

# MINING INDUSTRY IN BULGARIA

ANNUAL NEWSLETTER 2016





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**Dear Colleagues, and Friends,  
Dear Ladies and Gentlemen,**

On the 18th of August 2016, along with the Day of the Miner - the national professional day of workers in the mineral resource industry, which takes place on the day of the Dormition of St. Ivan Rilski, we also celebrate the 25th anniversary of the establishment of our industrial association, the Bulgarian Chamber of Mining and Geology.

Its beginning go back to 9 August 1991 and for us this date marks a memorable event. Since then, the Bulgarian Chamber of Mining and Geology has grown and strengthened, earned its repute as the only nationally representative industrial association, with authority and a European vision for the sustainable development of the sector.

The twenty-fifth anniversary of the Chamber is more than a number. It stands for a quarter of a century of hard work to unite our industry, to protect the interests of our members and to pursue our common goals, all in the name of the sustainable development of the mineral resource industry and the prosperity of Bulgaria.

It was a hard beginning. It coincided with the country's particularly challenging social and economic transition: galloping inflation, high unemployment and general insecurity. The approach to privatise the state-owned enterprises was to sell the more viable ones, and for the rest – unless interested buyers show up, wind them down. At that time, we, the representatives of 17 enterprises, still state-owned back then, founded the Bulgarian Mining Chamber. Our goal was to work together to adapt to the new market conditions, protect the companies from being plundered and stripped of their assets and to transform them, preserving their most valuable asset – knowledge, skills, professional expertise, and a lot of enthusiasm. Against all odds, together with the government, it was our duty to design the strategic vision for the sustainable development of this sector which is vital for Bulgaria and its economy.

Within one and a half months after the Chamber was established, we successfully negotiated and signed the Branch Collective Labour Agreement, the very first industry collective arrangement in post-1989 Bulgaria. Thus brought an end to the massive miner strikes that had paralyzed the country. This provided conditions for holding the first democratic general elections in October 1991. Undoubtedly, our success lay in establishing this new model for effective and constructive social dialogue with intra-branch trade unions. And it was a strategic step forward in the interest of all workers, in the name of social peace, and the prosperity of the sector.

One of the first tasks following the establishment of the Mining Chamber was to prepare a set of analyses, some of which were taken into account in the text of the Council of Ministers Decree No. 140/1992 on restructuring the mining industry and the step-by-step closure of the inefficient production facilities. Our opinion was based on the principle that mines and plants should not be closed down. Instead, they should be put on freeze, to wait until the conditions in the market and the economy improve. Time has proven that our position had been right. Unfortunately, it was never fully adopted by the government. Back then, thanks to the work of our experts, the liquidation of many mining companies was averted and the viable ones were put on the path of development. The privatisation deals by the management and employees in the sector were supported by the Chamber and turned out to be the most successful solution, vital for the companies' survival and the sound development of entire regions which depended on mining as the key source of jobs.

Our conclusion is that since those early years we have always pioneered the adoption of international standards and best European practices in our industry. We have cooperated with government institutions, contributing our experience and expertise in the efforts to improve the legislative framework in that regard. At the same time, some of the main impediments for sustainable development of the mineral resource industry over the years have been the administrative burden, less-than-perfect legislation, and corruption pressure. Our efforts, therefore, have been focusing primarily on assisting the government in developing a strategic document to recognise the vital significance of the mineral resource industry for the national economy and to provide direction for its development by adopting European best practices. That is why the setting up of the United Body for Government of Underground Resources in 2010, and the adoption of the National Development Strategy for the Mining Industry in 2015 were the culminations of our efforts. They provided a powerful impetus to keep on, working for their successful implementation, alongside the institutions responsible for our industry. We hope that the implementation of the Strategy through the mapped out actions and activities, will bring many more investors, both in the mineral resource industry and in the downstream industries along the value-adding chain, in order to increase the added value in the whole Bulgarian economy.



## CHAIRMAN'S ADDRESS

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Along with that, over the past years, the Chamber implemented a number of initiatives and projects of importance for the sector. The voluntary Standard for Sustainable Development in the mineral resource industry, the European Mining Business Forum, the InterMin Expo, the Branch Information System and The Earth and the People Business Centre have been projects key for the development of the sector and the strengthening of the BCMG, while our Industry Educational Model has now been recognised by the central government, the municipalities, and other important industries.

The National Celebrations of the Miner's Day, which we traditionally organise in cooperation with the Science and Technical Union of Mining, Geology and Metallurgy and the trade unions in the mining sector, have, over the years, become a forum bringing together generations of mining specialists, business leaders, institutions, partners and students. Also, the Chamber publishes its Annual Newsletter about the developments in our industry.

During the past 25 years I have had the honour and the privilege to serve as Chairman of the Bulgarian Chamber of Mining and Geology. On today's celebratory occasion, I would like to thank my colleagues from the mineral resource industry for the confidence they have shown in me by electing me to the post. Thank you for the projects we have implemented together. Through them, we have pursued, and will continue to pursue, our motto, 'Standing Strong Together'.

We are proud to have overcome the challenges of time, and today the leading companies among the Chamber members demonstrate the modern, European outlook of the mineral resource industry. They apply the latest standards in occupational safety and environmental protection, invest in caring for their most precious capital – the people, adopt innovative technology to achieve sustainable development in mining and processing, and they lead by example through their corporate social responsibility for the development of their regions. Throughout the process of implementing their mining projects, our members are committed to the leading moral principles of our industry which are enshrined in the Code of Ethics of the Chamber and in the industry's Sustainable Development Standard.

Today, our industry accounts for 3-4% of the national GDP and provides about 24,000 jobs, and another 120,000 job in the related sectors. It is one of the strategic sectors for Bulgaria and provides a solid base for all other industries in the economy. Its sustainable development is a guarantee for improving the country's competitiveness, attracting young people to find employment here and settle, constantly building upon what has already been achieved through innovation and new modern technologies.

In 2016, the large family of the BCMG has a membership of 116 companies which generate more than 90% of the output of the sector in terms of income. But to me, our biggest success is that we have been, and will continue to be, united. This is where our strength lies. The difficulties that we have overcome have helped us remember, always, who we are and where we started from. Hard times have made us stronger and united us closer!

On behalf of the Managing Board, I would like to thank also the government institutions, the municipalities, our partners from the national and the European employers' organisations and the trade unions for the good cooperation, understanding and support they have always given us.

It is with satisfaction that I note that during the past 25 years we have kept our enthusiasm and focus on our goals in progressing towards the future. The future which, I am positive, we will all keep building together, with self-confidence, commitment, determination, and vision.

Happy 25th anniversary to the Bulgarian Chamber of Mining and Geology!

May Saint Ivan Rilski, the protector of miners and of all Bulgarians, bless the thousands of our colleagues across the country who are celebrating the Miner's Day with us, giving them good health and future success, for the prosperity of the mineral resource industry and of Bulgaria!

May the Lord God preserve unto many years!!



**Professor Lachezar Tsotsorkov, D.Sc.**  
Chairman of the Managing Board, Bulgarian Chamber of Mining and Geology

# 25 YEARS



## BULGARIAN CHAMBER OF MINING AND GEOLOGY

Since **1996**

**Miner's Day**

**20** Celebrations

app **10 000** Guests

over **250** Prizes

Annually, on the day of St Ivan Rilski Assumption, the BCMG jointly with its counterparts, the Scientific Engineering Union of Mining, Geology and Metallurgy and the miner's trade unions, marks on a national scale the professional holiday of all people, employed by the mineral and raw material industry of Bulgaria. The celebration brings together generations of mining specialists, geologists, managers of mining enterprises, friends and counterparts of the Chamber. During the Solemn Assembly, the Chamber gives its Annual Awards on the distinguished through the year companies and anniversaries of persons with contributions to the industry are celebrated. The Minister of Energy is the patron of the celebration.



Since **2010**

**European Mining Business Forum**

**3** Editions app **600** Participants

**15** Countries

over **60** Speakers

Since 2010, the BCMG has been the initiator of the only biannual business forum related to mining industry in Bulgaria in partnership with the European Association of Mining Industries (Euromines) and the Ministry of Energy of the Republic of Bulgaria. The Minister of Energy is the patron of the celebration. The goal of the forum is to show the key role and importance of the branch, to discuss its status, problems and decisions, novelties and policies for sustainable development. The event attracts hundreds of participants in an open dialogue regarding the most important and topical issues of importance for the mining companies and the whole European community.



Since **2010**

**Intermin Expo**

**6** Editions **120** Companies

**6000** sq. m open and closed area

The specialized mining exhibition, organized by the Chamber, takes place every year during the International Technical Autumn Fair in Plovdiv. Its goal is to gain recognition as the main annual event of the sector, demonstrating the new technologies, the achievements, the trends of development, the attitude of the industry towards the environment and the people. Equipment and facilities for extraction of subsoil resources, for the prospecting sector and for the mining construction are presented at the exhibition too. Companies - providers of equipment, facilities, spare parts, materials, software, work clothes and means of personal protection participate in it as well.

# EVENTS, PROJECTS, INITIATIVES

Since **2013**

## Annual Meetings of Members

**3** Meetings

Over **200** Participants



In order to bring together their members and to establish a possibility for beneficial partnerships between the companies, since 2013 the Chamber has initiated conducting of annual informal meetings outside the state capital. They provide the occasion for presentation of the most important projects of the BCMG and a way for presenting useful feedback and new ideas of the members for the activity of the organization. During the meetings, companies in the field of supplies of specialized equipment and services present their activities to the mining companies by means of presentations and exposition booths.

Since **2012**

## Standard of Sustainable Development

**3** New Requests

**2** Certified Companies;

In 2012, the BCMG established the first in its kind across Europe voluntary Standard, whose goal is to contribute to the sustainable development and prosperity of the mineral and raw material industry in Bulgaria. The additional goals of the Standard include increasing the energy and resource efficiency, minimizing the environmental impact, provision of maximum social and economic benefits, as well as creation of long-term, dynamic and effective relationships with the interested parties and strengthening the reputation of the sector. The standard has three levels of coverage – golden, silver and bronze.



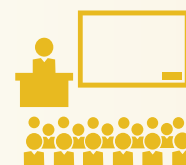
Since **2013**

## Sectoral Model of Training of Staff

**8** Mining Classes;

**5** New State Educational Requirements for Mining Specialties

In order to meet the great demand of staff for the sector during the last years, the BCMG has started a model for vocational high school training. In its essence, it represents active engagement of business in the whole process of the educational system – professional orientation, request for planned enrolment by specialties, development of adequate training programs, training of tutors, ensuring practices and internships of pupils and students. The first classes of training students after the new Vocational Education Act through dual education started in the town of Panagyurishte in 2015.

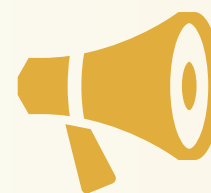


Since **2014****Branch Information System****8** Chapters**15** Indicators**28** Areas

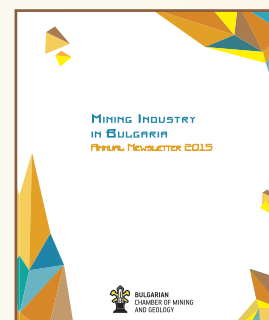
The information system of the branch represents an electronic data base with the most important indicators for the mineral and raw material industry – production, investments, employment, wages, and occupational accidents. Its goal is to monitor the status of the branch, to prepare adequate analyses and to support with facts the opinions and the messages for this strategic for the economy of the country sector. It includes also a section related to the best practices of the mining companies in various fields such as innovations, environment, health and safety at work, social responsibility, etc.

Since **2009****Communication Strategy**

As nationally representative sectoral organization, the Bulgarian Chamber of Mining and Geology is called upon to work actively for establishing and developing the image and the reputation of the mining industry corresponding to their important role and importance for the Bulgarian economy. For conducting of active, timely, interactive and open communication with all interested parties, the Chamber developed in 2009 its Communication Strategy with clear priorities and action plan. Its goal is to establish the BCMG as an expert source and active intermediary in discussing issues of strategic importance for the sector.

Since **2009****Annual Bulletin of Bulgarian Chamber of Mining and Geology****8** Editions**5000** Total Prin

The Bulletin of the Chamber has been issued since 2009 and has turned in the most important information instrument for communication with the stakeholders. It is presented officially every year during the celebration of the Miner's Day (18 August) and contains the most important data for the sector during the past year, the achievements of the Bulgarian mining companies in the fields of innovations, environment, human resources, care for local communities, etc., as well as articles of leading experts on current topics.

Since **2012****Photo Exhibition: Do You Know Where Things Are Coming From?****60** Panels**11** Exhibitions**7** Towns

As part of the goal to popularize the mineral and raw material industry of Bulgaria, in 2012 the Chamber prepared a thematic exhibition named "Do You Know Where Things Are Coming From?" Sixty thematic large-scale posters show the natural resources extracted in Bulgaria, the ways of their extraction, and the things made of them. The goal of the exhibition is to show how raw materials are the base of all things used in our everyday life, and without which our life would be unthinkable. The exhibition is presented across the country as well as during events organized by the BCMG and its members.





Since **2011****European Minerals Day in Bulgaria****3** Celebrations**12** Initiativesover **5000** Participants

Since 2011, the BCMG has been a national coordinator of the celebration of the European Minerals Day aiming at increasing public awareness about the major role of mineral raw materials in people's everyday life. Biannually, through various events and initiatives, the event informs about the way the minerals participate in efficiency of innovations and resources throughout the whole lifecycle of the product and why they are the base of economy of EU and for the sustainable development.

Since **1991****Sectoral Collective Employment Agreement****13** signed Sectoral Collective Employment Agreements; **25 000** Employees

Every two years aiming at the establishment of conditions for possibly most efficient activity of the extractive companies, the BCMG is partnering with the trade unions of miners, and signs sectoral collective employment agreements. This document settles issues regarding employment and social issues relationships – incomes, employment, social services, employment and working conditions, and social partnership. This is a clear sign that the companies from the sector work transparently and with care for the employees. The security, living standard, health and safety are priority of all members of the Bulgarian Chamber of Mining and Geology.

Since **2015****National Strategy for Development of Mining Industry**

The National Strategy for the Sustainable Development of the Mining Industry adopted in Bulgaria in 2015 is a strategic document for the sector and a result of the long-term efforts of the branch and science. It provides an institutional framework for priority development of the sector for the future decades. It guarantees interaction between business, the state and education based on the sound dialogue, the strategic needs and innovations in order to increase the competitiveness of the Bulgarian economy, to provide employment, to guarantee environment protection, and to implement innovations and the best world practices.

Since **2013****New Home of the Chamber**

In 2013 the long-awaited dream of the Bulgarian Chamber of Mining and Geology regarding our own home became true. The new business centre, where the office of the Chamber is located, is a design which embodies the general vision of sustainable development and is a symbol of the unity of the sector. With its modern architecture, the building meets the best standards for a complex disposing with all conditions for business, conferences and other business events, as well as with the conveniences of a tranquil place for genuine rest.





## MINISTRY OF ENERGY WITH CONSISTENT ACTIONS TO SUPPORT OF THE MINING INDUSTRY

**H.E. Temenuzhka Petkova**  
Minister of Energy of the Republic of Bulgaria

### **The long-awaited Mining Strategy was adopted by the government in the autumn of 2015. Could you tell us about the concrete implementation steps planned and undertaken by the Ministry of Energy?**

The Strategy for Sustainable Development of Mining and the Extractive Industries adopted last year was indeed long-awaited. It is a decisive step by the Bulgarian government to make the sector a key driver of economic growth. Consistent implementation of the strategy paper will enable the sector to develop in line with the best practices in Europe. To implement the Strategy, we have put into place a range of measures which are laid out in the Action Plan for the first five-year period.

We undertook a number of initiatives to improve the regulatory framework for managing subsurface natural resources. The amended Subsurface Natural Resources Act, which is already in force, enables us to resolve quickly the issues with the backlog of procedures and issue permits and concessions to applicants which are ready to go and have been waiting for years to realise their investment intentions. We have ensured full and accurate harmonisation of our national legislation with the requirements of the European Parliament concerning the management of the mining waste.

The amended Act now sets out the main principles for determining concession payments. The new method of calculating a concession payment enables better planning of future investments and improved predictability and management of outlays, thus improving the accuracy of estimating expected proceeds. All of that sets the scene for well-planned development of concession-granting activities.

Other important steps we took involve the development of a sustainable approach to prospecting, exploration and mining of subsurface natural resources, and ensuring transparency and informed decision-making. Using funding from the Operational Programme 'Administrative Capacity', the Ministry of Energy implemented a project entitled 'Up-building of an information system for the procedures for granting permits for prospecting and exploration or exploration and for concessions for extraction of subsurface resources'. These are just some of the measures put in place to implement the so-called Mining Strategy. I rely on the continuing expert dialogue between the Bulgarian Chamber of Mining and Geology and the Ministry of Energy as it will help map out more steps to implement the National Strategy for the Sustainable Development of the Mining Industry.

### **The dialogue between the Ministry and the Chamber has been developing successfully, indeed. But then, the issue of illegal mining, particularly in the non-metal sector, has been pending for years, and is yet to be resolved. Please share your view on how that can be addressed.**

The Ministry of Energy has a clear vision as to how the non-regulated mining of mineral resources in the country can be dealt with. In 2015 the Ministry's teams conducted 499 checks, of which 239 were carried out on the spot and 266 were desk examinations. Since this January, there have been 261 on-the-spot checks and desk examinations this year. The Ministry of Energy inspections can be either planned or unannounced, which is one of the most successful tools in curbing illegal mining.

Since the beginning of the year, we reacted by performing immediate and unannounced inspections in response to 16 alerts and 11 reports of unlawful activities have been issued. At the end of last year, we set up an intragovernmental working group involving all the stakeholders. At regular meetings we discuss the possible ways to resolve the illegal mining issue effectively. We have enjoyed good inter-institutional coordination and carry out joint audits, both unannounced and planned, on the spot, in municipalities affected by illegal mining. Another important step is the Ministry of Energy's proposed amendment to the Criminal Code to incriminate illegal mining of subsurface natural resources in Bulgaria. These legislative changes will enable the effective detention of offenders and it will be possible to trace and monitor natural resources placed on the market.

**Bulgaria's mineral industry is affected by a number of factors, such as the global trends in metal commodity prices, climate change agreements and EU and national legislation, to mention but a few. How do you see the development of the extractive industries in Bulgaria over the next 10-15 years?**

The mining and the extractive industry has a long tradition in Bulgaria, as well as a strategic role and a major contribution to its social and economic development. The sector accounts for about 5% of the national GDP and generates exports of over BGN 3.4 billion. Another important feature is the number of jobs in the sector, with about 30,000 people employed directly in the industry and some 120,000 in the downstream sectors. The figures look promising, but there is also a significant untapped potential in the Bulgarian mining industry.

For the past three years, imports of non-metals exceeds exports by a factor of 2.5, and out of the 170 or so types of natural stone materials available that can be extracted in Bulgaria, only a dozen or so are being utilized. This potential can definitely be explored. There are opportunities for expansion in coal mining, metallic minerals, oil, and natural gas extraction. In the coming years, several new gold ore deposits are expected to be commissioned in operation.

**And now a question relating to the energy sector. The debts of power plants owed to the coal-mining company Mini Maritsa Iztok have been repaid. Do you think that the measures now in place has successfully resolved the problem of overdue payments between companies in the energy sector?**

Protecting the interests of all interested parties in the sector and being aware of the difficulties experienced by the Bulgarian energy sector, at the very start of its term in office, this government undertook urgent measures to achieve its financial stabilisation. By renegotiating the terms of the long-term agreements with TPP AES Galabovo and TPP ContourGlobal Maritsa East 3, we have made an important step toward reducing indebtedness within the energy system. As a result of the agreed reduction in prices charged for availability, the establishment of the Security of the Electricity System Fund, the reduction in administrative costs of state-owned energy companies, and the changes in legislation, the Bulgarian energy sector is already improving its financial deficit figures.

Until now, we had focused on stabilising the sector and resolving the problems due to a legacy of wrong and economically unsound decisions that have been taken in the Bulgarian energy sector for years. We laid the foundations with regard to the full liberalisation of the electricity market, which will implement the fully market-based rules of operation in the sector. That will, in its turn, put a stop to the accumulation of new debt in the energy system. But let me assure you that we will not stop in our reform efforts and will continue to build upon these achievements to ensure a sustainable development for the Bulgarian energy sector.

**What would you say to the mining and geology community in Bulgaria?**

I wish everyone engaged in this challenging sector to keep on working with determination to shape the modern European face of our mining industry, caring for the environment, observing the requirements for health and safety at work, and pursuing policies of social responsibility.

I take this opportunity to declare the firm support of the Ministry of Energy for the entire sector and to assure you that for us at the Ministry, the sustainable and competitive development of the mining and extractive industries as a structurally significant sector of the Bulgarian economy is of the utmost importance.

