

# Infrastruktura

## Environment • Geology III

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Poland has no policy on raw materials.  
A discussion over such a policy is only beginning now.  
The Government's approach to the raw materials policy is full  
of legal confusion and chaos in decision making process.  
Problems related to this policy are almost totally unnoticed in strategic documents.  
Many decisions concerning deposits of strategic importance  
for the nation belong to municipal authorities.

Report „Poland's policy on raw materials: a paper on what does not exist but is badly needed”.

**Politicians must realize  
that raw materials management  
is a truly long-term  
and international business**



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## CuBR – chance for sustainable development of Polish industry of non-ferrous metals

### Strategy for knowledge and innovation

Herbert Wirth,  
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Professor at the Wrocław  
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Chairman,  
KGHM Polska Miedź S.A.  
Management Board



**KGHM and National Centre for Research and Development will use joint venture CuBR as a platform to implement concepts of new products and technologies in the raw materials sector. The goal is to create the strategy of knowledge and innovation based not only on own resources but also on the experience of the academic and business world.**

CuBR puts special emphasis on a smooth operation of the production process along the entire value chain—from mining to ore processing, metallurgical processes, production of metals, new materials and down to recycling. What is unique about the strategy is that we want to carry out the prototype and demonstration phases of the works. Such approach may serve as a prove that the implementation of results in the economic practice is as important as the research and development phases - making a link with the investment area and opening way to commercialisation of those results. Therefore our support is not limited to identifying and co-financing of projects, but also includes intensive professional and methodological support to the implementations. We are prepared for it.

#### **The origins and mission of CuBR**

The raw-materials sector has become a priority for the European economy from both, economic and social points of view. That is why we join innovation-seeking efforts to improve the efficiency of production process and provide an atmosphere friendly to innovative thinking. Companies, which more and more often are looking for new technological solutions, reorganise the area of management development by defining challenges ahead. At the same time, they put in order their relations with representatives of business and science.

KGHM is also marching in this direction. That is why the optimal management of assets and the implementation of innovative technologies allow the Company to improve its resource exploitation, expand its product portfolio, and improve the safety of people and natural environment. This way, the Company gains competitive advantage, while we are operating on the global market.

An example of such higher activity is cooperation of KGHM and NCBR which has produced the first bi-lateral sectoral programme CuBR intended to develop ground-breaking technologies for the processing of non-ferrous metals. The budget on industrial research and development amounts to PLN200 million and is financed half-half by KGHM and NCBR. It is an example of a joint venture which confirms the government understands the role of domestic innovation and the need to support them by putting such mechanisms in place.

We have adopted certain boundary conditions for CuBR. New challenges identified by the non-ferrous industry are addressed by multi-company national consortiums which include Polish universities, research institutes, and their industrial partners. Every project worth at least PLN3 million should be implemented during maximum three years.

I believe that any major progress in the area of non-ferrous metals requires a permanent development of advanced technologies and innovation based on national potential, commitment, and strategic alliances between science, small and medium-sized businesses, and big industry.

### **CuBR objectives and expected results.**

This initiative proposed under the aegis of NCBR and KGHM encompasses all the mining industry and is divided into four areas. The first area – mining and geology – focuses on maintaining of the production potential on own deposits using advanced infrastructure. The second area – ore processing – gives priority to low-energy technologies for the production of polymetallic copper concentrates of a quality compatible with copper roasting and smelting. The third area – metallurgy, processing, and new materials – is about innovative technologies for the processing of metal concentrates and full management of slags and semi-products. The last area deals with environmental protection, particularly, the consequences of mining and metal production, risk mitigation, and business efficiency. We know that breakthrough innovations are usually born at the borderline of different domains in multi-disciplinary teams, when objectives are well-defined, and when atmosphere of trust and openness is provided. Sectoral programmes make cooperation between business and science possible. They facilitate access to complementary, expert knowledge and to capitalize on synergies. They also help to build corporate wisdom.

Implementation of such programmes provides comprehensive solutions which address the expectations of all stakeholders and guarantee the achievement of the adopted targets. As a result, it makes the implementation and commercialisation of project outputs much easier. CuBR is not only about research – it is also a way of supporting the transfer of research findings into the industry. Our ambitions are high. Projects should lead at least to the production of a prototype or, quite often, to testing a new technology in real-life conditions.

The CuBR competition has had two editions so far. After the first round of applications, we launched four projects expected to obtain: a technology of quick access to deep deposits (below 1,300 m), an energy-saving technology of effective grinding non-ferrous ores for enrichment, and an innovative way of removing copper from slag in the copper flotation process.

