exposed to the South and East of Chelopech include Precambrian granitoid gneisses, two-mica schists, quartzites and amphibolites.

On September 30, 2003, Dundee Precious Metals Inc. concluded successfully the transaction of acquisition of the Bulgarian assets from their previous owner. In the 2004 – 2009

On April 15, 2010. The processing of the produced quantities of concentrate is taken over by the Tsumeb smelter located in Namibia, Africa, which was acquired by Dundee Precious Metals Inc. in the beginning of 2010.

Gorubso-Kurdjali AD mines about 70,000 tonnes of polymetal ores, containing gold, from the Chala mine.

## Mining of Industrial Minerals, Rock-Facing Supplies and Raw Materials for Construction

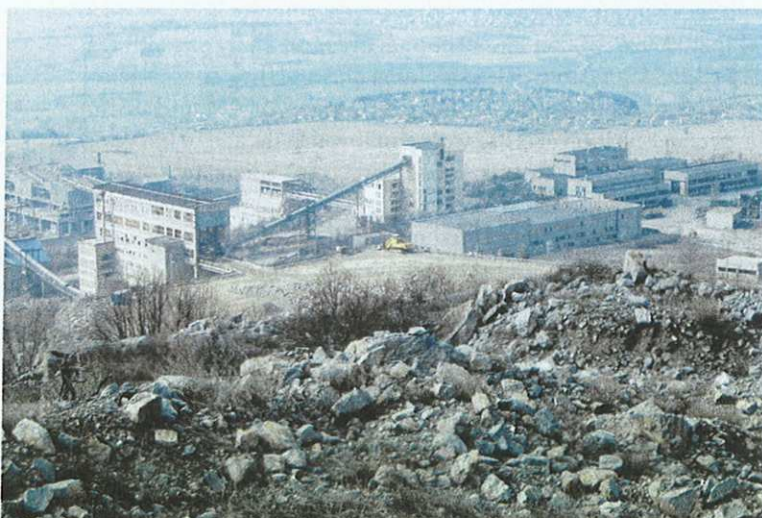
Last year the subsector employed 6,667.

In this group, most important for the country are the deposits of rock-salt, kaolin-containing sands, quartz sands, barite, gypsum and limestones for the production of faience. An essential share belongs also to the clay deposits (fireproof, bentonite and ordinary ones), dolomites, limestones for the chemical industry, quartzite, perlite, fluorite. Prospecting for vermiculite, graphite and others has been carried out in the recent years.

Leading companies in the sector of industrial minerals mining are Kaolin and S & B Industrial Minerals.

Kaolin was established in the 1920s in the city of Varna and has established traditions in the production of industrial minerals. Currently, the company is the biggest producer of industrial minerals in Bulgaria and is among the leading companies in the sector for Central and Eastern Europe. The Kaolin Group includes a number of subsidiaries operating more than 30 mines and 10 factories for processing of industrial minerals in Bulgaria, Serbia, Romania and the Ukraine. The Company operates deposits in the region of Vetovo, Kaolinovo, Ignatievo, Dimitrograd and Topolovgrad.

S & B Industrial Minerals AD (Bentonite AD), Kurdjali, is part of the economic group S&B Industrial Minerals SA, based in Athens, Greece. The company has a long tradition in mining and processing of non-ore subsoil resources.



period, the value of the invested funds exceeded 300 million leva. The investments planned for the next two years stand at over 170 million leva and are intended mainly for the expansion of the capacity of the mine and ore-dressing factory up to 2 million tons per year.

Chelopech Mining is among the biggest employers of the country. Over 900 are employed by the company.

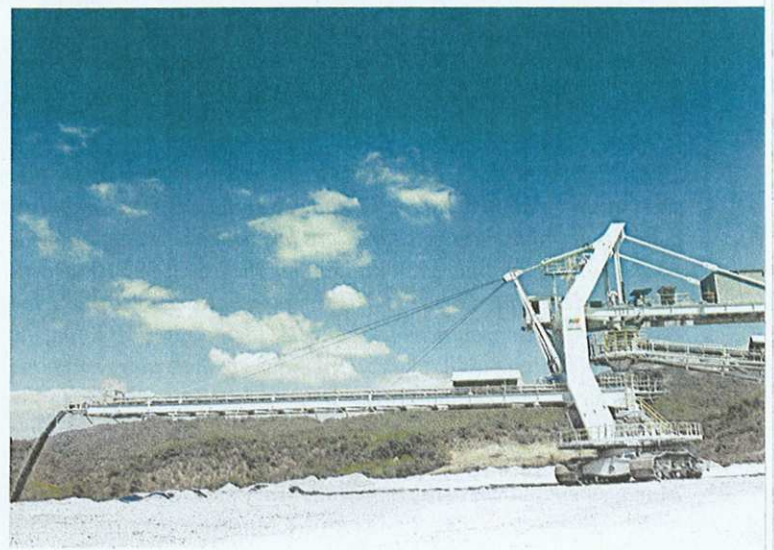
The sector of mining of rock facing materials and the production of raw materials for construction is undergoing significant changes in recent years and mainly small and medium-sized enterprises operate in it. Because of the drastic drop in the construction industry due to the economic crisis, the production of these enterprises went down by 50% on the average in 2009.