Questions: BCMG



## THE MINERAL RESOURCE INDUSTRY IN BULGARIA IN 2015

The continuing population growth on the Planet, technological developments, and the increasing rate of industrialisation on a global scale all call for a continuous increase of the extraction of mineral resources. At best, about 30% of the resources required can be sourced through waste recycling. The availability of subsurface natural resources in a given country or a national region is an opportunity to provide for sustainable social and economic development and improve living standards in the local community. Since 2010, the European Raw Materials Initiative has been sounding the alarm by cautioning that unless each EU member state adopts and implements a long-term strategy for the extraction of its own natural resources, the sustainable development of the whole European Union is at stake. A number of countries

in Europe have already adopted strategies for the sustainable development of their mineral resource industries, as a unity of the three pillars: economic, environmental and social responsibility.

### **Why is Europe focused on our industry?**

The extraction industry is vital for human existence. It is the foundation of the sustainable development of all the other industries. More than three-quarters of all the things around us are made using extracted raw materials, and the remaining one-quarter are made using tools that are also made from extracted mineral resources. In Europe, the industries that utilise mineral resources generate EUR 1 400 billion gross value added per year. They employ about 30 million people.

The natural deposits of mineral resources and the historical development of our industrial sector in Bulgaria position our country among the developed mining nations of the world. As of the autumn of 2015, we have a National Development Strategy for the Mining Industry in place.

**On 29 September 2015, Bulgaria adopted its National Strategy for the Sustainable Development of the Mining Industry.**

The key word here is 'development': a significant vision of a regional leadership, an ambitious program and rationale, creating business opportunities downstream the value chain far beyond the actual extraction of resources, value adding businesses that will improve tangibly the competitiveness of Bulgaria's economy.

## Bulgaria's Gross Domestic Product in 2015<sup>1</sup>

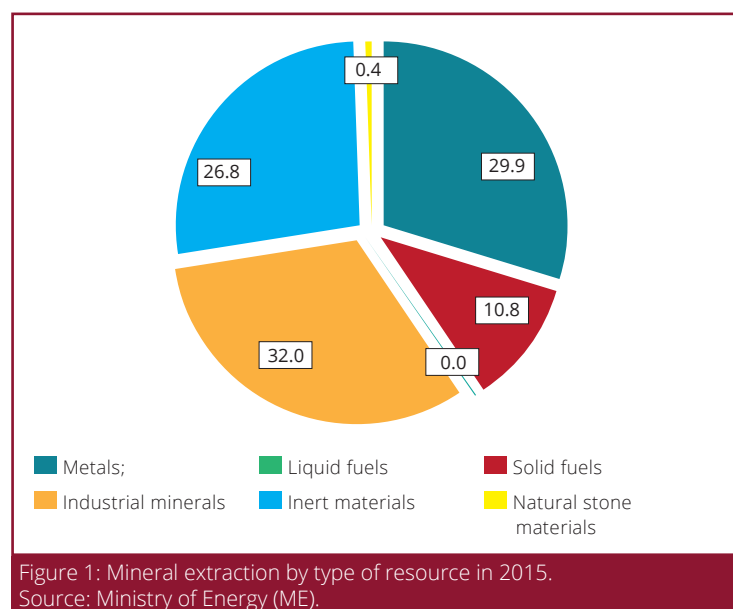
According to preliminary data, in 2015, the GDP has been growing in real terms at a rate of 3% compared to 2014. The 2015 GDP is BGN 86,373 million, or USD 48,953 million. This is BGN 12,000, or USD 6,801 per capita. Converted in Euro, the GDP figure is EUR 44,162 million, or EUR 6,136 per capita.

Gross value added amounts to BGN 73,805 million. In real terms, this is 1.5% higher than in 2014.

In 2015, the industrial sector generated 27% of the value added in the economy, which is 1% less than in the previous year.

## Extraction and Output

The mineral resource industry is a sector of strategic importance for the Bulgarian economy. It lies at the basis of all other industries and is an important factor for the country's economic stability and energy independence. Bulgaria is a leader in European ore mining, ranking third in gold and copper extraction. In terms of extraction volume per capita, our country fits into the definition for a 'mining country', with an output above the global average.



The main resources mined in Bulgaria are lignites, lead-and-zinc, copper and poly-metal ores, gypsum, limestone, bentonite, kaolin, silica sand, refractory clays, marble.

As of 28 July 2016, the number of concessions issued for extraction of subsurface natural resources is 513. In terms of the classification in Article 2(1) of the Subsurface Natural Resources Act, they fall into the following groups:

- ▶ Metalliferous minerals: 19;
- ▶ Non-metals – Industrial minerals: 72;
- ▶ Oil and natural gas: 18;
- ▶ Solid fuels: 18;
- ▶ Construction materials: 319;
- ▶ Natural stone facing materials: 66;
- ▶ Mining waste: 1.

The number of deposits of subsurface natural resources discovered (excluding mining waste) is 1 383, as follows:

- ▶ Metalliferous minerals: 218
- ▶ Non-metals – industrial minerals: 225;
- ▶ Oil and natural gas: 21;
- ▶ Solid fuels: 45;
- ▶ Construction materials: 688;
- ▶ Natural stone facing materials: 186.

Eighty per cent of mining activities in Bulgaria employ the open pit extraction method.

1. Source: NSI

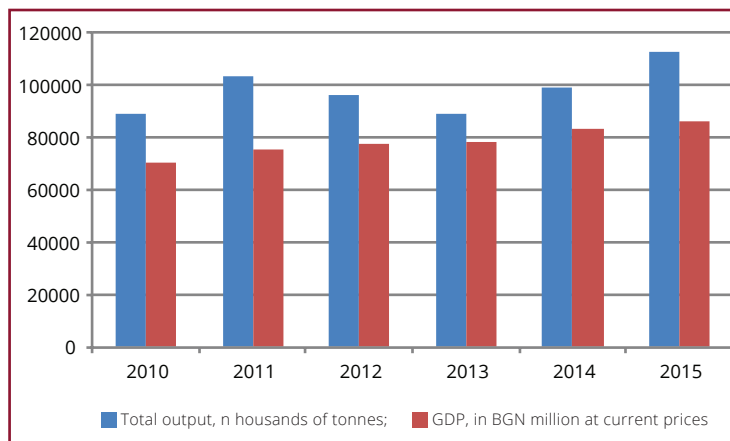


Figure 2 Total output/extracted minerals in GDP terms. Source ME/NSI. Reconciled data.

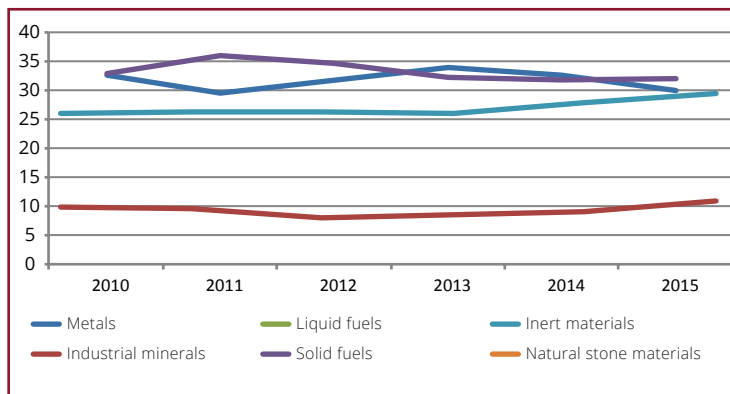


Figure 3 Mineral extraction output by sub-sector, in per cent. Source ME

EA Code 2008	Economic activities	2015* r. In BGN thousand.
In	Extraction industries	2 406 578
05	Coal mining	747 745
07	Extraction of metal ores	1 246 958
08	Extraction of non-metal materials and resources	357 119
09	Ancillary activities in mining	54 756

Table 1. Output by industrial enterprises down to the 2nd digit under the National Classification of Economic Activities, in BGN thousand

\*Preliminary reconciled data

The total mineral extraction output of Bulgaria in 2015 was 112.54 million tonnes, which is an increase of 12% (or 13.54 million tonnes) compared to the previous year and marks an all-times record in the history of Bulgarian mining.

**1 12.54 million tonnes, a record-high output in the history of Bulgarian mining**

An increase in output figures can be seen in almost all sub-sectors. The notable exception is the sub-sector of Liquid Fuels Extraction, where there is a serious decline. 11.4% decrease is registered also in the sub-sector of Extraction of Natural Stone Materials. There is an impressive increase in the sub-sectors of Extraction of Industrial Minerals, with 24%, Extraction of Inert and Construction Materials, with 17%, and in Extraction of Solid Fuels, with 13% and Extraction of Metalliferous Minerals, with 4%. There is a positive development in non-metals, where the increase indicates a revival in other sectors of the economy such as construction. Possibly, there has been a reduction in the percentage of illegal mining.

In per-capita term, the increase in mining output shows 16 tonnes per capita, a rate higher than the extraction output figures for the past 10 years.

The structure of mineral extraction exhibits long-term trends between 2010 and 2015, with solid fuels and metal minerals on a relatively steady increase in output volumes and accounting for the highest shares among the extraction industries. A runner-up is the extraction of construction materials, with a relative share already past the 25% mark. The extraction of industrial minerals has been oscillating around 10% since 2010, with this year's figure showing a growth of 24% on an annual basis and a relative share of 11%.

In 2015, the total amount of output produced by industrial enterprises in the mining industries stands at BGN 2.41 billion, which is 1.1% less than in the previous year. The highest contributors in the total value of output from the mineral resource industry are the extraction of metalliferous minerals, with 52%, and coal mining, with 31%.

Despite the higher figures for the extraction of metalliferous minerals, the value of that output declined by about 6%. This is explained by the onset of the downward cycle of all metal prices which began in 2013 and still persists.

## Human Resources

The number of people employed in the mining industry hired under contracts governed by the Labour Code in 2015 was 23,608, but the total number of those covered by the state social security scheme operated by the National Social Security Institute (NSSI) is about 30,000. That is 458 people less than in 2014.

The increased productivity of the human resources in the industrial sector is a fact, and is attributable to the upgrade in technology over the past 15 years, as well as to investments in the personnel development, training, improved working conditions and higher corporate social responsibility. (See: Figure 4).

### Labour productivity in the sector

**2.5** times higher than the average for all industrial sectors.

The annual average salary of those employed in the sector in 2015 was BGN 16,353 (an average increase of 2%). The highest pay is earned by employees in metal extraction companies and in lignite mining.

Labour productivity in the mineral resource sector is almost 2.5 times higher than the average for the industrial sector as a whole, at more than BGN 78,000 per person employed (2015).

It should be noted that over the period since 2000, the average wages have increased by 348%. This shows a positive trend of increasing income levels and job security for those employed in the mineral resource sector, with the companies in the mining industries seen as an employer of choice.

## Injuries at work

Thanks to the large investments made by concession holders in recent years in modernisation and improvements of the working conditions in the sector, the Bulgarian mining industry is no longer the highest risk sector in the economy. Compared to other sectors, it ranks 7th in terms of the number of accidents at work, 6th in terms of the number of idle days per year, and 5th in terms of the number of fatalities. Moreover, companies such as Kaolin and Asarel Medet report zero injuries at work last year, and in some, that has been the case for years. That should be the target for all companies, not only within our sector.

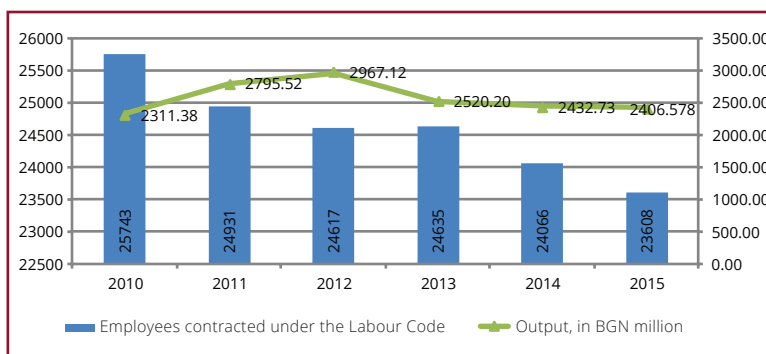


Figure 4. Number of employees contracted under the Labour Code and output during the period 2010-2015. Source: employment, NSI. GDP in preliminary reconciled data.

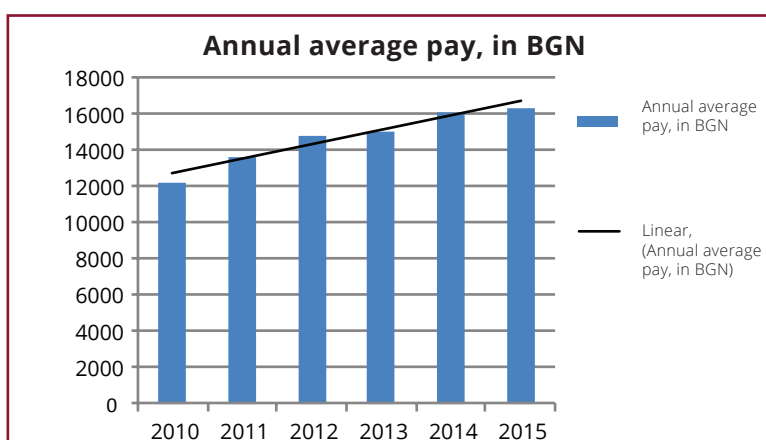


Figure 5 Annual average pay of employees in the mineral resource sector during the period 2010-2015. Source: NSI.

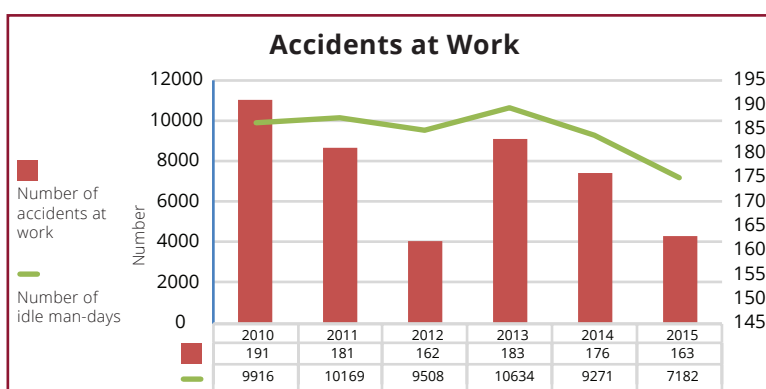


Figure 6. Number of idle man-days/ number of accidents at work for the extraction industries as a whole. Source: NSSI.

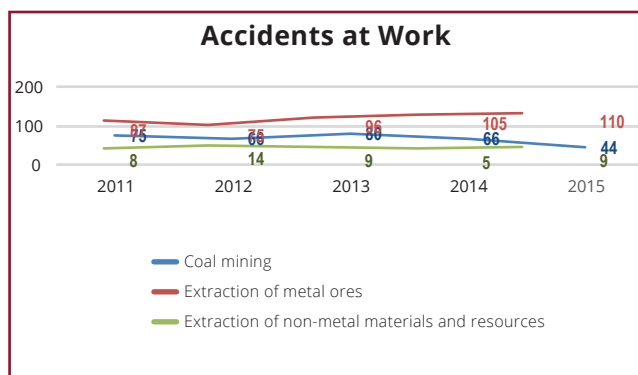


Figure 7. Number of accidents at work by sub-sector. Source: NSSI.

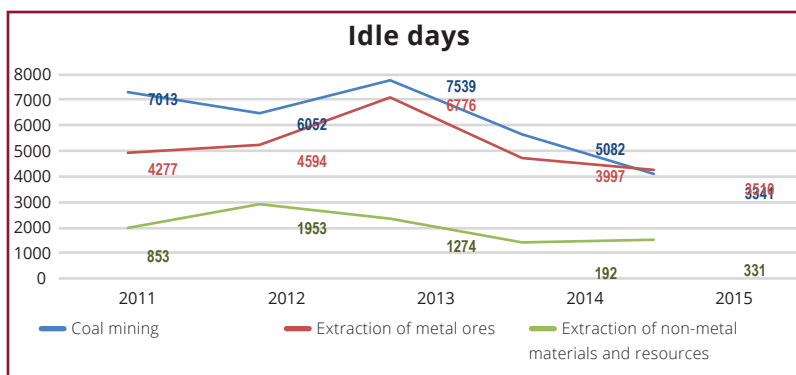


Figure 8. Number of idle days by sub-sector. Source: NSSI.

Due to its specific nature, the mineral resource sector involves significant risks for the health and safety of its employees, despite the massive upgrade in technology and equipment in recent years in the industry's hazardous and labour-intensive processes.

Unfortunately, the extraction industries rank at the top (based on 2015 data) in terms of frequency of severity index (ratio between the number of accidents and man-hours at work) and in terms of frequency index (number of idle days due to accidents at work as a percentage of man-hours at work), with the largest share coming from the sub-sector of metalliferous minerals extraction.

That determines the focus of BCMG members on health and safety at work. Prevention needs to be at the centre of attention: identification of the causes of injuries at work, risk assessment and risk mitigation measures. The trend in idle days follows the overall developments in terms of accidents at work in the sector, on a downward path since 2013, the year when that indicator reached its peak during the period under examination. The 2015 figures are the lowest during the past five years, which is a positive development.

Sub-sector	2010	2011	2012	2013	2014	2015	Number of fatalities
05 - Coal mining	1	0	1	7	0	1	
06 - Extraction of oil and natural gas	0	1	0	0	0	0	
07 - Extraction of metal ores	4	3	3	0	3	5	
08 - Extraction of non-metal materials and resources	0	1	0	1	0	0	
<b>Total</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>6</b>	

Table 2. Number of fatalities during the period 2010-2015  
Source: NSSI.

As the mining branch association, one of the main goals of BCMG is to help improving the working conditions in the mineral resource industry.

In 2012, in response to BCMG's persistent demand and with its active input, the Rules on Safety at Work in Developing Ore and Non-Ore Mineral Deposits through Sub-Surface Mining were updated. In 2014 r. The Rules were approved by the Regional Council on Working Conditions.

The 2016 work program of BMGK includes the task of updating all the other sets of rules on technical safety at work in the sector, and the Rules of Mining Rescue Services. Funding for the initiative to update safety rules has been secured from the BCMG members Asarel Medet and Kaolin.



## Imports and Exports

In 2015, imports of mineral resources continued to outweigh significantly the exports – by a factor of 3.4 in terms of volume, and 7.5, when calculated on the basis of the value of resources, which indicates the high untapped potential of the sector to contribute to the national balance of payments. According to preliminary 2015 data, products from the mineral resource industry account for over BGN 1.1 billion, which is a very large contribution to the total volume of exports when compared to the shares of other industries.

In discussing the untapped potential of Bulgaria's mineral resource industry, we should also mention improving the competitiveness of the downstream industries in the value chain, since for some categories the imported raw materials cost much more than those mined locally. For example, in Category 2616, the import of the silver ores and concentrates is 6 times less than exports, but the price per tonne of the imported raw material is 38 times more expensive than the local raw material. In such cases, an appropriate approach needs to be found and joint action is needed in order to improve the competitiveness of the Bulgarian economy as a whole.

Code	Type of raw material	Export, 2015		Import, 2015 г.	
		EUR thousand	Ton	EUR thousand	Ton
<b>25</b>	<b>Industrial minerals, including</b>	<b>292083.271</b>	<b>1987762.745</b>	<b>23856.340</b>	<b>348097.161</b>
2507	Kaolin	20187.272	208409.507	4348.051	39460.195
2522	Quicklime	1726.181	25144.770	97.255	1195.920
2523	Cements	11613.276	359915.637	2810.241	29905.481
2529	Feldspar	1614.660	21344.030	4824.065	159053.283
2530	Vermiculite, perlite and chlorites, unexpanded	5778.781	23577.853	1360.180	3151.187
<b>26</b>	<b>Metalliferous, including</b>	<b>225571.489</b>	<b>833410.882</b>	<b>1348396.700</b>	<b>1162648.690</b>
2603	Copper ores and concentrates thereof	206040.230	390896.688	1207286.599	963181.402
2607	Lead ores and concentrates thereof	5380.038	5424.372	76774.916	1027523.061
2608	Zink ores and concentrates thereof	1878.256	4483.050	55881.986	195668.501
2616	Silver ores and concentrates thereof	1017.650	7468.355	6545.007	1257.193
<b>27</b>	<b>Fuels, including</b>	<b>3328.089</b>	<b>43281.857</b>	<b>2769444.193</b>	<b>8085306.833</b>
2701	Anthracite	914.993	5324.584	36493.885	293518.116
2702	Lignite, whether or not pulverised, non-agglomerated	1427.966	36159.920	109.157	1676.403
2703	Peat	59.762	52.720	1050.580	8790.489
2709	Natural gas condensates	55.938	128.985	2025956.930	6023171.728
2711	Natural gas	869.431	1615.648	705833.641	1758150.097
<b>71</b>	<b>Precious</b>	<b>17555.410</b>	<b>1.336</b>	<b>14593.645</b>	<b>2.853</b>
<b>**</b>	<b>Other</b>	<b>21551.092</b>	<b>0.000</b>	<b>56057.239</b>	<b>0.240</b>
	<b>Total</b>	<b>560,089.352</b>	<b>2,864,456.820</b>	<b>4,212,348.117</b>	<b>9,596,055.777</b>

Table 3. Summary of imports and exports of mineral resources in 2015. Source Ministry of Economy

Autor : Eng. Ivan Andreev, BCMG



## 2015 ACTIVITY OF THE BULGARIAN CHAMBER OF MINING AND GEOLOGY

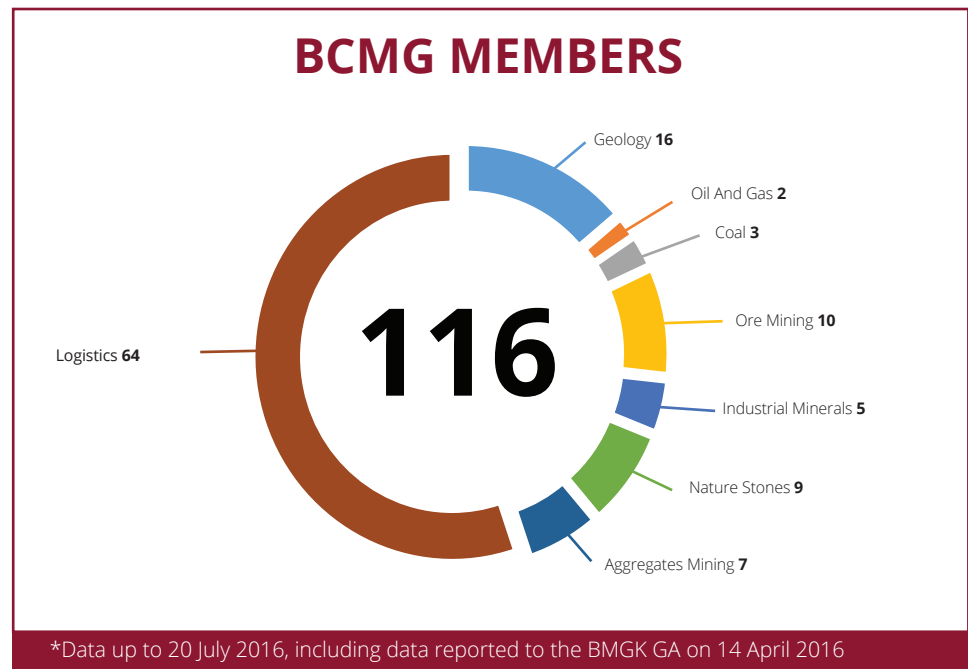
### BCMG with Consistent Efforts for Sustainable Development, Unity in the Industry, and Dialogue

2015 Activity of the Bulgarian Chamber of Mining and Geology BCMG with Consistent Efforts for Sustainable Development, Unity in the Industry, and Dialogue

The past 2015 was marked by momentous events and trends. The Council of Ministers adopted the National Strategy for the Mineral Resource Industry. Asarel Medet celebrated its 50th anniversary. The dialogue with the stakeholders, ranging from government institutions to media, has improved notably. The companies from the industry continued to make strategic investments in sustainable development. Declining commodity prices left their mark on their business plans.

Through its consistent actions, the Chamber demonstrated unity and strengthened its leadership in the

branch. Through joint work and active dialogue with all stakeholders - from central government to local communities - our members realised into practice our motto, Standing Strong Together. The BCMG felt the support of its members during the year, with everyone trying to build upon the achievements already in place. The positive trends we saw in 2014 persisted along their natural course of development during the past year. This can be evidenced by our activities in 2015.



## New Members

We are happy that for the period April 2015 – July 2016 eight new companies have joined our ranks. These are: Technostroy Engineering EOOD; CMC-C EOOD; Zlatna Panega Cement AD; Ingconsult EOOD; Belogradchik Mining Company AD; Sigma Bulgaria AD; Asarel Investment EAD; Alki-L EOOD; Emkotek OOD.

True to its motto, Standing Strong Together, the BCMG remains open for companies operating in mining and extraction, geology and mining logistics with a track-record of good reputation, aspiring for sustainable development and willing to join the Chamber's efforts on projects and initiatives of common interest for the industry.

## Chamber Operations



Prof. Dr. Lyuben Totev



Prof. Dr. Sc. Nikolay Valkanov

To improve the efficiency of the BCMG **Managing Board** operations, the Chamber's General Assembly decided there should be two Board Deputy Chairs. Then, it unanimously elected Prof. Lyuben Totev, Rector of the St. Ivan Rilski University of Mining and Geology. Now, the MB has one more deputy chair, in

addition to Prof. Nikolay Valkanov, D.Sc.

During the past year, the BCMG team and the management were supported by the **Chamber's standing committees**.

The Legal Committee worked very hard, preparing a number of opinions and taking part in meetings to discuss draft laws and regulations of particular relevance to the industry such as: draft orders instituting protected areas in line with the Habitats Directive, proposals to amend legislative instruments related to Natura 2000, an opinion on the proposal of the Ataka Parliamentary Group to terminate the existing concession agreements for gold, precious and rare earth metal mining. It produced information sheets on concession fees in other countries and other materials. The Committee prepared terms of reference for drafting amendments to the Subsurface Natural Resources Act and other related acts. It drafted opinions on specific issues brought up by members and actively cooperated with the MB in finding solutions. The legal experts drafted a proposal for updating the draft National Development Strategy for the Mining Industry before the document was finalised by the Council of Ministers in September 2015.

With the support of the *Public Relations and Image Committee*, the BCMG prepared an annual plan for implementing its Communication Strategy, with a focus on improving internal communication and coordination among the

members. The aim is to increase mutual information sharing between the Chamber and its membership. The Committee provided support in planning for the European Minerals Day 2015. It discussed the Annual Newsletter and took part in producing it, and provided similar support for participation of the Chamber's members in the Mining industry, a special paper and digital supplement circulated with the 24 Chasa and Trud daily newspapers to mark the Miner's Day on 18 August 2015. The Committee held a joint session with the Standing Committee on the Environment before the World Climate Summit, Paris 2015 to coordinate the Chamber line of action in engaging with the Ministry of Environment and Water on Bulgaria's position.

During the reporting period, the Environment Committee provided advice and discussed topical issues concerning the existing environmental legislation and the legal instruments up for amendment, such as the project to set up a Register of permits for prospecting and exploration of subsurface resources with the Ministry of Energy; the amend act to update the Subsurface Natural Resources Act; Ordinance on Mining Waste Management; a draft Ordinance on the terms and procedure for development and approval of management plans for protected areas; questions on how the decisions taken by the Paris Climate Conference would impact the mining industry. It discussed the proposed goals and overall ideas concerning the EU Circular economy.

Regarding issues relating to *Natura 2000*, the Committee drafted the BCMG position on the draft orders instituting protected areas in the meaning of the Habitats Directive. It took part in meetings with the Ministry of Environment and Waters

and the National Nature Protection Service Directorate to discuss the bans on activities in protected areas, protected area management plans and modifications to the standard forms to be filled in for *Natura 2000* protected areas.

Its experts formulated questions about the implementation of the Flagman Initiative for a resource-efficient Europe in Operational Programme *Environment 2014-2020*. It also requested information on the government's actions with regard to old and abandoned mining waste facilities.

The Committee formulated the BCMG position on the materials and draft decisions of the Monitoring Committee of Operational Programme *Environment*, in coordination with the Environment Committee of *Euromines*.

It provided information to support the formulation of the Bulgarian position in the drafting of the amendments to Framework Directive 96/62/EU on ambient air quality assessment and management and took part in working meetings with the industry organised by the Directorate for Clean Ambient Air Protection.

The members of the **Committee on Human Resources and Industrial Relations** contributed to the work on the Industry Model for Vocational Education by taking part in the consultation process to ensure consistency between the types of vocational areas for acquiring qualifications at secondary vocational schools and the special focus areas for university level education so as to match the needs of the industry.

The Committee took part in the collective bargaining on the terms and conditions for the Industry Collective Labour Agreement for 2015-2017 signed between the Chamber and

the miners' trade union federations. The bargaining proposals for the statutory minimum income levels for social security and health insurance purposes for 2015 in the extractive industries sector were coordinated at each industry level for all sections of the document, and the proposed changes take into account the industry's economic development capacity.

### Internal expertise

The BCMG worked actively to encourage and improve internal communications. This was the focus of the efforts and coordination work done by the Standing Committee for Public Relations and Image. Encouraging sharing on the part of the members was a key message communicated by the Chamber in the letters by the Chairman, at the 2015 General Meeting (held in Devin), as well as on other occasions.

Along with the customary methods of requesting the members' feed-back and suggestions for improvement, the BCMG launched a series of electronic questionnaires, e.g. to assess the Annual Newsletter, to poll the membership on the question of national representation.

The idea to expand the industry's current expert network is increasingly gaining ground.

### Online communications



The website of BCMG

In 2015, the Chamber continued to publish up-to-date information and news on its **website**. The high-quality media monitoring service enables the timely tracking of developments and publication of news for the members. The website has thus become a news hub for the industry. The site's stock of information is continuously enriched with the latest legislative instruments of relevance to the mineral resource industry.

The BCMG has set up a **profile** in the professional network LinkedIn, which led to the Chamber establishing its own online channel. As of the end of July 2016, the number of its contacts has grown to 741 – mining experts, academics, journalists and influential opinion-makers. The BCMG profile also serves as a news board for posting news targeted to our contacts. This helps build the Chamber's own network of followers.

### Dialogue with Government Institutions

As of late 2015, we adopted the good practice of gathering information from the members on issues encountered in dealing with the Ministry of Energy: delayed processing of documents, failure to keep statutory deadlines, etc. These are discussed at the monthly meetings between the Executive Director of the Chamber and the leadership of the Ministry of Energy. Both sides have stated their satisfaction with this good practice.



Meeting regarding the illegal mining, BCMG

During the reporting period, the institutional relations with the Ministry of Energy have further improved. The expectations that the Minister of Energy and her deputies would contribute personally to strengthening the involvement of government institutions in the pursuit of our common goals have been met. At public and expert-level events, the Ministry representatives have pointed out the priority assigned to the mineral resource industry in the government's strategic plans and highlighted its vital role for the competitiveness of the Bulgarian economy.

The effective communication with the Ministry of Energy can be seen in high-level meetings between the leadership of the Ministry (the Minister, Deputy Minister, Ministry Secretary) and the Managing Board of the Chamber on strategic and important operational matters.

Pursuing its mission, the BCMG has been active in the dialogue with the legislative and the executive branches of government. During the period, the Chamber initiated a number of positive changes in the laws and regulations governing the industry.

### **The National Strategy for Sustainable Development**

of the Mining Industry was adopted by the Council of Ministers on 29 September 2015. This was the successful end of 5-year long process. The decision

to develop the Strategy was made in 2010 and the Subsurface Natural Resources Act was amended, setting up the United Body for Government of Underground Resources (under the Ministry of Economy and Energy).

Since the beginning of 2015, the Ministry of Energy resumed work on the adoption of the draft Act Amending the Subsurface Natural Resources Act, in order to transpose the EU Mining Waste Directive. The amendments take into consideration many of the Chamber's proposals. The draft act was adopted by Parliament.

In November and December 2015, the Council of Ministers initiated a debate on the transposition of Directive 2014/23/EU into the Concessions Act. The BCMG consulted with leading European law offices on the topics under discussion and the legislation put into place in EU countries that are relevant to the Act Amending the Subsurface Natural Resources Act and the Concessions Act. The opinions by the two law offices helped the Chamber to uphold its position. The intentions to shift the regulation for certain activities related to permits for prospecting and exploration and concessions for the extraction of certain raw materials in the amended Concessions Act were dropped.

Throughout 2015, the BMGK continued its efforts to resolve the problem with the illegal extraction of mineral resources. This is a permanent item on the agenda discussed at the regular meetings in the Ministry of Energy discussion and solutions are being sought. During the public event presenting Operational Programme Environment (June 2015), the issue was brought up by the Chamber Chairman Prof. Lachezar Tsotsorkov, D.Sc. personally and addressed to Prime Minister

Boyko Borissov. The series of actions began in March 2015, when the BCMG held a working meeting with representatives of the competent institutions to discuss and agree on specific measures to counteract illegal mining. The meeting was attended by representatives of the Ministry of Energy, the Ministry of Economy, the Ministry of Environment and Waters, the Ministry of Finance, the Ministry of Interior, the General Labour Inspectorate, the State Agency for National Security, the Directorate for River Basin Management of the Danube Region, the National Association of Municipalities, CEIBG (KRIB), BIA, WWF Bulgaria, the Bulgarian Association of Producers of Inert Materials and BCMG members. It was decided to set up intra-governmental working group, to include representatives of all parties interested in resolving the issues, i.e. government institutions and industrial associations. It is expected to suggest specific legislative amendments to prevent illegal mining. It should be incriminated in the Criminal Code. Another task of the working group is to develop common instructions for coordinated actions by the various bodies to respond to alerts and act to prevent illegal mining. As a result, an intra-governmental working party was officially set up. It is led by the Minister of Energy.

### **COOPERATION**

#### **Partnership with National Employer Organisations**

In 2015, our fruitful cooperation with CEIBG and BIA for improving the conditions for doing business and enhancing the level of industrial relations and corporate social responsibility continued.

At its meeting on 14 April 2016, the BCMG General Assembly gave CEIBG

a mandate to take part in the National Council for Trilateral Cooperation for the next election cycle.



Signing of the Branch Collective Labour Agreement (2015-2017)

The recognition of the mining industry's efforts can also be seen in the number of awards received by our members at the 2015 Annual CEIBG Balls. The Grand Prix for Investments went to Asarel-Medet, and the Innovation Prize was won by Minstroy Holding.

In 2016, the CEIBG Special Prize for overall contribution for the development of the Bulgarian economy was awarded to Asarel Medet. While accepting the prize, Prof. Lachezar Tsotsorkov, D.Sc., Chairman of the company's Supervisory Board, who is also the Chairman of the BCMG, said the distinction was 'a recognition for the entire Bulgarian mining industry'.

### Social Partnership

The Chamber continued to build on the good cooperation with the trade union organisations in the sector. We partnered in preparing common positions on current issues. In January 2015, the Industry Collective Labour Agreement for 2015-2017 was signed.

During August and September each year, the social partners negotiate the minimum income levels for social security and health insurance purposes for all categories of employees for all sub-sectors. The

proposals are submitted to the Ministry of Labour and Social Policy. The procedure for 2015 was no different.

The regular meetings between the BCMG Executive Director and the Chairs of the Federation of the Independent Trade Unions of Miners (FNSM) and the Miners' Trade Union Federation (SMF) continued. These meetings discuss current issues for the industry.

### Interaction with Other Industrial Associations and NGOs

The Chamber and our members actively supported the annual science and technology conferences held by the Science-and-Technical Union of Mining, Geology and Metallurgy (NTS MDGM) which discuss new developments in science and practices in the mining industries.

The BCMG cooperates with non-government organisations on topics relating to environmental protection and sustainable development in order to survey opinions and balance our positions and share good practices. Together with the industrial associations of energy-intensive, the metallurgical and chemical industries (Bulgarian Federation of Industrial Energy Consumers, Bulgarian Association of Metallurgical Industry and Bulgarian Chamber of Chemical Industry), we release common positions on several occasions.

We set up contacts with the Bulgarian Society for the Protection of Birds and their pan-European organisation, BirdLife International. The discussions aimed to learn about each other and explore opportunities for partnership for sustainable development.

As in previous years, the Chamber was a project partner in the UN Global Compact Bulgaria Network.

In 2015, the Responsible Choice initiative was launched. It encourages companies to adopt a sustainable approach to business-planning and rational decision-making based on their business needs. This corporate behaviour trickles down to the individual company employee, translating into more responsible consumption.

In the autumn, the BCMG took part in the Career Fair and presented the miner's trade and the mining engineer's profession. The event was the finale of the Proud of My Parents' Work campaign for 2015 and attracted about 800 children with its engaging exhibition stands and demonstrations.

### International Cooperation

The BCMG continued its intensive interaction with Euromines, taking part in initiatives relevant to the Bulgarian mining industry and in the information exchange and exchange of strategic documents.



Signing of the Memorandum with the Austrian Mining Chamber

Dr. Roman Stiftner, Euromines Board member, honoured the national celebrations of the Miner's Day. The Euracoal President sent a greeting address.

During the past year, the BCMG signed Memoranda of Understanding with the Mining Chambers of Austria and Macedonia. The parties agreed to engage in active cooperation in

the field of education, management systems and prevention activities for health and safety at work, exchange of good practices, including in legislation, technology, environmental protection, on the basis of the 2010 European Raw Materials Initiative and the principles of sustainable development.

The BCMG took part in the working party of the European Innovation Partnership (EIP) in the area of raw materials focusing on improving the regulatory framework, knowledge base and infrastructure base for raw materials in Europe. The initiative aims to provide support for economic growth and a foundation for achieving higher value added in the industry. The EIP on Raw Materials is becoming part of the European Commission's Industrial Strategy (launched in the autumn of 2012) which is aimed at turning Europe into an attractive destination for investments in industry. At the end of 2015, a second call for declaring commitments in the mining industry was launched. Following a decision of our MB, the Chamber declared one commitment: Standard for Sustainable Development.

In April 2014 during the General Meeting, the opportunities offered by the EIP on Raw Materials were presented by the Regional coordinator for Central and Eastern Europe Krzysztof Kubacki.

## PROJECTS

### Industry Branch Information System

Over the past year, the Branch Information System, BrIS, continued to expand. It has an improved branch portal structure linking it to the BMGK website. The Queries Module has two new sections: BCMG Members and Concessions. The first one provides information about the members by



Meeting at Chelopech Village about the Branch Educational Mode

geographic area, and the second - lists all mining and extraction concessions on the territory of Bulgaria with geographic coordinates, area, and raw materials extracted.

Best Practices Section includes successful examples from the members grouped in four categories: technical solutions, environmental solutions, health and safety at work, and CSR. The portal also contains reports and economic analyses of the industry and the competitiveness of the Bulgarian economy, as well as sectoral analyses.

In 2015, data and data sources were structured and agreed upon with the relevant institutions. The BrIS information covers several areas, including output in the sector, investments, employment, wages and work accidents in the industry. The necessary data will be obtained from the National Statistical Institute, the National Social Security Institute, the Ministry of Energy, and the Ministry of Economy.

### Industry Training Model

This project involves the development of the BCMG network at the national level and a survey to assess the requirements for cadres. During the period, eight regional meetings were held in Smolyan, Srednogorie, Vratsa, Pleven, Sofia, Blagoevgrad, Stara Zagora, and Pernik, to present the

Industry Training Model and to discuss the current status of vocational education and the needs for specialists. The meetings were open to all concession holders in the region.

As a result, in Stara Zagora will start dual education in 'Electrical equipment in industrial production'. You can read about the implementation of the dual education pilot project in the Municipality of Panagyurishte on page 43.

The importance of the problem was underlined in the discussion on education held in May 2015. The event was part of the campaign "YES! To the Bulgarian Economy". Asarel Medet hosted the event which was organised by the Standard Daily and CEIBG. Participants included the Minister of Labour and Social Policy, the Minister of Education and Science, and the Minister of Energy.



"Yes! To the Bulgarian Economy" Discussion

The Chamber made seven proposals to amend legislation which included changes to the Public Private Partnership Act, modifying the approval procedure for planned number of students in vocational high schools and universities so as to take account of proposals made by the business associations. The BCMG demanded coordination of curricula too.

The project relies on the partnership with institutions. In 2015 meetings with Regional Inspectorates of

Education (RIE) and the National Agency for Vocational Education and Training were held to present the project and gaining their support. The model was also presented to peer industrial associations. The Bulgarian Association of Metallurgical Industry (BAMI) expressed interest to join the efforts to implement the model and a desire for partnership.

In May 2016, progress made in the pilot project for dual education in Panagyurishte was presented in the host town. Initiated by the local businesses, the project is seeking to gain broader support from the Municipality of Panagyurishte, the local educational institutions, the Regional Inspectorate of Education in Pazardzhik and the Ministry of Education. One of its first steps is to unite schools in a single vocational high school, to provide education in special fields that are needed for the industry. Another step is the relevant changes to legislation that would facilitate the implementation of the model: a new type of employment contracts, tax deductions for companies which have introduced dual education and for those providing student scholarships; providing general education for mentors, and introduction of protected trades in vocational education.