The enterprises operating in the field of rock facing materials carry out activities in two main directions: mining and processing

of rock facing materials and processing of imported supplies. The presence of Bulgarian raw materials in the production of decorative products is insignificant. Practically Bulgaria is producing currently only decorative limestones, marbles and gneisses. The lack of sufficient production of granites, marbles and others, required to meet the market demand, is compensated by imports of rock raw

types of cement, mainly of the Portland type, sulphate-resistant and special cements, as well as hydraulic binders for roads, including white cement, of which it is the only producer in the country.

In general, the companies are concessionaires of 7 operating quarries and of 5 deposits of limestone, marl, sand and clays. The limestone stock and reserves in them amount to a total of over 548



materials and products from China (granite), Turkey (marble, granite), Italy (marble) and others.

The leading enterprises in the sector include: Hemus M – mining and processing of limestones; Ilindentsi Mramor – mining of marble; Koprivlen Mramor – mining of marbles and limestones and Bumar – mining and processing of marbles and limestones.

A total of 317 quarries for construction materials are developed in the territory of the country. By the end of 2009, 53 contracts for exploration of construction materials were implemented.

After an analysis of the Ministry of Environment and Water has shown that the issued permits for mining of construction materials are sufficient to cover the needs of the construction industry in Bulgaria, in the beginning of 2010 the Council of Ministers of the Republic of Bulgaria suspended the reception of applications for issuance of permits for exploration of construction materials for a period of two years.

The leading enterprises in the sector of production of construction materials are Holcim Quarry Materials AD, Devnya Cement AD and Balsha Mining Factory EAD.

Holcim is one of the world leaders in the production of cement and aggregates. The company owns four companies in the field of aggregates: Holcim Quarry Materials Sofia AD, Holcim Quarry Materials Rudinata AD, Holcim Quarry Materials Plovdiv AD and Vris OOD. The companies operate a total of 10 sites and offer materials of different application in construction, from concrete and concrete products to asphalts, mortars, etc.

For the recent two years, the annual production of the company's subsidiaries in Bulgaria is as follows: of sand and gravel 2,400,000 tons and of crushed stone – 1,700,000 tons, and a drop of 50% of the production was marked in 2009.

Devnya Cement AD, jointly with Vulkan Cement AD and Lyulyaka Materials EAD are part of the Italcementi Group, the fifth world's biggest cement producer.

The companies of Italcementi Group in Bulgaria offer eleven

million tons, these of marle to 325 million tons, of quartz sand to about 32 million tons and of clays to over 19 million tonnes.

Currently, Italcementi Group has an annual production capacity of 2.5 million tons in Bulgaria. The Group provides over 500 direct jobs, as well as about 1,500 indirect jobs – subcontractors working in the territory of the plants.

## Geology Exploring Sector

As a result of the carried out preliminary and detailed study and evaluation, about 8,000 sites with established deposits, manifestations and indications of different in nature mineral raw materials are known in Bulgaria.

Recently, geological explorations are carried out of mineral raw materials non-traditional for the current industrial productions. Explored were deposits of such raw materials such as the Kremikovtsi complex barite-iron deposit, the oolitic Fe-ore sediment deposits in the region of Troyan, the poor Fe and Ti-Fe deposits in hostrocks, as well as the Fe-V schist deposits in Strandja mountain, the deposits of kyanite (dysten) in the Central Rhodopes, the zeolite deposits in the Eastern Rhodopes, the deposites of potassium-alkali rocks (bulgarites) in the Easter part of Sredna Gora mountain, the hydrocarbon deposits, etc. Development of technological procedures and evaluation of the possibilities for use (in the capacity of "secondary" mineral raw materials) of waste products from the mining and processing activities, such as: treatment of poor oxide ore through chemical-bacterial leaching of materials from the waste banks in the neighbourhood of the mining sites; microbiological treatment of ores and technological waste from the processing for extraction of metals; treatment of metal bearing solutions with ion-exchange resins, etc. has been implemented along with this process.

Despite the fact that Bulgarian mine enterprises have been strongly influenced by the world crisis and by the drop of metal prices in 2008 and in the beginning of 2009, we can say that the sector is recovering from the drop and expects to have a serious growth in 2010.