In order to obtain up-to-date information on the demand for specialists from our membership, the Chamber designed an electronic application form. The information was circulated to the competent RIE, and results relating to higher education were sent to the MGU St. Ivan Rilski, the Ministry of Economy, and CEIBG to be included in the request for planned number of students to be recruited for 2016/2017.

The BCMG took part in the National Coordination Unit, one

of the managing bodies of Project Domino. It is implemented as part of the Bulgarian-Swiss Cooperation Programme and is part of the support for introducing the principles of dual education in the Bulgarian educational system. Its aim is to design a model and build capacity for implementing the principles of working by doing in Bulgarian vocational education.

In 2015, the Earth System Science Committee at the National Agency for Vocational Education and Training adopted five drafts for State Educational Requirements for mining qualifications with the active participation of the BCMG representatives: mining technician, mining industry operator, drilling technician, drill operator, and mining surveyor.

### Project EARBDMining

In April 2015, the BCMG launched the project "Investigative monitoring for the assessment of pressures and



Meeting with companies under the EARBDMINING Project

impacts from the mining of metal ores, processing metal ores and uranium mining and proposals of measures for the East Aegean River Basin district management plan". It is implemented in the framework of the programme 'BG 02 Integrated marine and inland water management', co-financed by the European Economic Area Financial



Mechanism 2009-2014. The project will contribute for the assessment of these impacts by analysing and aggregating the available information. It will also provide arguments to support derogations, if necessary, from the set targets and propose measures based on good practices. The beneficiary is the MGU St. Ivan Rilski, and its partners are East Aegean River Basin Directorate, BCMG, and Eco Forum for Nature NGO.

Three working meetings with the participating companies were held, presenting the results from field activities at each of the project stages. Measures suggested on the basis of the project results were also discussed before being proposed for inclusion in the updated River Basin Management Plan.

On 20 April 2016, a workshop was held to present best environmental practices in the mining and processing of mineral materials. Its aim was to build up the capacity of experts involved in the project and of the stakeholders to apply successful solutions in environmental protection.



The event brought together about 30 representatives from the project participants, managers and environmental experts from mining and extraction companies from the districts of Arda and Srednogorie.

## EVENTS

### Miner's Day

The national celebration of the Miner's Day in 2015, which is traditionally organised jointly with the Science-and-Technical Union of Mining, Geology and Metallurgy and trade union federations, was a success. The event was highly attended and a wide range of government institutions were present.



Public Prayer for health at the St. Nedelya Cathedral, 18 August 2015

Official guests included the Minister of Energy Mrs. Temenuzhka Petkova, Chairs of standing parliamentary committees, deputy ministers, representatives of the Office of the President, the Council of Ministers, members of the European Parliament, regional governors, mayors, the Presidents of the both national trade unions in Bulgaria, the Chairman of the Confederation of Employers and Industrialists in Bulgaria (CEIBG), representatives of the BIA leadership, heads of industrial associations, etc. As usual a number of mining companies and prominent figures from the industry took part in the celebration.

In 2015, we were honoured to receive many international guests, including the Executive Director of the Austrian Mining Association and member of the MB of Euromines, Dr. Roman Stiftner, the Chairman of the Macedonian Mining Industry, Mr. Nikolaycho Nikolov, ambassadors of other mining countries, and miner trade unions from neighbouring countries.

During the celebrations, the BCMG handed its traditional Annual awards to its members with outstanding achievements over the past year. A total of 16 companies applied with 36 projects in five categories: best annual results, innovation, health and safety at work, caring for the nature, and CSR. A journalist prize was also bestowed for objective and consistent coverage of the industry, and a prize for Best Student in MGU the St. Ivan Rilski.

Together with celebrating the Miner's Day, the Annual Newsletter of the BCMG for the mineral resource industry was released. The publication included a status review of the industry and the Chamber activities. A new feature in this edition was the inclusion of 4 overviews addressing a number of questions in the topic areas of health and safety at work, environmental protection, CSR, and best practices. The newsletter contained also materials developed by Euromines and by Prof. L. Totev, and presentations of companies which marked anniversaries in 2015.

### Intermin Expo 2015

The sixth exhibition Intermin Expo: All About the Mining Industry was held during the autumn edition of the Plovdiv International Technical Fair.

The exhibition showcased machinery and equipment for mining and quarrying, the exploration sector and mine construction. Exhibitors

included suppliers of machinery, equipment, spare parts, software, work clothing and H&S equipment.



Intermin Expo 2015, IEC Plovdiv

The BCMG set up its own exhibition stand and presented the mineral resource industry and its activity.

### Members' Informal Meeting

In November 2015, the 3rd Informal Meeting of BCMG members was held in Devin. Its aim was to report on progress in the Chamber's work, discuss issues and provide networking opportunities. It was attended by some 70 people – members and service providers.



Joint Members Meeting at Devin Town

The discussion format allowed each participant to share their opinion and suggest new ideas. The priorities for future activities that sparked the liveliest debates were the positioning of the Chamber, changes in legislation, dialogue with the government, the Chamber projects and the Communication strategy.

The second part of the meeting included presentations of activities, products and services of mining logistics companies. The end of the event was with an official dinner and entertainment.

### The European Minerals Day

The European Minerals Day was held at the Earth and the People National Museum in partnership with DMP Chelopech and Kaolin, and Asarel Medet hosted a series of student visits from their region.



European Minerals Day at the Earth and People National Museum

During the 3-day event, the Museum was visited by over 1,200 people. For a first time, the Chamber set up a Facebook event, posting interesting facts about the mining industry. At the invitation of the BCMG, 3 groups of students from 3 schools visited the event, and another student group was invited by Minstroy Holding.

It was a successful event because of the large number of visitors it attracted, and because of the positive feedback from the guests.

### Analyses of Bulgaria's competitiveness

With the support of the BCMG, two analyses of the competitiveness of the Bulgarian economy were published. The "Analysis of Bulgaria's Social and Economic Development and

Competitiveness (2007-2014)" was produced by the Centre for Economic Development. "The Analysis of the Competitiveness of the Bulgarian Economy" was developed by the Centre for Study of Democracy.



Presenting the two Analysis of the Competitiveness of Bulgaria

The aim of the presentation is to share with a wide audience a feasible model for successful economic governance of the country and its priority industries in order to improve the competitiveness of the Bulgarian economy and conduct regular performance monitoring.

The two reports gained the support of the nationally representative employer organisations and the trade unions. The BCMG proposal was submitted to the Council of Ministers.

### World Environment Day

In 2015, BCMG joined "Along the Food Road", a reality show for children organised by the UN Global Compact-Bulgaria Network. The campaign was distinguished with Second Prize at the 2016 PR Prize competition held by the Bulgarian PR Society in the Special Event category.

For yet another year, the Chamber has been a partner to the UN Global Compact-Bulgaria Network in marking the World Environment Day, 5 June. In 2016, there was an online campaign and internal communications among the staff of

the member companies within the Network. The BCMG supported the production of materials, branded with its 25th Anniversary Logo, which were circulated among more than 10,000 people.

### Career Fair

The grand finale of the fourth edition of the project "Proud of My Parents' Work" for 2015 came with the Career Fair. It attracted over 800 visitors, mostly families with children of various ages.

The BCMG took part with a separate exhibition stand and presented two careers in mining: those of a miner and a mining engineer. Children learnt about the importance of mining and the uses of minerals in our daily lives.

### The BCMG as a Partner

During the period, the Chamber partnered in several important events. The BCMG and some of its members took part at the event organised by the "24 Chasa" and "Trud" daily newspapers, along with CEIBG to present the Operational Programme Environment.

Early this year, the BCMG was one of the institutional partners at the 10th Annual Meeting of business with the government, organised by the Capital newspaper.

This spring, the international conference on "Education and Business – the Future Leaders" was organised by the Bulgaria On Air Media Group and BloombergTV Bulgaria. The BCMG was invited to join as a partner.

**Autor : Eng. Ivan Andreev, BCMG**



EMBF

# European Mining Business Forum 2016

IV<sup>th</sup> edition

Under the patronage of the Minister of  
Energy of the Republic of Bulgaria

 **13 September 2016 Hotel Hilton - Sofia**



## Main topics:

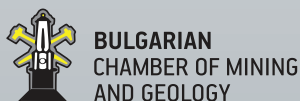
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**Panel 1:** Markets. Investments. Risks. Competitiveness of the Mining industry.

**Panel 2:** Reindustrialisation. The role of Mining industry.

**Panel 3:** Horizon 2020. Opportunities. European Innovation Partnership.

**Panel 4:** Sustainable Development. Responsible Mining industry.  
Good practices.



REPUBLIC OF BULGARIA  
Ministry of Energy





## INNOVATIONS ARE THE KEY TO SUSTAINABLE INDUSTRY DEVELOPMENT

Innovations are essential for the Bulgarian extractive industry. Their timely introduction increases industry competitiveness and thus supports national economy. Our industry boasts more and more examples of best practices and projects, which drive the sector forward with the help of innovations.

What we have gathered below are some recent examples, which show that innovations have a significant share of the investments of the mining companies. This is a logical and expected development. If we are to review the state of the industry from 15-20 years ago, we will see that many of the

current industry leaders faced bankruptcy or closure due to poor management.

Thanks to the efforts and strategic decisions made by their managers, the determination and hard work of their numerous teams, the old mines have become modern ore-extraction and ore-dressing complexes. The leaders in the metal-ore mining are now being distinguished with national and international awards as tribute to their consistent efforts and strategic investments.

### State-of-the-art mine management system

The extraction processes at

**Ellatzite** Mine are currently carried out and controlled by a new, state-of-the-art mine management system - Dispatch. The system is supplied by Modular Mining Systems Inc., USA and helps maximize productivity and efficient management of technological processes related to ore mass extraction. An important system component is the ProVision high-precision positioning system, which controls accurate and careful digging of mine mass and high-precision drilling.

The total value of investments made in the Dispatch system alone over the period of 2015-2016, exceeds BGN 4.5 mln.



Control of the performance of Dispatch System at the site

„Our team implemented the entire Dispatch system in 2015-2016 with the help of the supplier. We also built a wireless communication system and installed a computer for each machine. The Dispatch server centres provide a reliable data storage space for the entire production process,” notes Eng. Mladen Nedkov, head of Mine Information Systems at Ellatzite Mine.

The system automatically controls the production process with input from mining engineers, geologists, mine surveyors, geologists, and dispatchers. It ensures maximum equipment performance by reducing wait time between runs of excavators and tipper-lorries (increasing the efficiency with more than 5%). Process management, including constant monitoring and control, is carried out by mine dispatchers at the control centre.

The system's advantages are evident in the process of automatic blending as well. Dispatch ensures reliable ore blending and achievement of targets.

By introducing the automated system, Ellatzite-Med AD has been able, in the course of a year, to achieve a 19.8% increase in the productivity of the entire fleet in terms of hauled mine mass per operating tipper-lorry per hour. The system helps decrease emergency repairs of equipment,

encourages preventive servicing, optimizes costs, and improves H&S.

The system works towards improved safety during work. Its capabilities are huge, such as avoidance of hazardous zones, signalling for dangers, traffic and speed regulation and improvement of limited-visibility movement.

### New Cyclic-and-continuous technology

In 2016, **Asarel Medet AD** introduced a new Cyclic-and-continuous technology for ore transportation (CCT-3). The investment amounts to BGN 20 mln.

The performance analysis right after its start-up reveals that transport efficiency has improved with 18.4%. This is the third CCT in operation at Asarel Medet but the first designated for ore transportation.

A first-of-a-kind for the Bulgarian mining industry double transfer of the modules of the Semi-stationary crusher corpus of the overburden CCT-1, currently inoperative, was carried out as part of the project. The CCT-1 equipment was re-used in the most rational and environmentally-friendly manner in the construction of the new conveyor. The entire equipment, which weighs more than 1,100 tonnes, was moved in only four modules, without detailed disassembly.



Cyclic-and-continuous technology line for ore transportation

Reduced use of vehicle transportation and introduction of CCT-technologies results in approximately 40% reduction of harmful exhaust gas emissions from mine vehicles.

CCT-3 has a clear economic effect as well, due to the significant reduction of the volume of ton-kilometres and of mining roads construction and maintenance costs. This in turn results in lower cost of the extracted ore, which has a major impact on company competitiveness and its stability in the event of collapse of prices of the metals on global stock-exchanges.

### Lead-zinc ore processing and dressing line

A one-of-a kind for Bulgarian industry, highly innovative lead-zinc ore processing and dressing line is being deployed in **Rudmetal**.

“The modular production line is not only far more efficient but also solves grave flotation-related environmental problems”, points out Mitko Mladenov, director. Its introduction will increase the competitiveness of the company.

The company will introduce a non-cyanide ore dressing technology, investing more than BGN 10 mln in the new production line. A part of the equipment for the line is delivered as part of an EU grant at the amount of BGN 2.9 mln.

Among the innovations applied by the new production line is the use of column flotation equipment. It is far more efficient and ensures better quality of the concentrates. The production line employs a full water cycle, which eliminates the need for a tailings pond. Its combination with the non-cyanide flotation technology results in huge environmental benefits.

An additional saving of reagents is achieved by an innovative device, which separates approximately 40% of the gangue in the form of crushed stone prior to fine crushing and grinding. This bi-product will find commercial use in construction.

The line’s capacity is 110,000 tons of ore per annum, where the lead-zinc ore extracted by Rudmetal will account for around 60% of this amount. The company plans to import ore in the near future.

### Energy management standard

**Ellatzite-Med** is the first Bulgarian mining company to hold a certificate of compliance with the international energy management standard ISO 50001:2011. This is the sixth certificate awarded to the company. It supplements the Integrated Management System (IMS) which follows the ISO 9001, the ISO 14001, and the BS OHSAS 18001 standards. Also, the company holds certificates of accreditation in accordance with ISO 17025 – testing and calibration laboratories, and ISO 17020 – operation of bodies performing inspection.

Upon accession of Bulgaria to the EU, the GEOTECHMIN group of companies introduced new management practices and improved its quality management systems. In line with this policy, in 2010 Ellatzite-Med commenced work for phased development and deployment of IMS. The systems encourages efficient management of all business processes.

The new standard will help Ellatzite-Med to enhance those systems and processes, which improve energy characteristics and optimise energy use. Its application also aims to reduce environmental impact and energy-related costs through systematic energy management. ISO 50001 sets the framework for development and improvement of the energy management system for efficient energy use and the development of energy efficiency measures.

### Digital setters

For the first time in the Bulgarian mining industry, **Ellatzite-Med** is



New digital setters at Ellatzite-Med

introducing new-generation digital setters. These serve to supply the excitation winding of the rotor and automatic regulation of the field current of synchronous motors with installed capacity of 2.5 MW, actuating the ball mills. Their high reliability is the product of the two identical, independent, galvanically isolated regulator units, each with its own set of supply sources, sensors and operating circuits. The digital regulator allows recording of more than 100 oscillograms for the purpose of analysis of the main events arising during operation.

„This investment is the most energy-intensive process in the entire Ellatzite-Med flow diagram, and the high reliability and accurate digital control allow maximum optimisation of energy costs”, says Eng. Kiril Yonchev, director of Automation at Ellatzite-Med.

Improving the energy performance of the mills is among the main objectives of the Energy Management System adopted by the company under ISO 50001:2011.

## Upgrade of the automated medium and fine crushing system

At the beginning of 2016, **Ellatzite-Med** carried out a complete overhaul of the Electrical Equipment, Monitoring and Metering Devices and Automation Sectors of Electrostatic Filter No.1 at the Medium and Fine Crushing Department. This upgrade also involved laying of new cable routes, mounting of electrical switchboards and control panels, mounting of Rico-Werk equipment. The scope of works also included a new automated management system for the facility, based on Siemens Simatic S7 programmable process controller. The Electrostatic filter No 1 was integrated into the Automated Management System controlling processes within the Medium and Fine Crushing sector of the Ore Dressing Complex at Mirkovo village.

Result analyses show that the Automated Management System for the Electrostatic filter and Prometos Gamma DP regulators which control the three-phase step-up transformers allow optimum control in accordance with pre-set conditions (input and output current, and pressure to the fields), comprehensive monitoring of the status and performance parameters of all units.

The deployment of the new Automated Management System controlling technological processes in the Medium and Fine Crushing sector in 2014 and the gradual modernization of its subsystems will ensure high reliability of the equipment performance, reduced energy consumption, and will promote health and safety at the workplace.

## New mining equipment

In addition to the CCT, **Asarel-Medet** also deployed new mining equipment. The new Komatsu electrical excavator has a weight of 252 tonnes and bucket capacity of 15 m3.



New Mining Equipment of Asarel-Medet.

In addition there are two Caterpillar chain bulldozers equipped with the Product Link system. It allows remote monitoring of important performance parameters. Its paddles have a capacity of 8.7 m3. The bulldozers boast a Wiggins fast fuel system and a Lincoln automated lubrication system. The diesel engine allows electronic control of fuel injection and comprises a turbo compressor meeting EPA Tier 4F and EU Stage IV environmental regulations.

The upgrade also includes four new BelAZ tipper-lorries. They have a cargo capacity of 130 tonnes and British Cummins engines. The machines come with improved suspension, a fortified rear axle, and improved electrical system.

## Improvements in the flotation section

The other large-scale project undertaken by **Asarel-Medet** is renovation of the first section of the Flotation Department of the Asarel Ore-dressing plant in which the company has invested close to BGN 25 mln.

The project has achieved excellent technological outcomes and a 22.5% reduction in energy consumption. This, naturally, lowers the cost of the final copper concentrate.

Flotation in the new section is now fully automated. The 46 new flotation machines are produced by the Finnish manufacturer Outotec. The section is equipped with 2011-generation high-technology Cathode copper extraction and electrolysis installation.



Flotation Department at the Asarel Flotation Plant

### Technological renovation

Another positive example from the industry gives **Geostroy**. The company constantly invests in new machines and technologies aiming improvement of occupational health and safety. One of its main activities is construction and mounting works and mining activities at Ellatzite Mine. In its pursuit for continuous performance improvement, in 2016 Geostroy purchased two new LiuGong tippers, a LiuGong mining sprinkling truck, and a 15m3 Hitachi excavator.

The company has also completely renovated a machine servicing hall (802 m2 with 800 m2 yard). Today it serves as a modern base for mining and supplementary equipment. The project was completed in strict observance of all project requirements and construction and mounting works. A modern radiant heating system supplied by Electric Infrared Star Progetti was also



New Maintenance Hall for preventive maintenance of Geostroy

installed, along with a filtering general ventilation system, automatic emergency supply ventilation, etc. The direct effect of these investments is improved health and safety conditions.

The above examples prove the dedication towards sustainable development through innovation demonstrated by the Bulgarian companies from the mineral resources industry. They strive to introduce new technologies to boost the efficiency of extractive companies and improve service quality offered by logistics companies, along with an increase in market share and attraction of new clients.

### ECOLOGICAL



Since 2016, Varna-based **Ingconsult** offers its own brand of electric bicycle. European and North American citizens who show a serious interest in the electric bicycle phenomenon are aplenty. Most of them find the office and the car a tedious routine, which oppresses and exhausts them. The mission of the electric bicycle is to invite them to venture outside the closed environment in favour of exercise and fresh air. Transport-related time and expenses, parking and maintenance costs are significantly reduced, while modern technologies render the electric bike a safe, economical, and environmentally friendly means of transport.



## Innovative approach

**The University of Mining and Geology „St. Ivan Rilski“** and Minstroy Holding are partners in a large-scale research and implementation programme for more efficient and comprehensive utilization of ore resources and sustainable development of the Bulgarian mineral resources industry. The joint project meets best global standards and practices. Within the research program, a team led by Prof. Dr. Ivan Nishkov from the Central Laboratory of Raw Materials Processing and Waste Management and Processing at the MGU St. Ivan Rilski developed an “Innovative project for comprehensive lead-zinc ore extraction and dressing at Gorubso-Zlatograd”.

## Project scope

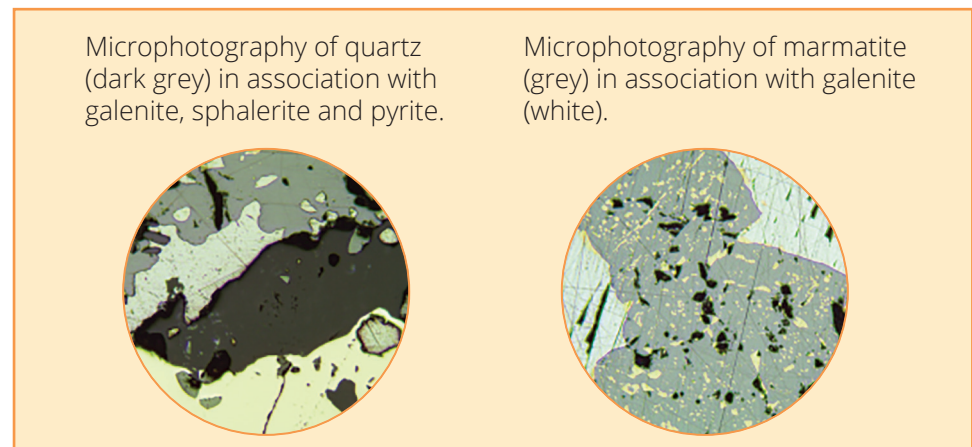
- ▶ Mineralogical monitoring of extraction sites with the purpose of determining the mineral content of raw materials. The objective is quality management of the extracted ore and advance information, which will be used during ore processing at the flotation factory.
- ▶ Mineralogical monitoring of intermediate products produced by the ore-dressing factory for the purpose of determining mineral phases with view of quality control over end products – lead and zinc concentrates.
- ▶ New technological and reagent regime with fractional feeding of new, non-toxic flotation reagents for efficient flotation. The aim is to obtain lead and zinc concentrates with improved quality characteristics in compliance with metallurgy requirements.

## ▶ Innovation in action

The innovative approach has already been introduced in **Gorubso-Zlatograd** and results in stable qualitative and increased quantitative indicators. The produced high-quality metal concentrates fully comply with the required parameters for metallurgical processing.

The innovative technology will be presented before the international scientific community at the 24th World Mining Congress (October 2016, Rio de Janeiro, Brazil).

The representative data on content of harmful impurities in end products – quartz and lead in the zinc concentrate and zinc in the lead concentrate demonstrate that, as a result of the innovative approach for comprehensive lead-zinc ore extraction and processing management, Gorubso-Zlatograd produces high-quality concentrates.



The innovative approach for comprehensive lead-zinc ore extraction and processing management at Gorubso-Zlatograd ensures rational utilization of natural resources and prevents their exhaustion.

The innovative technology applied by Gorubso-Zlatograd results in environmentally friendly, efficient and comprehensive processing of lead-zinc ore in full compliance of all sustainable development requirements.

Innovations require targeted efforts in research and a multidisciplinary approach. In this connection, innovations are not a challenge for Gorubso-Zlatograd – they are a reality.

### Author:

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Department of Mineral Processing and Recycling  
University of Mining and Geology “St. Ivan Rilski”



## COMPETITIVENESS AND INNOVATION - THE NON-ENERGY RAW MATERIALS SECTOR PROVIDES SOLUTIONS

**Dr. Corina Hebestreit**  
Executive director, Euromines

This month the EU is publishing its annual report on the implementation of the European Innovation Partnership on Raw Materials: the EIP Scoreboard. The scoreboard tries to assess the situation of the industry in Europe and provides a basis for identifying future challenges.

Of course, domestic production of raw materials is an essential part of the EU economy. It provides a reliable supply of inputs to many downstream industries (e.g. automotive, chemicals, and electronics manufacturing). Domestic extraction of construction minerals has increased since the 1970s, allowing the EU to remain more or less self-sufficient. Domestic extraction of industrial minerals on the other hand stagnated in the 1980s, and for metals — in spite of an exponential increase in demand — it even decreased slightly. On the other hand Eurostat data show that the EU processes more raw materials than it extracts. This difference can be explained by imports and recycling. Looking more closely at metal mining, it can be seen that several metallic raw materials are

mined in the EU. Indeed, the EU has the potential to increase the current production start new production units. Nevertheless, domestic extraction of metals is largely insufficient to meet the EU's raw materials demand.

### Providing value and employment

Taken together, raw materials industries in 2012 provided EUR 280 billion of added value and more than four million jobs. However, the economic importance of the raw materials sector goes far beyond the economic activities strictly related to the extractive and processing industries.

EIP Scoreboard 2016, based on data from Eurostat, retrieved on 20 May 2015. Value added at factor cost from the Annual detailed enterprise statistics for industry, code sbs\_na\_ind\_r2. Number of employees from Industry by employment size class statistics (NACE Rev. 2, B-E), code sbs\_sc\_ind\_r2.

Looking at the metals value chain alone, the secure supply of raw materials is essential for jobs in downstream manufacturing sectors. These include the production

of fabricated metal products, electronics, and machinery and equipment. It is estimated that more than 11 million jobs are affected, equal to 40 % of the jobs and value added from the EU's entire manufacturing sector.

If the EU wishes to maintain this employment it needs to ensure that the sector can expand in Europe. For competitive and technical reasons the sector needs to automate as much as possible which means job losses. Hence only if the whole supply chain can be kept and extended in Europe it will be possible to maintain this vital element of the EU economy.

### Innovation is essential for the EU to remain internationally competitive

EU statistics do not record exploration expenditure, hence the sector presents itself as an overall low R&D intensity sector which is not true. If these figures were taken into account, the situation would look different. However, even taking just the top R&D investor companies in the raw materials sector, they have almost doubled their annual



Innovative solutions at European mining companies

R&D expenditure since 2003. Between 2003 and 2013, it grew more than twice as fast as public R&D investments. Now with the economic down-turn figures will drop again.

Facilitating access to risk capital and assisting companies to bring innovations to the markets will be necessary.

EU patent applications in the raw materials sector on the other hand show a decreasing trend. Nevertheless, in 2011, the EU still accounted for 36 % of patent applications filed by the EU, Australia, Canada, Japan, Russia and the USA together (Indicator 9).

Finally, to be able to stay at the forefront of innovation, the EU needs the necessary knowledge and skills or skilled workforce. The mining and minerals sector in particular is already reported to be suffering from a significant talent shortage.

### Framework conditions for mining in Europe

Looking at mineral exploration activities, data suggest that the EU's minerals potential is under-explored and under-exploited. Mineral exploration is an important step in the mining life cycle because it contributes to the discovery of potential new deposits and the opening of new mines. These activities also represent a low level of investment, in spite of the mineral potential in the EU. Furthermore, in recent years, investment in metallic minerals exploration has steadily decreased, both in the EU and globally. This is mainly due to a lack of incentives and access to risk capital, not due to lack of exploitable resources.

Institutional framework conditions — national minerals policies, data on mineral endowments, environmental regulations, public acceptance etc. — can either impede or expedite the development of mining operations. The policy framework and regulatory structure in particular are important factors that affect the EU's attractiveness to mining operations. Frequently updated or new legislation changing the requirements and impacting on the cost structure and weak implementation are deterring factors for investors. The "sound" proofing of administrative procedures would be recommended.

Public acceptance is another factor that greatly affects mining companies' operations. Data show that public acceptance of extractive activities in the EU is low as compared with other economic sectors, which is partly due to the past performance of the sector, but also of the continued political support for the "service industry" which should not have neglected the existing industries whilst promoting new ones.

### Crucial Importance of national minerals policies

National minerals policies that ensure security of supply of important raw materials and ensure the sustainability of the extractive operations as well as their products are crucial to economic policies.

**In general one can say that the following principles need to be adhered to:**

▶ **PRINCIPLE 1: FAIR LICENCE ALLOCATION**

The award of exploration rights should be done on an objective basis and generally with a view to free and open access, absent circumstances that suggest potential multi-party interest where tendering should be considered.

▶ **PRINCIPLE 2: WORK IT OR LOSE IT**

An exploration company should be required to make an on-going financial commitment in order to maintain exploration rights.

▶ **PRINCIPLE 3: EXPLORATION PERIOD – SUFFICIENT FOR DISCOVERY**

The exploration company should be able to retain its exploration rights for a period sufficient to give it a reasonable chance of making an economic discovery.

▶ **PRINCIPLE 4: RIGHT TO MINE**

The “right to mine” is the central monument of any mining code; it refers to the exploration company’s right to produce minerals, on an exclusive basis and free of third party interference, where such rights are granted on the basis of objective criteria and free of discretion, subject only to peripheral health, safety, environmental and other such operating authorisations.

▶ **PRINCIPLE 5: MINING PERIOD – SUFFICIENT FOR MINING DISCOVERY**

The mining company should be permitted to hold mineral rights until the exhaustion of the known ore.

▶ **PRINCIPLE 6: OBJECTIVE, FAIR AND CLEAR GROUNDS FOR FORFEITURE**

The mining company should be permitted to hold mineral rights until the exhaustion of known ore

▶ **PRINCIPLE 7: SOCIAL LICENCE TO OPERATE TO BE ENCOURAGED**

Modern mining codes should consider mechanisms for encouraging local community engagement, but a ‘community veto’ over a project should be avoided.

▶ **PRINCIPLE 8: TRANSPARENT AND BALANCED ENVIRONMENTAL REVIEW**

Environmental approval for proposed mines should be based on the principle that development should be facilitated, where reasonable to do so; the process should involve clear and objective criteria, with the assistance of expert input, within established (and staged) time frames, with the object of modifying impacts, where possible, and with a right of appeal or review.

▶ **PRINCIPLE 9: RESERVE POWER OF STATE TO ENCOURAGE DEVELOPMENT**

All mining codes should consider the potential need, in limited circumstances, for state intervention to overcome regulatory, financial or other obstacles to the development or continued operation of a particular project.

▶ **PRINCIPLE 10: FISCAL FREEDOM**

The mining company should be free to realize the value of an investment made.

## Environmental and social sustainability

Adapting to the climate change goals is one of the key challenges for the raw materials sector for the future.

Data on air emissions suggest already a decoupling between raw materials production and air pollution and greenhouse gas emissions. Between 1995 and 2009, emissions from the production of raw materials in the EU decreased by 10-40 %. Given that many parts of the raw materials industry are energy-intensive, this decrease is a reflection of the economic down-turn, fuel switches and the increased uptake and effectiveness of energy and air emission management systems in the EU.



Social Economic Council at the European Commission

Occupational health and safety is important for social sustainability. While the raw materials sectors are relatively exposed to occupational hazards — accident rates are at the same level as those of other high-risk sectors such as construction — accident rates have been decreasing since the middle of the 1990s. New technologies will continue to decrease hazards and risks in the sector.

Further, the EU raw materials sector is a world leader in sustainability reporting. About one third of the Global Reporting Initiative reports in the raw materials sector are filed by companies with their headquarters in Europe.

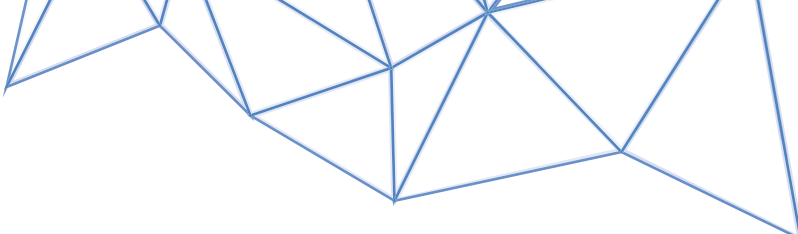
Source: EIP Scoreboard 2016, page 119, Number of companies that have joined the Global Reporting Initiative, by world region 3 (left) and the 2000-2014 trend for Europe (right).



**Euromines** is the recognized representative of the **European metals and minerals mining industry**. The members' main objective is to promote the industry and maintain their relations with European institutions at all levels. Euromines provides services to its members with regard to EU policy and forms a network for cooperation and the exchange of information throughout the sector within Europe. The association also supports contacts with the mining community throughout the world.

Euromines members are large and small companies who with their subsidiaries in Europe and in other parts of the world provide jobs to more than 350,000 people. Their activities and operations produce more than 42 different metals and minerals. For some metals and minerals, Europe is the world's leading producer.

The association is based in Brussels and holds membership meetings twice a year. Its committees and working groups meet regularly throughout the year. Euromines also follows trade and investment issues for the mining industry both inside and outside of Europe.



# THE CLIMATE CHANGE. COP 21. THE BUSINESS

**Dr. Marina Stefanova**  
Sustainable Development Director, Global Compact Network Bulgaria

***'Your commitment, leadership and partnership are needed more than ever'.***

**Ban Ki-moon, United Nations Secretary-General**

A historic international climate agreement was adopted in Paris in late 2015. Experts have defined its outcome as a turning point in limiting climate change. For some economic sectors, this signalled the end of 'business as usual'.

Over the past year, France has been encouraging all interested parties to declare their support and commit to concrete action. During the high-level meeting, the COP 21 official portal registered almost 11,000 commitments by 2,250 populated places in 150 regions, 2,025 companies, 424 investors and 235 civil society organisations. The unprecedented support and the concrete action pledges by all interested parties generated an atmosphere of trust and contributed to the Paris success.

### **What commitments have been pledged by business?**

Caring for Climate Initiative: More than 450 CEOs from 65 countries and 30 industries have committed to setting concrete targets, reporting on progress, and working with policy-makers to strengthen climate action.

**Science-based targets:** Over

100 businesses worldwide have committed to aligning their emission reduction targets with the global decarbonisation targets of keeping the temperature increase below 2°C.

Responsible engagement in climate policy: Over 100 international corporations have committed to take part in the climate policy-making process.

**Putting a price on carbon:** Sixty-five companies with a total market capitalisation of USD 1.9 trillion from 20 industries have incorporated carbon pricing in their long-term strategies, investment decisions and public policy advocacy campaigns and will be reporting their progress.

Seventy-nine corporate executives from the Alliance of CEO Climate Leaders, whose corporations report annual income of USD 2.13 trillion, have undertaken a public commitment to reduce the environmental and carbon footprint of their companies; set reduction targets for their emission and cooperate along their supply chain and within the various industries.

Over 100 businesses with a total market capitalisation of USD 100 billion and 30 institutional investment

intermediaries have committed to regular disclosure of climate change information in their annual reports.

### **CONCRETE, CONSISTENT, TRANSPARENT**

*'Work does not end with the COP 21 Agreement, it is just beginning'.*

Prior and post-COP 21, how to limit warming to up to 2°C is a topic debated by all of humanity. There are, however, certain undisputed facts:

- ▶ The technologies we need in order to achieve the COP 21 target are already available.
- ▶ Those technologies need to be deployed on a much larger scale.
- ▶ We need to act very quickly.
- ▶ Their cost is extremely high.

And while governments and investors are trying to estimate and agree on the cost, companies have another task at hand. They need to transform their business models, redirect their investment capital towards emission reduction technology, and communicate transparently their efforts to manage the environmental footprint of their

operations. The bravest of them venture even further, exploring solutions that can turn climate challenges into market opportunities.

If you think this sounds too complicated or fuzzy, here are some practical steps:

1. Learn more about the topic.
2. Join an existing and well-established initiative or community from which you can quickly get best practices, expertise and guidance. In Bulgaria, one such resource is the UN Global Compact - Bulgaria Network. Since 2007, together with UNEP and UNFCCC, we have been running the Caring for Climate global initiative. Today, it brings together more than 450 companies which reported a 12% reduction in their carbon footprint in 2013.
3. Analyse your operations and develop a strategy for managing climate change and adapt your business.
4. Set clear, concrete and measurable targets to reduce your greenhouse gas emissions.
5. Put your own in-house/voluntary price on the carbon emissions you generate. It must be high enough to have an impact on your investment decisions.

Climate change may be unavoidable but the rest is up to you.

Read more at:

<http://web.unep.org/greeneconomy>  
<http://caringforclimate.org/>  
<http://sciencebasedtargets.org/faq/>  
<http://www.worldbank.org/en/programs/pricing-carbon>

## XXIst UN Climate Change Conference (COP 21)

At the Climate Change Conference in Paris in December 2015, 195 states accepted the first-of-a-kind universal, legally binding global climate agreement. It has a global action plan aiming the limitation of the global warming under 2°C.

The agreement will be in force in 2010 after 55 which represent at least 55% of the global emissions show their ratification instruments.

The government agreed to:

- ▶ Maintain the increase of the average global temperature under 2°C above the pre-industrial levels;
- ▶ Limit the increase to 1,5°C because it decreases significantly the risks and the impact of the climate change;
- ▶ Cooperate in different areas, incl. early warning systems, incident readiness, and insurance risk;
- ▶ Mobilize USD 100 bn annually till 2020 r. for implementing the commitments;
- ▶ Monitor and periodically to report their progress.



## Network Bulgaria

### The United Nations Global Compact - Bulgarian Network

The United Nations Global Compact - Bulgarian Network is an association of companies, universities, and NGOs, in which all believe that:

- ▶ the mission of the individual is to provide value;
- ▶ the free labor is art;
- ▶ by only creating for the others, they can create themselves, and
- ▶ by this way they can be role models for their children.

The Bulgarian Network unites 35 members, which create collective projects of public significance, and which have positive impact on the sustainable development of the business and the society. The most prominent ones are "Proud of My Parents Work" and "The Responsible Choice".

The UNGC Bulgarian Network implements its activities on the basis of the Principles of the UN Global Compact, and is a national partner organization of CSR Europe for Bulgaria.



## EDUCATION AND BUSINESS

### Business-Education Partnership as Distinguishing Feature of Our Mining Industry

The responsibility for future starts with a care for the present. This motto is valid for environment protection, health and safety of employees, as well as for education.

When education is concerned, need of staff to take over work and management of processes in extractive companies is often brought forward. Inevitably, this is so. However, the commitment of the Bulgarian mineral and raw material industry to the next generation of mining engineers and to the young people seeking orientation for professional realization, in particular, could be seen through the large-scale purposeful initiatives. Moreover, we witness regular practices, some of them of duration of over a decade. Their goal is to show the mining profession as interesting, attractive and bringing satisfaction.

#### Including Young People

The participation of students in a student's practice in an extraction company is the most popular and effective way to incorporate them to the sector. Thus they acquire direct impressions and make their first steps to understanding mining industry.

Good example in this respect is project "Student Practices". In fact, this is one of the most successful EU funded projects in higher education. The participation of **MGU St. Ivan Rilski** in it had a positive role for the professional realization of the students. The permanent coordination and the professional management on by the team of the Ministry of Education and Science created work environment where all participants were motivated to perform their obligations of high quality and responsibly.

The best proof of these observations is the mere fact that all students of MGU who started practical training within the project, successfully graduated.

According to the last data of the MGU, a total of 1,062 of their students participated in the project and 515 finished their practice and 117 were proposed jobs. While expecting a continuation, additional 134 students have already confirmed consent of employers for conducting practical training.

*"The most impressive of the work of the project are several cases in which the students preferred to start work in Bulgarian companies, instead leaving abroad. It's obvious, that when a real environment with competition is being created, the things can happen."* – says Ass. Prof. Dr. Yuli Radev, Head of the Career Development Center at MGU.



The number of registered companies offering internships and employment to students of the University of Mining and Geology is over 90. Along with the leading companies from the branch such as Assarel Medet, Dundee Precious Metals Chelopech, Elatsite Med, Overgas Inc., Gorubso-Zlatograd, the partnership with representatives of the small and medium-sized business such as Vimag Engineering EOOD, Transssystem OOD, Terra Ars, Pochven Monitoring OOD, Logo Company EOOD, etc.

Within the project, Gorubso-Kardzhali, CEZ Bulgaria, Transssystem, etc. expressed the greatest interest to engage students from the MGU for practical training.

### Role of Academic Mentor

The academic mentor who is from the University and the student build a professional connection so that the practice can be successful for both of them. As expected, the students try to prove themselves and to learn more from their stay in the program. The mentors, in their turn, aim at their group of students to be among the best performed and more of them to be recruited by the host companies. Moreover, the mentor is really a party to the realization of their students in prestige design organizations and production departments from the mining sector mainly.

The student practice plays an important role in the formation of the intellect and social education of young people by teaching them responsibility, showing them the opportunities for them, and giving them the chance for further realization and development.

The carried out visits provide the academic mentor, the companies that participate in the project as well as the students themselves a feeling of security and correctly finished work.

*„In the face of their mentors some of the practicing students found their first employers. A number of companies participating in the project enabled the students to directly participate in the development of environmental projects, in carrying out drillings, to work with 3D-scanning devices, etc.“, says Ass. Prof. Dr Eng. Evgenia Alexandrova, academic mentor of 48 students for a 2-year period.*



A group of mining students with their mentor.

The participants are satisfied by the possibility to use in practice the skills they have acquired at the MGU by working in companies that have high technological modern equipment related to the use of the newest software technologies.

*„My students share their satisfaction from the practice: the acquired experience has been useful for them and they highly appreciate the help of the receiving company as well as from their equal inclusion in the work teams.“ – Chief Assistant Dessislava Simeonova says, a mentor too. Two of her students are employed by Electron-M and CEZ Distribution, where they had their internship. „Now they can boast that they are well-realized young people“, she adds proudly.*

### The improvement

Ass. Prof. Dr. Hristo Stoev, academic mentor too, points out that

it is of mutual interest the travel arrangements to be improved. He suggest the number of the hours of the mentors to be increased. Chief Assistant Simeonova adds that it will not only improve the logistics but also it will increase the opportunity of the mentor to gather important information from their students and to analyze their observations.

### Students' Voice

The students' practice combines both "collision of new and unknown" in the application area of knowledge and the enthusiasm and ambition for self-development in young person.



A geologist-student with her mentor at Chelopech Mine.

*„In the internship academy of **Overgas Inc.** I have received information, which I could not receive anywhere else“, says Miglena Yankova from the Application Geophysics specialty, who has been employed since August 1, 2015 by the Quality Control and Metrology department of **Asarel Medet.** „I worked with the most advanced software products for digitalization, visualization, processing*

and interpretation of drilling and geophysical data. In this way I wrote and protected with honours master degree's paper on: *Quality and Quantity Interpretation of Drilling and Geophysical Data from Drillings in Northeastern Bulgaria*. Miglena got acquainted vis-à-vis with the practical work of an oil geologist. „And the incredible team of young specialists, first of which is my mentor Mr. Nikola Sechkaryov (Ed. – a member of the Management Board of the BCMG), working in Prospecting and Search of Oil and Gas department, transferred to me his knowledge and skills for processing of well logging diagrams.“

The modern 3D scanning and printing equipment is among the most attractive ones for the young people. „I am very happy regarding the organization of practice and from what I learned at Izy 3D company. I learned new 3D modeling programs. I believe that this platform should be enriched and developed“, says Lyubomir Meshekov, student from the Computer Technologies in Engineering Activity specialty.

The students give emphasis to other positive sides of the program as well. Along with the application in practice of what they have learned under the guidelines of the mentor, the students receive also scholarships. Some of them even manage to cover the tuition fee for the next year with these sums.

Each of them recommends the program to be upgraded so that more young people could confirm their theoretical knowledge and improve their skills in practice.

„During my practice I had the possibility to get acquainted with the technological processes for production of gold. This made me to continue to develop in professional direction: I am having already my master's studies

with the MGU in the same direction, because during my practice I got acquainted with my future profession“, says Emine Myumyun from the Flotation and Recycling of Raw Materials specialty.



Student summer practices at Asarel-Medet

### Internships and Continuity

The creation of a possibility for realization of the young specialists through provision of suitable jobs and investment in their professional development is one of the engagements related to the social responsibility of the GEO-TECHMIN group and an important element of the efficient policy related to the human resources management of Elatsite-Med.

The company has been conducting internship program since 2011, and its goal is to attract young specialists. It provides them an opportunity for professional orientation in real conditions. „Important for us is the succession between the generations, the exchange of *accumulated knowledge and experience, as well as the personnel selection and development required for the production directions of the company,*“ Eng. Simona Sabkova, HR Director, **Elatsite-Med.**

In 2016, for the sixth subsequent year, the program enables young people from the technical and economic specialties from different universities to be employed by departments and structural units of the company during the summer months and to receive information and experience which will be beneficial for their future professional realization. All probationers have the opportunity to get acquainted closely with the activity of **Elatsite-Med.**

The paid summer students' internship is of duration from July to September. It is conducted in real work environment at the Flotation Complex of Mirkovo village and the Ore Mining Complex of Etropole. The probationers work under the management of mentors of proved professionalism and rich experience.

## Investments in the Education of Young People

Twelve years in a row, **Dundee Precious Metals** invests in the education of young people. The practice of the company is to train pupils and students every year within the frames of a summer internship program.

With its traditions in the provision of real work atmosphere, the company supports dozens of students along their path to different specialized areas such as geology, geomechanics, floatation and recycling of raw materials, mine surveying, development of natural resources and mine engineering.

The big interest of students from different universities to a training with the **Chelopech Mine** is a reason the company to renew and develop its probationer's program each year. Novelty from the recent couple of years is the opportunity students from Krumovgrad to be trained in different departments of DPM Chelopech thus preparing them for the future production in Krumovgrad.

In 2016, some 400 students from different specialties have applied in respect to the announcements for the different departments of the company. For second year, 6 students have the opportunity to get acquainted with the work of the team in Krumovgrad as well.

The internship programs ensure two-way benefit – both for the students and for the company. The motivation of the young people who demonstrate their first steps in real work environment is of great importance. Favorable for the company is hiring young people of suitable education and motivation. Experi-

## STUDENTS ADD VALUE



At the Kaleto Hill with Lyubomir Vesselinov

During their practice in Belogradchik town, a group of students create a data base of the geological landmarks of Belogradchishki Skali Geo-park. It includes selection, expert evaluation, and scientific description of the genotypes for the submission of an application for the geo-park to UNESCO. During the practice, geo paths in the region of the Belogradchik Rocks were described and marked. A collection of hundreds of rock samples for the newly constructed Visitors' Center of the town was prepared and it will be exposed in the windows of the new geological museum.

*„We created a geological map of the geo-park in Arc GIS with new data about the geological building of the region. The complete data base for the geology of the Belogradchik region served as a basis for the development of an application dossier for the submission of an application of Belogradchik Rocks geo-park to the European Geo Parks Networks in 2014”, says Prof. Dr. D. Sinyovski, who is also an academic mentor.*

The students and their mentor received the recognition of the local government. They were received by the Mayor of the Belogradchik Municipality, Mr. Boris Nikolov who thanked them for the work done. He also expressed hope that the students will help with their knowledge in future as well for the development of one of the poorest regions in Europe.



Student Internship at DPM Chelopech

ence shows that such probationers acquire experience quickly and after they are employed they develop professionally quickly.

### Training Practices

Besides the summer internship program, DPM Chelopech provides an opportunity to students from MGU St. Ivan Rilski and St. Kliment Ohridski University of Sofia to improve their theoretical knowledge in practice through carrying out of training excursion practices. In the period from April to July, the company met over 140 students, whose practice in the enterprise is of duration from one to five days.

Despite the high intensity of the training, the well conducted practices are valuable experience and support the quality of training. The benefits of the provided opportunity are both for the students and for the teachers who update their knowledge regarding the advanced production practices all the time.

### Welcome!

For thirteen years in a row, **Asarel-Medet** has started a internship program. On 1 July, the first 30 students for this year were welcomed. They had applied and were approved in order to acquire new knowledge and professional skills in the company from Panagyurishte.

The students are distributed in the main production workshops and the administrative departments, and in the duration of one or more months they are part of the company. Among them are students from leading Bulgarian universities, such as the University of Sofia, University of Plovdiv, MGU St. Ivan Rilski, the Technical University, the University of National and World Economy, the Economic University of Varna, the Economic Academy of Svish-tov, etc. This year, the internship program has two stages: the first one is between July 1 to July 31, and as of August 1 other ambitious students will be included in it as well.

*"The internship program of Asarel-Medet is one of the ways to early identify the talented future professionals and to support their success. It is directed to students willing to apply what they have learned in practice and have the ambition to succeed. The program gives chance to young people to discover their strengths and to lay the foundations of a successful career. The internship with us gives maximum benefit to young people. The students have the chance to get acquainted with the real work environment, the rules and atmosphere in a leading mine company",* Executive Director of Asarel-Medet, Eng. Delcho Nikolov, comments.



Student Internship at Asarel-Medet

The number of students willing to get included in the internship program of the company grows every year. The fact that during the Days of the Career forum (in early 2016), over 500 young people expressed interest to the stand of the company was indicative.

Over 500 students have participated in the 12 issues of the program so far, and more than 100 have already become part of the team of the company, the HR Department informed. A total of 59 students participated in 2015 only.



Students get familiar with the activities of Asarel-Medet

### Dual Training

A pilot model of a dual system for vocational training will be launched in the Municipality of Panagyurishte initiated by **Asarel-Medet**. Thus the sectoral model of the **Chamber** for preparation of cadres is applied in practice on local level.

During the academic 2015/2016, the partnership between Asarel-Medet and the Vocational School of Industrial Technologies, Management and Tourism in the town is based on four new established subjects. Seventh class graduates applied for Mining Electrical and Mechanical Engineering subject. The eight class graduates had to choose between three alternatives: Extraction and Construction Mining Technologies; Flotation, Processing and Recycling Technologies and Road Vehicle Equipment.

The dual system provides the opportunity part of the training to be conducted at the enterprise, in real

production environment, providing chances for scholarships and employment by the company. Besides this, the graduation from one of these subjects is a very good basis for continuation of education in a university as well as an opportunity for receiving a student's scholarship from Asarel-Medet AD when choosing specialty required by the company.

### Support to Knowledge Seekers

Through the Education for Everybody project, **Asarel Foundation** provides conditions for equal access to education of disadvantaged pupils from the Panagyurishte Municipality. Pupils from the local schools having excellent grades and less than 5 unexcused absences, receive scholarships from the Foundation. The scholarship holders are from 8th to 12th form and study in the schools of the municipality.

The project provides also free textbooks to children of families

at disadvantage, and the pupils supported with textbooks in 2015 were 110. Through this initiative support (transport and textbooks) is rendered to inhabitants of the municipality at disadvantage who have outgrown pupil's age but have enrolled for correspondence training with the Vocational High School.

In this project, Asarel Foundation partners with Panagyurishte Municipality and the managements of all six schools in the municipality. The analyses show that over 90% of the supported pupils have improved their grades. The opinion of the headmasters of the schools and of the teachers is that the quality of the educational process has increased, and the pupils are more prepared and more motivated.



## ENVIRONMENT PROTECTION

### Building Upon the Legal Requirements for Environment Protection

Environment protection is one of the leading priorities of the companies of the Bulgarian minerals and raw materials industry. One of the main principles, on which their environmental policy is based, is the obligation to comply with the applicable statutory requirements of the Bulgarian environmental legislation.

Following the principles of sustainable development, however, the leading mining companies show that legal compliance is only the first step within their environmental responsibility. The aspiration to constant improvements, perfection in processes and planning and, thence, in the performance, place **Kaolin** and **Asarel-Medet** as leaders in the environment protection.

#### Step Forward

*„Our policy is not to wait for someone from the outside to say what is wrong and press us to improve or fix it. We exercise self-control, perform monitoring and take timely reasonable preventive actions,”* Eng. Mariela Dzhidzhinkova, Head of the Environment Department at Asarel-Medet, said.

*„If we confined our policy only to mandatory compliance with the effective legislation, this means that we put up only with the basic level. This is inadmissible for a company aspiring to growth and permanent development,”* Valentina Dobрева, Head of the Environment and H&S Department at Kaolin, points out.

The philosophy of the modern mineral mining involves the understanding that the legal requirements outline the road along which a company has to go. They set the direction and the limits that should not be crossed.

*„Just like people should take preventive care of their health, we, as a company, are in a continuous search of innovative solutions for preventing environmental harm and for an overall environmentally-friendly approach to the management of our business processes,”* Ms. Dobрева added.

The ultimate goal is striking a balance between the economic interest of the business and its responsibility to the society and

the next generations regarding the environment.

Asarel-Medet sets an eloquent example to this effect. *„It is not a mere chance that already in 2002 we were the first company in Bulgaria (please note that I do not say in our sector or in the heavy industry sector but in Bulgaria) that was certified under ISO 14001 for environment protection,”* Eng. Dzhidzhinkova commented proudly.

Many people are aware of the classical example, where already in 1988 Asarel Medet had a functioning complex ecological area, set up in partnership with the Bulgarian Academy of Sciences and different scientific institutes. The area was set into operation 10 years before its mandatory introduction by the law.

### Promised and Fulfilled

Large scale and responsible businesses, such as mining, require consistent and upgrading measures for management of the environment protection processes and adequate investments. These measures correspond to the corporate social responsibility activities because mining affects the local community, where the families of the companies' workers actually live.

*„The protection of the native Panagyurishte Region, where over 97% of our colleagues live, finds an expression in our investments in environmentally friendly technologies and state-of-the-art equipment while implementing company environmental projects and strict compliance with the regulated norms in accordance with the Integrated Permit for the operations and the international standard, ISO 14001,* Eng. Dzhidzhinkova said. It is not

a coincidence that the company motto points out the balance and the harmony between people and the nature.

This is supported by the figures and the projects implemented. In the past 15 years **Asarel-Medet** invested over BGN 80 mln in environmental projects. In this way the company guaranteed compliance with all emission restrictions with a view to the protection of the environment. It develops and implements its own annual programme “Environment”, which includes efficient monitoring, recultivation of terrains, disturbed by mining activity, reliable operation of system of hydrotechnical facilities and of the three treatment plants of the company (for ore, drainage and household waters).

Over BGN **80** million are **invested by Asarel-Medet** in environment projects (1999 – 2015).



In 2015 alone, the implementation of the program took BGN 4.329 mln. The amount includes operational costs for the water treatment plants and events for protection and restoration of the environment in the area of the mine. Separately, BGN 1.518 mln were spent on activities of soil protection and recultivation.



Kaolin – Vetovo: Quartz-kaolin.

Kaolin have an aspiration towards continuous improvement of energy efficiency. One of the company's successful projects involved the building of an installation for alternative fuel designed to replace up to 50% of the natural gas used with biomass. Another project aims at improving the energy efficiency in production through the replacement of the heating insulation of the kaolin drying facilities. The measures for utilization of waste heat from the drying process set an example for upgrading of the energy management system.

*„We seek optimal use of natural resources. There are many ways to achieve this: through selective extraction of the needed amounts of raw materials, through research and installation programmes for reduction of technological waste, through an increase of productivity and new products,”* Ms. Dobрева says. *„Both the restoration of the fertility of disrupted terrain through recultivation and the protection of their biodiversity are our responsibility.”*

The outstanding projects, implemented by **Asarel-Medet**, include the overall technical and biological recultivation of the Oxide Refuse, restoration and recultivation activities in the Eastern Refuse. The total value of the program on the protection of waters and air and monitoring of the components and factors of the environment is BGN 2.811 mln. In 2015, a number of monitoring studies of the flora and fauna of the area around the company were performed. The public monitoring of the condition of the waters in the region also continues: since 2011 it has been monitored by latest-generation automated plants submitting continuously data in real time. It is unique for the Bulgarian industry that the data from the monitoring of the local waters can be seen in real time – 24/7 by all interested parties on the company's website.



Sand Career of Kaolin, Dabravino Village – a saving belt for skylarks

In order to ensure minimal adverse impact of the extraction and processing of industrial minerals, **Kaolin** exercises continuous control through identifying of the potential risks and planning of operations, related to the designated important

aspects of the environment in compliance with the environment-related policy, general and specific goals.

The company develops, applies and maintains procedures concerning certain important aspects of the environment and plans efficient means for operational management – from maintenance of the facilities through physical means for control to trained personnel. The ultimate goal is daily efficient production with control or reduction of the harmful emissions and prevention of incidents.

### Distinctive Features



Окисно насипище - Асарел



***“It is inadmissible for a company aspiring to growth to confine itself to basic compliance with the law.” - eng. Valentina Dobрева, Kaolin AD***

While searching for the distinctive features of the leading mining companies, the both experts point one the ones that best characterize their own companies. „The leading Bulgarian companies dispelled the outdated myths presenting the mining industry as unattractive, hostile to the environment or inefficient. Our whole society should be aware that a number of companies have invested huge funds and already have modern production complexes with automated management systems, modern equipment

and new technologies,” Eng. Dzhidzhinkova noted.

In response to the global tendency in the modern society to achieve sustainable development and the increasing sensitivity to this issue on the part of the local communities and clients, the Bulgarian mining companies aspire to responding adequately by paying an increasingly higher attention to the best available technologies for extraction and processing with a greater focus on minimizing the unfavourable impact from their activity on the environment.

*„The same applies to Kaolin. Our mother-company Quarzwerke has perfect reputation regarding environment protection. In Germany, it is a three-time winner of the Sustainability Award. It makes efforts and investments so Kaolin could work up to the best world standards,”* eng. Dobрева proudly stated.

### Instead of Conclusion

Both the institutions and the business have been aware for a long time that the Bulgarian mining companies meet international standards and apply the best practices for efficiency, occupational safety, environment protection, that they care for the people and social responsibility, and are oriented towards the social and economic development of the respective regions. This is the vision for the development of the mining sector. When it reaches the young people, it becomes attractive for them. This is how they begin to show an increasingly higher interest in mining, which is an excellent bid for the future.



### Tailings pond recultivated with lavender, hip tree and oil-bearing rose



Test fields at the Chelopech Tailings Pond

The Environment Protection Department of DPM Chelopech and a team of the Forest Engineering University of Sofia have been working on a 5-year project on plant growing on a terrain near the Chelopech tailings pond since 2011. The project is a part of the plan on the closure and recultivation of the facility.

The project „**Field Tests on the Chelopech Tailings Pond**“ has begun with preparation activities and studies. The growing of essential oil crops in the Balkan Fields was a traditional activity of the past. This guided the experts to the growing and analyzing of essential crops – hip tree, oil-bearing rose, lavender, etc. These crops are characteristic of the region and their growing has a high economic effect. They are on demand at the international market and there are environmental and biological preconditions to grow some of them on degraded lands because they do not require high soil fertility.

The objective behind the projects is, on the one hand, to study the possibility for restoration of farming activities and the environment on disturbed land and, on the other, to study the possibilities for adaptation of certain essential oil crops, for their growing, development and providing economically-justified yields. On the basis of the results and analyses of the field tests performed, the experts will recommend varieties that grow best on the terrain, retain their qualities and ensure a possibility for the use of the land for farming after its recultivation.



Hip, oil-bearing rose and lavender are typical crops for the region and their growing has a high economic effect.

Experimental sections have been formed within the tailings pond of DPM Chelopech in connection with the field tests. The conditions in the test area are set as the ones that the tailings pond would have after the recultivation. The terrain on which the field tests are performed has a total area of 5 decares.

The growth and development of essential oil and herbal crops are followed annually. The way the plants spend winter is studied, the quality content of the water in the soil, the soil substrates, etc.

In late 2016, the project will be completed and the experts will summarize the data of their 5-year observations on the crops in the different test areas. The implementation of this project, fully initiated and financed by DPM Chelopech, will help select the most appropriate recultivation method. Another highly important aspect of the project is that once the recultivation is completed the local community will be able to develop farming and grow essential oil crops on an improved terrain with the help of good planning and the conducted studies and tests.



## THE WAY AHEAD

### Prevention and Proactivity in the Conditions of Continuous Production

The high rate of development of equipment and technologies prompts the need of modern methods for identification, assessment and analysis of the risk in the mining industry. The main goal of the risk management is to minimize and reduce this risk. This means bringing the conditions for the emergence of accidents and casualties to a minimum. Big accidents and casualties usually emerge upon violation of the procedures of safe implementation of the technological processes.

Quite often, however, accidents and casualties may emerge as a result of the combination of different factors in terms of time and place. Such accidents can have

major humanitarian and material consequences. In order to avoid the combination of such factors creating conditions for the emergence of dangerous events, it is necessary to recognize warning signs and signals preceding a given event. This would allow to apply measures and activities eliminating the terms and preconditions for accidents and casualties.

#### Risk Assessment

“A traditional and highly efficient approach for safety management is based on risk assessment. It is founded on knowledge of the hazards in the different technological processes and the mechanism of their occurrence”, Senior Assistant of Alexander Krilchev of the **MGU**

**St. Ivan Rilski** says. He is an expert in the areas of mine ventilation and technical safety.

However, unforeseen dangers with heavy consequences can emerge in complex technological systems. In such cases, adequate prophylactic measures are applied only after a number of simulations. The different scenarios drafted should follow the development and occurrence of these threats. Also, Safety can be managed through a method, where quick risk identification is performed and the envisaged measures and activities are applied to avoid its recurrence.

#### Training

Workers' training has an important

role in the risk management. The statistics of accidents shows that the main reason for their occurrence is human error. This is related to non-compliance with working procedures and safety instructions, use of machines and facilities not in accordance with their designation, underestimation of hazards at work, inadequate actions in emergency situations, etc. This can be changed by increasing workers' knowledge, skills and habits and the exercise of strict control by the employers over the compliance with the requirements of the legal documents on occupational health and safety, Dr. Krilchev said.

### Good Examples

The companies with the best policy for safety management in surface extraction are Asarel Medet and Ellatzite-Med, and in underground extraction – Dundee Precious Metals Chelopech. All three companies possess installed integrated management systems for quality management, environment protection and provision of occupational health and safety (OHS). Their plans and activities are carried out in accordance with the international standards ISO 9001:2002, ISO 14001:2004 and OHSAS 18001:2002.

All instructions and procedures for the safe implementation of the different technological operations are included in a safety management system. This allows carrying out continuous control and assessment of the applied procedures, instructions, etc.

Good practices for the provision of OHS are being applied continuously in the three companies. Their investment programs for improvement of the working

conditions are strictly implemented every year. Their scope extends from the purchase of working outfits and personal protective equipment to prophylactic medical examinations.

### Practical Safety

*„The provision of the highest standard for safety and health at work and the continuous improvement of the working conditions are an important aspect of the social responsibility of our company,“* Eng. Neyko Ouzounov, Head of the Occupational Health and Safety Department of **Asarel-Medet**, said.



Keeping high H&S standards at Asarel-Medet

In 2015, they invested a total of BGN 4.696 mln in their program on the provision of occupational health and safety. It includes provision of working clothes, personal protective equipment, free food, prophylactic medical examinations, additional health and life insurance, etc.

The projects in this field of Asarel-Medet not only upgrade the social care to the employees, but they secure collective safety measures.

The permanent measures for OHS improvement in the Asarel Mine and the Asarel Flotation Plant include the supply of new machines and facilities, meeting the highest European and world safety norms. The company has set the strict control of the use of modern personal protective equipment and the special working outfits as a standard on its territory.

### Golden Rules

The care for people's health and the provision of healthy and safe work conditions are the most important priorities of Dundee Precious

Metals. The company-owned DPM Chelopech and DPM Kroumovgrad, based in Bulgaria, encourage their employees to participate in the provision of their personal safety at work and to assist in the safety of their colleagues.

Already in 2007 DPM Chelopech introduced its first Golden Rule – zero tolerance to employees having used alcohol before work.

2013 saw the application of the

second Golden Rule – “Disconnection and designation of the electric and mechanical equipment”. For the past two years the company has introduced a total of four Golden Rules, including Work at a height, Entry and work in confined spaces, Operating lifting facilities and Load feeding facilities. Another two Golden Rules will be introduced in 2016: Proficiency for driving the mobile equipment and Work unsupported array.

## 7 GOLDEN RULES for safety govern the Chelopech Mine.

The introduction of the Golden Rules ensures more secure and safe working environment both for employees and site sub-contractors. With them DPM demonstrates its values as well. They are a way of thinking set forth in procedures and instructions. They seek to remind once again of the specific requirements at work.

The introduction of the Golden Rules made possible good planning of work and risk management. By knowing these rules, everyone can answer questions, such as: What can go wrong? How bad could it be (serious injury or fatality)? What should be done in order to control it?

Apart from promoting the culture of protecting the colleague, the Golden Rules demonstrate the DPM practice of example-based management, because the truth is that each employee is an example - for the new recruits or for the people with less experience.

The understanding and compliance

with the Golden Rules is care for one's own health and that of the colleagues.

### Automation and safety

The improvement of the conditions for OHS envisages continuous investments in production, such as the automated system for mining management, Dispatch, of **Ellatzite-Med**. Installed in 2015-2016, the system enhances safety at work by providing a precise and adequate map of the haul roads in the mines and the location of the machines. The graphic information is particularly useful in case of poor visibility due to bad weather. The system also provides other advantages, such as restriction of the passage of lorries in dangerous zones; marking of dangerous zones and signaling when the driver approaches them; speed limit; an emergency button to alert in case of incidents.

### Safety in the DNA

As a result of the systematic policy and comprehensive care, for a fourth consecutive year Asarel Medet has reported zero traumatism and lack of occupational diseases. This is due to the increased daily control (24/7) of observing OHS, the annual training courses at all levels in the company and the application of the best practices in this area.

In order to promote and build upon the safety culture, each issue of the company newsletter dedicates one page on OHS issues. „For years the safety principles in our companies have been synthesized in the so-called Five Steps for Safe Operation, with which workers unconditionally comply.” Eng. Ouzounov from **Asarel-Medet** also said.

„The company policy on OHS of Ellatzite-Med is a part of the overall company DNA,” said Eng. Spas Penkov, Head of the OHS Department of **Ellatzite-Med**. The commitments, undertaken and declared by the management, for the fulfillment of main and specific goals in this area are implemented through holding of adequate personnel training. „Training in our company yields good results. The colleagues considerably change their opinion towards the working process and become more aware of the need of responsible and strict compliance with occupational health and safety requirements,” he added.

### Everyone for Safety

The safety rules also apply to all partner-companies carrying out different activities on the territory of **Asarel-Medet**. These requirements are a part of the general rules of the contracts with the contractors.

„So far we have also issued six books on occupational safety, healthy diet and healthy life. We promote the rules for healthy life and provision of first aid among the stakeholders as well. They bring new knowledge to the children from schools and kindergartens in Panagyurishte which are our partners,” Eng. Ouzounov said.

### Compliance

**Geostroy AD** is aware that the company's sustainable development should be aligned to the needs of its employees, partners and the society. There is an integrated management system operating in the company, which covers the standards ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.



The Dispatch System at Ellatzite-Med increase the safety at work

It was among the first in the construction sector to be certified under ISO 50001:2011- Energy Management Systems. For the company, this was a serial step towards responsible management of the resources and investments into energy efficient equipment and mechanization.

The installed and successfully functioning integrated management system in **Ellatzite-Med** under the standards ISO 9001:2004, ISO 14001:2004 and OHSAS 18001:2007 is oriented towards the policy of prevention and improvement, while assessing the possible threats and risks to the improvement of the OHS conditions and the environment and proactive conduct by assuming responsibility for observing the requirements for the safety of workers in the conditions of continuous production. „We are in the course of introduction of the new requirements under ISO 9001:2015, ISO 14001:2015,“ Eng. Spas Penkov from Ellatzite-Med added.

The totality of application of strategic

goals and planning, prioritizing of safety and development of culture of safety form the basis of the good results in OHS. The employer-employees shared commitment and the good dialogue between them predetermines work in favour of the protection of everybody's health and life.

### Studying the Stress

Described as the curse for the contemporary people, the stress at the workplace is often neglected by workers and employees as a factor of low productivity and deteriorated health. Studying the level of stress among the workers of a mining company is a challenge.

**Asarel-Medet** and the expert and consultancy company, **Odiko-69 OOD**, undertook this task. The results obtained by the two companies clearly show that the investments in the human capital and the technological improvements reflect both on the good performance of the company and on the workers' mental health.

The stress level of the staff of Asarel-Medet was studied twice – in 2013 and 2015. The results obtained have been analyzed and summarized and measures have been taken as part of a biannual Program on the Minimizing of Stress, approved by the Technical and economic expert council in the company. The management of Asarel-Medet has been working on studying and minimizing of professional stress for more than 10 years.

### “TAKE 5”

In **Imerys Minerals Bulgaria** systematically and consistently study and implement best practices to ensure H&S working conditions adopted and implemented at the corporate level throughout the international group of Imerys.

“TAKE 5” (the Five Steps) for safety are implemented to ensure safety in relation to self-assessment of the risks to their own workplace. The five steps are:

1. Think of the task
2. See what you exposed
3. Evaluate risk
4. Take precautions
5. Do your job safely

“TAKE 5” strengthens the individual responsibility of the employee for prevention and implementing safe actions every day before starting work or changing the working position.

“**Serious Six**” is another initiative of Imerys, which aims to identify and eliminate conditions and actions that are significant risk of serious injury or an accident to an employee or a contractor. Through monthly reviews the project managers identify adverse conditions and take appropriate action to promptly correct the problems.



## SOCIAL RESPONSIBILITY

### To Be a Part of the Local Community

The companies of the minerals and raw materials industry adhere strictly to their commitment regarding the three pillars – economic, social, and environmental responsibility.

For years, our mining business has been an integral part of the solution of strategic or daily problems in the local community. The leading mining companies structure and implement social investments at the sites, where they operate. Each of them is integrated into the region, where it works. Therefore, quite naturally and also given that the companies' workers and managers are local people the projects bring benefits for all.

Here we will tell part of the important stories for voluntary investments and projects in support of the local community. Each of them is unique but what they have in

common is their contribution to the development of local groups or the whole population, add value and enhance the living standards.

#### **New golden treasure**

Asarel-Medet invested over BNG 90 million in the old hospital in the native Panagyurishte in order to turn it into a modern medical complex, named Uni Hospital. This has been the biggest investment in the Bulgarian healthcare for the past twenty-five years.

The building of a modern high-tech hospital complex with an oncological centre and complex multi-sector activity was launched in April 2015. The project, implemented through public-private partnership by the Panagyurishte Municipality and **Asarel-Medet**, has attracted a number of investors and dozens of doctors and medical specialists

from the region and the rest of the country.

Uni Hospital has 296 beds and 715 medical and non-medical staff. An annual budget of BGN 400,000 is allocated for staff training.

The medical complex brings major benefits: for every 50 patients of the oncological centre the state will save around BNG 1 million because the prices, at which the services, subsidized by the National Health Insurance Fund, will be provided will be around two-times lower compared to prices in Turkey and three-times lower compared to those in Germany.

The project's social importance is related to the main unifying long-term objective: ensuring high social and health standard for the inhabitants of the municipality, access to high-quality and modern



The modern high-tech hospital at Panagyurishte

healthcare and provision of full social and personal career opportunities.

Asarel-Medet and the established investment company, Asarel Panagyurishte Zdrave, received the Investor of the Year Award for 2015 for the construction of the high-tech hospital. This has been the third such award for Asarel-Medet, after the company was awarded earlier for upgrading carried out and its innovative environmental projects in 2007 and 2011.

### National self-awareness and values

One of the most popular programmes of **Ellatzite-Med AD** and Geotechmin OOD is „Culture and National Identity“ with a focus on the spiritual rising and preservation of the national self-awareness of the young people in the local municipalities, where the companies carry out their activity.



A replica of the Hristo Botev's Detachment Flag is being presented out of the Hr. Botev Museum for the first time.

More than 10,000 books of the world and Bulgarian classical literature have been donated to kindergartens, schools and community centres in ten municipalities for the for years since the programme's launch in 2012.

The success of the programme among the local communities motivated Ellatzite-Med and Geotechmin OOD to organize a regional drawing, family tree, essay and poem competition titled „My

Native Place in My Eyes“ last year. First to eight-grade students from seven partner-schools from the region of the Sredna Gora Mountain and Etropole studied the local customs, stories about heroes and feats and created works on the basis of historical events of their native place.

By the regional drawing, composition, essay, and poem competition „Dream for Freedom“ in 2016 the two companies assisted the efforts of the local schools

and parents to educate children as persons who withstand and appreciate freedom and their homeland through strengthening of their Bulgarian self-awareness and values.

The Museums Directorate, town of Koprivshtitsa, and the Hristo Botev National Museum, town of Kalofer, are partners of the “Dream for Freedom” competition. Their experts hold discussions in all partner-schools. In this way, the school children can hear exciting stories about the fate of poets-heroes Hristo Botev and Dimcho Debelyanov and see original exhibits in the museums.

Interest in the competition has been growing: in 2016, there were 189 first, second and third-place winners in the different categories, which is by 95 more compared to the previous year.

The portraits of Bulgarian National Revival figures, leaders of the freedom movement and outstanding personalities find again their place in classrooms and school corridors. With the financial support of **Engconsult EOOD** the school children of Frederic Joliot-Curie 4th Language School in Varna can see a selected collection of 60 portraits of outstanding Bulgarian personalities every day.

**Geotrading AD** has been contributing to the spiritual and cultural development of the community in the Doushantsi Village for years. The company has supported a number of local projects, such as the publishing of the book “Chronicles of Doushantsi Village”, the theatrical performance “Doushantsi – Pearl among Villages”, a film for the village, etc.

The commitment of Ognyanovo-K to public causes and their active

support for the local communities is a well known fact. Following a consistent policy, in June 2016 the company supported the publication of the full collection of the region's literature - 9 volumes describing the past of Slivnitsa and the region.

### The Night of The Museums

The first large-scale edition of the European Night of Museums was held in Varna in May 2016. **Engconsult EOOD** provided 200 bottles of wine from the Pobiti Kamani Boutique Winery that were give as presents to the first Varna citizens having visited more than 20 of the sites included in the special cultural map of the Sea Capital of Bulgaria.

### Preservation of authenticity



The church "St. St. Cyril and Methodius" at the Dushantsi village

Capital repair and restoration of the wall paintings of the 135-year old Sts. Cyril and Methodius Church in the Doushantsi Village were carried out with a donation of Geotrading. This is the only church in the village having a population of around 800 people. It sustained considerable damage during the torrential rains in 2014.

Authentic wall paintings, made by the artist Ivan Stoyanov Zografski, follower of the revolutionary leader of the XIX century Georgi Benkovski, were restored thanks to the donation of **Geotrading**. The project was also joined by Geostroy, both part

of the GEOTECHMIN Group. A water blessing ceremony of the Christ's Birth Church, built in the Mladost Quarter in Sofia with the participation of donors Geostroy AD and Geotechmin OOD, was held in 2015. Its construction was presented in last year's bulletin.

### For talents



National Talents Festival at Panagyurishte

The Panagyurishte talents are heartily supported by Asarel-Medet, jointly with the Panagyurishte Municipality. The "Star Class" initiative is joined by local boys and girls with outstanding talent. Recognition and fellowships are granted to athletes, cheerleaders, singers and musicians, and children having won prizes at international and national competitions and school Olympiads. 250 children from the municipality were distinguished in 2015.

The company supports traditionally the Patriotism National Festival for Young Performers of Bulgarian Patriotic Songs. It had its 12th edition in 2016. The event is on the calendar of extracurricular activities of the Ministry of Education and Education. It gathers annually hundreds of children and youth from the country and the Bulgarian communities abroad. The best performer from Panagyurishte receives the special award of Asarel-Medet.

### I am proud Project

The BCMG members, **Asarel-Medet** and **Ognyanovo-K**, implemented the project of the UN Global Compact Bulgarian Network for a third consecutive year. Through the project, children of the companies' employees visited the workplaces of their mom and dad, familiarized themselves with the production process and learnt more about the labour and the professions of their parents.

„Where do mom and dad exactly work? How deep is the mine? What amount of ore can be loaded on the big trucks? How is copper extracted from the big rocks? How is the copper used in computers, telephones, automobiles and planes?"

Sixteen children of Asarel workers got the answers of these questions in 2015. They got acquainted with the production processes in the company as well as with different professions – of geologists, mining engineers, dispatchers, drivers, excavator drivers, etc. Traditionally, the guests got familiarized with the company's history through its exhibition. Then they took a selfie before the huge wells, excavators and veteran hopes, who take their deserved rest within the company's outdoor exhibition.

The big-scale of the Asarel Mine and the control board, from which the working processes are managed, made most children dream of a career in the company. Each of them took an ore from the Panagyurishte deposit for their collection. The unique plant for production of copper cathode through extraction and electrolysis was the other site that attracted the children's interest.





UNGC Bulgaria's Proud Project at Ognyanovo-K

Apart from children of its employees, Ognyanovo-K also welcomed guests from the St. Antim Shelter. The event took place in the Puklina Limestone Plant, near Slivnitsa.

The children, aged 9 to 13, learnt more about the values of labour and education, saw examples of the importance of each employee in the overall working process, got familiarized with the specific nature of the profession of the engineers, mechanics, and laboratory assistants.

*„Inspired by the activity and enthusiasm of our children during the previous editions of the event, this year we set again the focus on labour values, commitment and education with the intention to guide them in their future professional orientation,”* the Executive Director, Nikolai Kolev, said.

The children acquired considerable new knowledge about limestone – one of the most frequent minerals in nature, its processing into

different products and their wide application. The little guests participated directly into a laboratory experiment thus experiencing the excitement of discoverers.

Within the initiative Ognyanovo-K also took part in the Children's Bazaar of Professions held at the National Palace of Culture. The initiative attracted more than 800 children within a single day. Many of them visited the stall of Ognyanovo-K, where the profession of a laboratory assistant was presented. They showed keen interest and participated in the live experiments, which demonstrated what happens, when slaking unsalted lime.

### Attitude to the employees

On the occasion of the Children's Day, 1 June, Geotrading organized a drawing competition for children of its employees. The topic was „Big Machines“. The children presented their ideas about different types of mechanical equipment.



Children's painting contest at Geotrading

There was one winner in each the three age categories – up to 5 years, 6-9 years and 10-12 years, and they were given a special award – a meccano. Every child received a present for the holiday, which was held in the company's ProAuto service centre in the Goroublyane quarter, Sofia. There were entertainments for everyone: a puppet show, bowling games, and an atelier for handcrafted masks. The assembly of a cardboard excavator provoked the highest interest among the potential engineers. The hosts held a demonstration of LiuGong mini-excavator and mini-wheel loader. At the end of the party, the children were given a chance to be photographed on the big machines.

### Professional longevity

Under a long-term company tradition at Asarel-Medet, on the occasion of the Miners' Day, workers, specialists and managers with the best professional achievements and continuous length of service of 25, 30, 35 and 40 years in the company are decorated with awards. In 2015



World Fireworks Championship at Panagyurishte

the company marked its 50th anniversary and held events under the motto „50 Years Together“. A total of 252 company employees were granted awards for professional achievements or long-term service in the company.

### Fire in the Sky

For a fourth consecutive year Panagyurishte played host to the World Fireworks Competition „Fire, Colour, and Fantasy“. Asarel-Medet is a general sponsor of the attractive event. The three-day competition draws high interest on the part of the town’s citizens and guests. It has increased the tourist flow to the town and promotes local business.

### Blood donation

A total of 136 workers of **Asarel-Medet** and the **Asarel-Medet Group** took part in the traditional campaign for voluntary and gratuitous blood donation. The initiative was organized together with the Regional Centre for Transfusion Hematology in Plovdiv.

### In the name of sport

A dream of the Panagyurishte citizens, cherished for years, was fulfilled in August last year and now they have a modern sports hall, where Bulgaria’s future champions can hold their training sessions.

The BGN 15.5 million project was implemented by Sport Invest Panagyurishte and **Asarel-Medet**, and the Panagyurishte Municipality participated through public-private partnership. The hall has 2,250 seats and is designed for 30 types of sport and for competitions of the highest national and international class. It is also excellent for concerts, exhibitions and the like. The implementation of this project is a precondition for the development of sport tourism and will have a considerable indirect effect on the development of



Asarel Arena Sports Hall at Panagyurishte

hotel and restaurant keeping, trade and services in the municipality and the region.

In 2015 and 2016, the sports clubs in the Panagyurishte Municipality will receive financial support by Asarel-Medet through the Association of Sports Clubs. The Association has 21 member clubs: football, judo, sambo, volleyball, handball, athletics, table tennis, badminton, chess, motoring, taekwondo, kickboxing, tourism, motorcycling, minifootball and basketball. Asarel-Medet is also the general sponsor of the Oborishte Football Club, which achieved its ever greatest success in 2015 by entering the Professional B Group.

In 2015, Panagyurishte hosted the International Tennis Tournament, **Asarel Bulgaria Open**. This was the first event on the calendar of the International Table Tennis Federation (ITTF) held in Bulgaria. Asarel-Medet was the general sponsor.

Participating in the tournament were athletes from 24 countries, including 20 tennis players from the Top 100 of the men’s and women’s world ranking. In 2016 the tournament is of a higher status and a purse of USD 80,000 in August in Panagyurishte.



Awarding at the Asarel Bulgaria Open.

### To adopt a river



Adopt the River Project of Titan Zlatna Panega

The initiative “To Adopt the Zlatna Panega River” was launched in 2013 as part of the CSR policy Titan Bulgaria.

There is a broad circle of stakeholders behind the initiative: the local business, led by **Zlatna Panega Cement**, the Labour Bureau in Teteven, the municipalities of Yablanitsa and Loukovit, the Regional Museum of History in Pleven, the

Institute for Biodiversity and Ecosystem Studies with the Bulgarian Academy of Sciences, local schools and NGOs, etc. They have signed a memorandum of cooperation aimed at overall and long-term sustainable development of the whole area along the Zlatna Panega River. A number of ideas have been implemented within the project so far.

The “Adopt a River” subproject for biomonitoring of the river and its surroundings by children from the schools of the nearby settlements was successfully completed in 2016. The project was developed with the help of the Regional Ecological Centre for Central and Eastern Europe – Bulgaria, the Nature Section of the Regional Historical Museum, Pleven, and the Environmental and Public Health Office in Kjos, Iceland. It received grant financing through the Financial Mechanism of the European Economic Area.

### Public Council

According to **Holcim Bulgaria**, the successful business should generate values for the society, where it develops. This involves not only profit and the selling of products on the market but also long-term commitment to activities improving the living environment and the welfare of the local people. Priority spheres in the corporate social responsibility of the **LafargeHolcim Group** are the infrastructure, the education and the sustainable development of the local community.

In order to be as close as possible to the needs of the local people, in April 2012 Holcim Karierni Materiali - Sofia set up a Public Consultative Council. It includes representatives of their management, the local authorities and the community. Such councils operate successfully in many companies of the LafargeHolcim Group across the world. They have certified their efficiency as a very good means of communication, identifying and settlement of problems and strengthening of relations with the community at the places, where the company works.

At the beginning of every year, the company sets an annual budget for financing of projects or initiatives in the separate sentiments. The hitherto implemented projects involve an automated irrigation system on the stadium in the Negovan Village, children’s playgrounds in Novi Iskar, Svetovrachane and Negovan, street fitness in the Chepintsi Village, renovation and public works in Novi Iskar (fountain), Chepintsi Village (public square), infrastructure in Svetovrachane (road).

The feedback is more than positive. *“The Council sets a successful example of sustainable cooperation. It can serve as a model of how the business and the administration should work together. There is two-way benefit from such interaction,”* said Daniela Raicheva, Mayor of the Novi Iskar.

These are just some of the successful examples of the company members of the BCMG. They have been developing mature programmes for corporate social responsibility, by which they build upon what has been achieved by them and the local community for the sake of sustainable development. The active participation of every mining company in the life of the local community contributes to the acceptance of the industry by the local people and for sharing of common goals and values and brings benefit to everyone.



Children's playground at Novi Iskar Borough



## THE NATURAL STONE SUBSECTOR - BUSINESS AND TRADITIONS

### Interview with Eng. Kiril Petrov

Executive Director, Bumar EOOD, and BCMG Managing Board Member

Natural stone decorative materials are a resource that has been an emblem of Bulgaria. The industry began its development following a decision of the then socialist state, today, our domestic production is recognisable and in demand across Europe and the world.

However, the subsector is experiencing some difficulties that can be resolved in the mid-term. We approached the person responsible for the subsector on the BCMG Managing Board, Eng. Kiril Petrov, and asked him to outline the trends and the producers' expectations.

#### **Eng. Petrov, what are the trends ahead for the subsector?**

My colleagues and I notice a decrease in the output of Bulgarian raw materials compared to the available resource base. We largely export raw material, mostly Vratsa limestone. On the other hand, we import cheap raw material or pre-fabricated materials, primarily from China and Turkey. That has an impact on the Bulgarian processing firms. This trend has been around for more than 10 years.

I believe there is a way to address this issue. It is necessary to develop the resource base and begin quarrying more types of Bulgarian

raw material. Thus Bulgaria can become a major exporter of finished products and the so-called pre-fabricated materials. For example, Greece has 150 geologic types of natural stone and rock decorative materials, 120 of which are commercialised. Here in Bulgaria, the number of geologic types is over 170 yet only 25 or 30 of them are now of commercial interest.

These figures clearly show that our raw-material potential is higher. Hence, the potential to generate sustainable growth. Our processing firms need raw material and, to operate, they procure it by importing block stone from abroad.

#### **What are your expectations from the government?**

The country is facing a number of challenges. The good news is that we have an excellent dialogue with the single managing authority, the Ministry of Energy. But problems have been piling up for years and must be addressed. For example, to ensure the subsector is developing, we expect the government to cooperate in opening new quarries. As I said, the potential is there. Over the past ten years or so, however, the only new area for quarrying natural stone and rock materials are

the gneiss deposits near the town of Gotse Delchev. Adding the fact that our producers, and especially the processors, of natural stone and rock decorative materials are under the pressure of the dumping prices of the Chinese and Turkish materials. There, and elsewhere, the government subsidises the export of those materials. Those measures give them a competitive advantage. For example, Italy has long-standing traditions and even a stone culture. That is why for start-ups in the natural stone subsector, the authorities on the Apennines applied protectionist measures. Through them, they promote local consumption. There is the famous example that you cannot obtain the legal papers for a house in Italy unless it contains local stone. This provides an impetus to the Italian industry.

The example of Turkey is even more extreme, yet it is indicative of the kind of care given by the government in order to support an industry that has potential. They grant natural stone companies a grace period ranging between 5 and 10 years, so that they can establish themselves, get used to the market conditions and get into a normal pace of business operation.

Again, let me give you a Greek example. After the fall of the junta,

the measures were similar to those in Turkey. In addition, however, there are the enhanced administrative procedures and low export duties for raw materials, which produces a cumulative effect that works as their advantage and puts us at a disadvantage.

Here, that kind of measures are now unthinkable because we are a member of the EU. Still, I am sure that there are ways to provide a more favourable environment for sustainable development of the subsector.

### **What is the administrative burden in launching a concession?**

Our business is regulated by many different laws and regulations that, more often than not, create difficulties, rather than providing support for our development. There is a problem with the procedure for starting the extraction, once a concession has been granted. There is the separate issue with the duration and the delay in obtaining the concession itself. But once you have that, the problems with the legal status of the land and rights of access and building rights begin. However, being a concession holder, the investor starts paying the concession fees, despite the fact that it has not yet earned any real income from extraction.

Our subsector, similarly to the rest of the extractive industries, requires massive investment and serious risk-taking. Unlike ore mining, the rate of return in our case is several-fold lower. Our advantage, however, is that despite the small profit margins, many more companies can join the operations at various locations, provided that the available deposits of natural stone and rock materials are developed.



Natural Stone Extraction Career.

### **Could you suggest three feasible steps to improve the business climate in the subsector?**

Firstly, the whole process of geological work and the granting of a concession should be faster. I often have the feeling that it is now blocked. We suggest that a time limit for it should be set, of up to 5-7 years.

The second step is tax exemptions, which does not mean to look for any privileges. The first five years are critical to the development of an undertaking in our industry. It is only learning to stand on its own feet, it has made considerable investment in machinery and equipment, and it is yet to establish itself on the market. That is why, during the first two years it can possibly not be required to pay the concession fee. The following three years, minimum concession fees should be charged. And already after the fifth year begin charging the full concession fee and even perhaps require payment of the amounts for which the grace period was applied at the beginning.

The third issue is the lack of protection for domestic extractive and processing industries. Currently, there is an expansion of cheap Chinese granites. It is possible to set some indicative prices for imports of such products, which would enable the government to receive at least higher VAT proceeds from imports. Even if the customs duties are not high. My example on this is Macedonia. It has had such measures in place for 20 years now.

### **Which are the immediate competitors of our producers?**

We have no protection whatsoever for national production. Marble slabs for tombstones enter our market from Turkey, selling at EUR 20. And our production cost is at least EUR 40. If the government were to set a nominal sales price of EUR 40 for imported materials as well, without forcing them to actually sell at that price but only charging VAT on that basis, then the end price of imported slabs would go up by BGN 10, which would be at least some sort of facilitation for the Bulgarian producer.

It is possible to consider measures to subsidise domestic production. For example, one might consider the possibility to provide government support

in the range of 1 or 2 Euros per square metre of exported material.

### How about illegal mining and quarrying?

This is the topic most often associated with the natural stone/rock subsector. It exists also in the extraction of inert materials. It is a problem that has remained unresolved for many years. In our case in particular, it is known that gneisses are most affected by illegal quarrying.

Yet the institutions that should control this and impose sanctions are not doing their job. Sometimes the off case will get to the prosecution office, and... That's that. Registered extraction and processing companies working with natural stone and rock decorative materials operate legally, pay their taxes, their concession fees – everything that the law requires. While those who break the law by not paying anything can price their product much lower and thus compete unfairly with the legally compliant producers.

### What is the role of government institutions in terms of illegal quarrying?

Even if they have an in-depth understanding of the problem, there is still a lack of common will to resolve it. In my experience, I have been faced with illegal quarrying for over 20 years. Over time, most of my colleagues have started to lose motivation. Because, when we have alerted the state institutions via the BMGK, instead of considering large-scale and urgent measures to regulate and stop illegal quarrying, they turn on us, the legal extraction companies. After such an alert, the government launches inspections

of the available and registered deposits, looking for a reason to impose sanctions.

Over the past 2-3 years, one can feel some movement in the inert materials subsector. Our colleagues from BAPIM, the Bulgarian Association of Producers of Inert Materials, have the ambition to keep the pressure on the institutions, regularly making suggestions and supporting them in their work, so that the problem can be resolved. I expect that through their efforts, and with the help of the BCMG, we will see some positive results. Maybe we will gain the support of the local units of the Regional Directorates of Forestry, because they have the real picture of the territory they oversee. Besides, once the illegal quarrying in riverbeds is curbed, the consumers of those materials will turn to our producers. I am convinced that the problem will not be resolved, if we rely on the locals and even on some of the local mayors. I am confident that we have gained ample experience with that issue. If we add to our own strengths the information about the locations of illegal quarrying – and those are no secret – and if we target our efforts to hit those, the subsector will be swept clean within a year or two.

Another thing in point is that we need to work with the owners of that land – the central government and the municipalities. They need to perform their duties which stem from their property rights. That implies proper monitoring and control, including with regard to activities performed on their turf. Moreover, the BCMG is aware of the illegal mining and quarrying cases: the firms, the individuals, the activities, and with the support of



Preparing for extraction of natural stone

the Ministry of Energy, things can be straightened out extremely fast. The issue with the mayors has two sides. On the one hand, we need to get them on our side, although they have their own interests. On the other hand, they want to be of service to their fellow citizens, which means that they close their eyes on illegal mining.

### And what about the role of innovation?

Over the past five years, we have seen companies from the subsector managing to obtain EU project funding for upgrading their technology, from innovation to buying new machinery.

Foreign investors and machinery suppliers say that there is a lot of enthusiasm to work in the subsector in Bulgaria. What we have in terms of natural resources and expertise is a huge advantage for the country. It is our basis. That is not present in the Czech Republic or in Hungary, for example. And our companies are operating, despite all the difficulties.

The good thing is that natural stone and rock materials are included in government programs as a priority area for development. There, funding is earmarked for machinery for the processing industry, which is good. Unfortunately, however, our raw materials remain underdeveloped.

Thus we are becoming a country that processes cheap materials and the so-called pre-fabricated materials. Those issues apart, we have high employment rates, we pay taxes, and the amount of taxes we generate can grow, if there are incentives for development in the extraction subsector and more companies decide to enter it.

### Is there any potential still untapped in the subsector?

We meet with understanding on the part of mayors of municipalities and villages. In quite a few places, there has been geologic prospecting and the local people are aware of that potential. Add to that the demand for new jobs and better income, and we are welcomed as an investor.



Processing of natural stones

But then the problem we discussed earlier kicks in. You have to wait for 10-12 years before you can get a concession, and then, we wait some more before we can get a road. And there is the issue of Natura 2000, because despite the benefits for nature as a whole, its interpretation by the institutions and by the Greens creates unnecessary bureaucratic barriers.

### How about the availability of skilled labour?

Our sector can uptake up to 1% of the employable population. We



Processing of natural stone materials

need skilled workers. The wages we offer, I think, enable people to lead a decent life. Salary levels in the range of BGN 1,000-1,200 can provide for a normal standard of living on the regions where we operate. We need mostly local people who want that kind of job and have the skills to do it, mostly at the processing enterprises. There are also isolated cases where workers commute by company transport from other places. But that raises the production costs and holds other risks as well.

That is not understood by the local people. The payment level is arrived at as a function of many factors. Value added in our subsector is low, hence the low profit margins. External competition is high, and when we add to that the pressure from cheap raw and pre-fabricated materials, we get the current levels of pay.

### Where do you market your finished products?

You know that the Vratsa limestone is well known almost globally. Our gneisses are also very popular. Realistically, these are the materials that are accessible. Most of all, export in Europe, and limestone is well received in China as well. Our goal is to become an extraction and production base for Europe, and not be just a workshop for materials. The major long-term goal is to expand the applications for those raw materials and utilise them efficiently. For example, marbles and limestones have a high potential in terms of utilizing the raw material that is not fit for blocks. It could be useful as an inert material, for example, in cement production. Three years ago, the MGU St. Ivan Rilski produced a study that indicated their underused applications. A good impetus would be to encourage Bulgarian architects to opt for our natural stone and rock decorative materials in their design projects. The difficulty in that is that despite the rich natural resources, we have only 20-30 types being used. By developing our resource base, we can also help architects produce original and remarkable works, using the full variety of our materials.



## 60 YEARS OF ENTERPRISING, PROFESSIONALISM, CORRECT PARTNERSHIP

**Minproekt – the reliable partner in energy, mining, processing of raw materials, and industrial construction.**

The beginning of Minproekt dates back on January 1, 1956. This is the date, when the design organization for mining and industrial design was established. Their task was complex solution of all research and development, structural and design matters related to the construction of coal mines, flotation plants, briquette production, with the increase of economic efficiency of the different enterprises and of the sector as a whole.

Due to the stagnation in the coal consumption in the beginning of 1970s, Minproekt changes business focus towards to ore mining and minerals. By their project plans the mines in Madan, Madzharovo, Kurdzhali and Bourgas were constructed as well as a number

of quarries and crushing and sieving plants for the production of aggregates and raw materials for the cement industry.

Then the mines of the Bobov Dol Coal Basin were combined in a large coal mining complex for production of brown coal. Advanced, high-productive, mechanized complexes and transport systems were introduced.

In 1980s the mining capacity of the Pirin Coal Basin reached maximum development and utilization corresponding to the state needs. Minproekt developed the complex designs for the construction and operation of the Chernomorec 2 Mine (Black Sea 2) of the Black Sea Coal Basin.



Processing of natural stone materials

The enterprise participated actively in the modernization and automation of processes of dressing plants of the coal factories of Bobov Dol, Pernik, Tvarditsa, as well as of the first briquette factory in Bulgaria – Brikel EAD, Galabovo town.

In 1995-1997, during the period of the great financial and economic



crisis in Bulgaria, Minproekt designed and assisted in the effective development of Katrishte deposit (Kyustendil Coal Basin).

Minproekt develops unique for the world mining practice design solution and methodological guidelines for determining the dimensions of the boards of mines, on the grounds of which reconstruction, upgrading and enlargement of the mines of the Maritsa East Lignite Basin were conducted. An advanced system of quality control of the mined lignite coal was introduced.

### Innovations on Scale

The research and development and implementation potential of the institute introduces important projects regarding new mining technologies, systems of complex analysis and quality control, as well as regarding complete programs for environment protection and recovery, hygiene and safety at work, conservation of inefficient mining developments, liquidation and rehabilitation of closed down mining sites.



Rubber Belt Conveyor for bulk materials transportation

Under the conditions of alternating financial and economic crises and free market competition, Minproekt expanded their activities. Their experts focused on engineering services for the implementation of the large-scale energy projects in the territory of Maritsa East Mining and Energy Complex as well as for the processing industry of the non-ferrous metallurgy.

### Expertise and Experience

Minproekt is a specialized company for feasibility studies, investment design, consulting, and supervision in a wide range in industry. Their specialists work on projects regarding mining of coal and mineral resources, deposits 3D

### MINPROEKT TODAY

- ▶ The only state-owned design company in the field of energy, mining and processing of raw materials.
- ▶ Certified under ISO 9001:2008 and has modern and well-organized base for implementation of projects of national and international importance. They are carried out with care for environment, personnel and society.
- ▶ It has the only Bulgarian notifying body for evaluation of compliance of:
  - ▶ Explosives for civil uses (Directive 2014/28/EU)
  - ▶ Equipment and protective systems intended for use in potentially explosive atmospheres (Directive 2014/34/EU) with their own test centre.
- ▶ Experienced and highly qualified personnel.
- ▶ Specialized licensed engineering software and advanced hardware.
- ▶ Cooperation with Bulgarian and foreign counterparts.



Industrial Building for Raw Materials

modeling; engineering geology and hydrogeology; technological plants and systems; belt systems and conveyors for bulk materials as well as for their automation and control.

The expertise of the company is upgraded also by the built-up architectural and construction designs of industrial and public buildings and facilities; health-improvement and sport facilities and the related HVAC.

Minproekt is the preferred counterpart for draining off mines and hydro technical facilities, as well as for BKWS&S systems and for waste water treatment facilities.

Its experience in electrical construction includes construction of cable systems and high and low-voltage conductors of up to 110 kV, of substations and transformers, external and internal power supply of industrial and public sites, roads, railways and transport facilities, as well as geodetic expertise and valuation of properties, machines and buildings, agricultural lands and plantation.

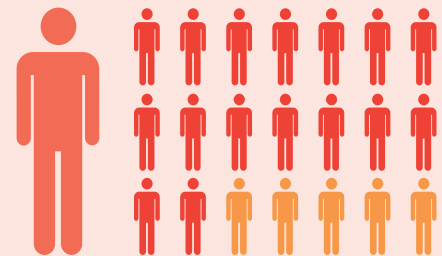
Minproekt has indisputable quality of a leader in the field of health and safety. The company has created

and upgraded a series of statute books related to occupational safety, and the best examples are the ones concerning the work in underground coal mines; upon development of deposits in open-pit mines, as well as the books of rules regarding development of ore and non-ore deposits in underground way.

All this becomes possible with availability of well-trained, motivated, and professional team. All engineers of Minproekt have licenses of full designer's competence in investment engineering design and territorial construction. The company upgrades their knowledge and skills through annual training for development of personnel and acquiring of additional qualification.

## HUMAN CAPITAL

100  
EMPLOYEES



90% university graduates

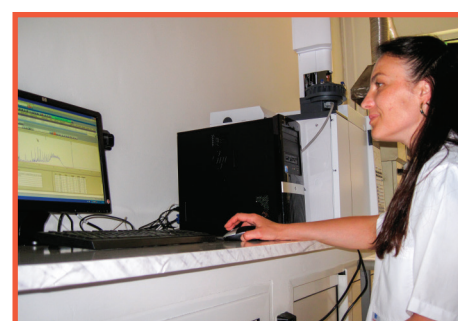
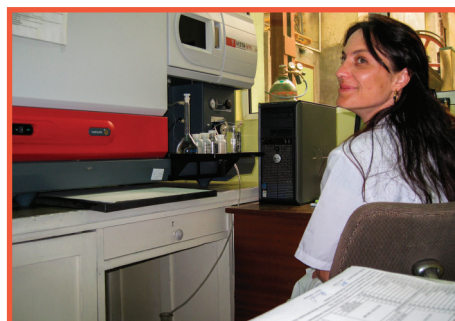


15 engineering and  
economic specialties



## 60TH ANNIVERSARY OF DIAL

**We are not indifferent to the environment we live and work in. We aspire to contribute to its improvement.**



Dosimetric and Engineering-Aerological Laboratory (DIAL) was established in 1956 at the state-owned Redki Metali (Rare Metals) aiming at studying the labour conditions in the uranium industry and offering measures for improvement of the work environment and environment regarding radiation. The laboratory conducts the first radiation measurements of uranium mining in Bulgaria resulting in introduction by the Council of Ministers of national standards for work with ionizing radiation sources.

The laboratory participated in the selection of all industrial and work sites of the uranium industry. It designed the complex monitoring networks. Thus the radiation and non-radiation indicators used to be controlled during the operational, liquidation and post-liquidation period.

In 1992, the Council of Ministers terminates the uranium mining in Bulgaria and DIAL became a separate company.

Nowadays, DIAL conducts a wide range of services - from taking and analysis of water, soil, air, etc. samples to preparation of reports on environment status and radiation safety, control on existence of radioactivity of goods, materials and products upon production, import and export. It participates in and performs research and application developments, participates in international projects, designs the construction of a network for complex monitoring, environmental assessment.

The laboratory is certified pursuant to ISO 9001:2008, it has a license from the Nuclear Regulatory Agency for work with ionizing radiation sources and has a permit issued by the Bulgarian Nuclear Regulatory Agency for temporary storage of radioactive substances. It is accredited by the Bulgarian Accreditation Service Executive Agency. Measurements and analyses are conducted both under the Bulgarian State Standards and under European methods.

Their quality of work is guaranteed by the new modern equipment - it makes quick measurements of high precision. And their highly qualified and experienced specialists work together with leading scientific institutes. **специалисти работят съвместно с водещи научни институти.**

**The most important principle for the activity in the next**

**60** years

**will be correctness regarding counterparts.**

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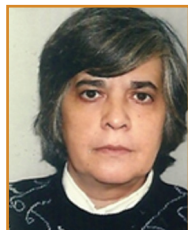
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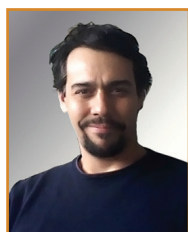


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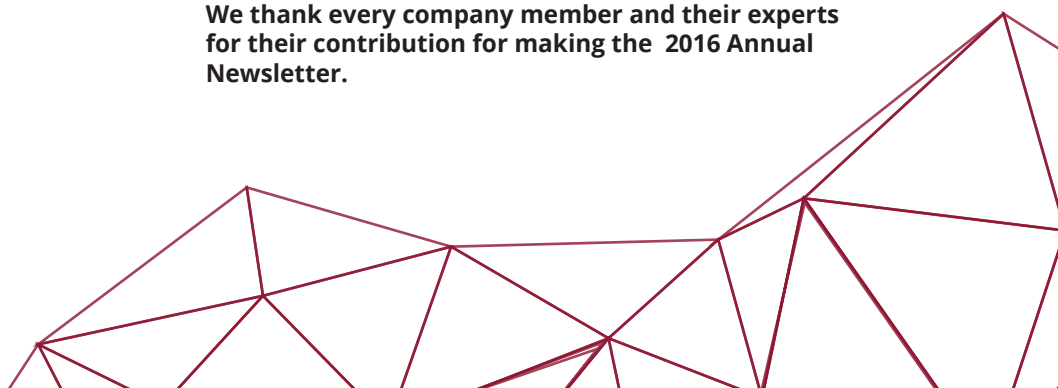
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