The second edition of the competition selected eight projects intended to find an innovative solution for our strategic Intelligent Mine expected to allow future safe exploration of deep deposits. We are going to implement remote-controlled and automated crushing machinery, make the anchoring cycle automatic, and obtain highly-efficient technologies of copper ores enrichment, a technology for the production of low-loss electric cables, and innovative methods for energy storage. We have also announced a need for designing a technology of production and application of innovative ultra-hard layers based on Ren compounds that could enlarge our product portfolio. The third round of applications for the competition will start in autumn, this year. Also this time, we expect a good response from inter-disciplinary consortiums boldly taking up the incoming challenges.

Innovation requires the skill of taking a new, broader look at the possibilities, technologies, products, and processes. I do believe the implementation of CuBR projects will, at the end of the day, select such

research teams and concepts that will result in ready-to-implement ground-breaking industrial technologies or innovative machines and equipment improving the technological chain, or they will enable the development of new economically viable materials and products.

From a broader perspective, CuBR is providing support to the efforts of Polish non-ferrous metals industry to reach the position of a global leader. We are very proud of it. With time, we can build Polish economy's competitive advantage, but only when working all together.

## Seminar of the Polish Technological Platform on Raw-Materials

### Problems of the sector of non-fuel minerals in Poland



The Polish Technological Platform on Raw-Materials (PPTSM)-which integrates the key academic and industrial partners in the sector of mineral raw-materials for the work of the Ministry of Economy under its „Plan of work for Poland’s security of non-fuel minerals” - in April 2015 organised a seminar in Warsaw to discuss „The problems of the sector of non-fuel minerals in Poland.” The Ministry of Economy co-organised the meeting with the following supporting partners: The Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, the Lower Silesian Raw Materials Cluster, the Union of Employers Polish Copper, the Waste Treatment and Recycling Cluster, and the Institute of Technology and Innovation.

The Platform invited to the seminar experts who were asked to summarise the current knowledge on problems the Ministry of Economy included in its Plan of Work as deserving further studies. These were, among other issues:

1. Identification of raw-materials which are key for Polish economy, discussed together with the identification of the current recovery and potentially higher recovery of key materials obtained from waste.
2. Identification of social problems related to geological works and to starting up and continuation of mineral extraction, with the indication of the good practices and available remedies.
3. Comprehensive evaluation of public and legal charges paid by the mining industry, analysis of their effects on the rational use of mineral deposits, and on the international competitiveness of mining companies.
4. Identification of the current recovery and potentially higher recovery of raw-materials from waste, which are key for the Polish economy, and evaluation of the possibility to implement solutions improving that recovery.
5. Analysis of the reasons for NCBiR to set up a research agency for the substitution of non-fuel minerals important to Polish economy.
6. Support to the influx of key minerals into the Polish economy.
7. Definition of practices good for Poland in terms of preventing illegal extraction of minerals.

As a result of the discussion held by representatives of the scientific world, non-governmental organisations, and the government, several postulates were put forward, among them:

- To pay special attention to unlicensed extraction of minerals because access and extraction of minerals should take place in regulated and stable conditions. This also applies to the necessity of introducing legal and organisational changes to promote the recovery and recycling of minerals, especially those present in used electrical and electronic equipment, as well as in other sources.
- In the area of identification of raw-materials which are key to Polish economy needs, clearly define the selection criteria.

- Indicate directions for the stream of waste and adequate systems of its further processing. Attention must be drawn to the fact that anthropogenic deposits are not homogenous and, at the same time, to the fact that each such deposit (urban mining included) shows higher concentration of important chemical elements than any natural deposit.
- The area of public and civil-law charges paid by the mining industry shows excessive fiscalism which prevents it from obtaining the raw-materials in a rational way. It is necessary to develop a proper fee calculation model that will not add any new tax instruments but simplify them instead.
- Many foreign initiatives can be seen on the raw-materials market, therefore, better information must be obtained about the businesses which are after the hard-to-get minerals. Do foreign companies provide us with those raw-materials? So long as they are Polish companies, the state administration is responsible. The more information from companies, the better and more effective is the work of the ministry. If a company pays taxes in Poland or operates on international markets from this country, we should support it too.
- Substitution becomes an important problem when the supplies of critical raw-materials are threatened. Poland has this problem with 21 chemical elements. This requires a research agency, placing the substitutes in smart specialisations, etc. The outflow of waste from Poland is important too as they may represent considerable value as a source of recoverable raw-materials. This issue is regulated by the current EU law. Poland needs regulations accepting such restrictions.
- The guidelines for the Plan of Work can be considered as an introduction to the development of regions but positive mass media coverage of this problem will be indispensable. The Corporate Social Responsibility, which is well noticeable in big corporations but not so well in small and medium-sized businesses can be of a great help here. Another important factor is to implement the recommendations and guidelines set forth in the Global Reporting Initiative and in the related European and global activities. Social issues accompany every phase of the mining process from exploration down to the liquidation of a mining facility. Under the Polish law, extraction can be commenced after getting a permission from the local government and, therefore, the appropriate policies of entrepreneurs are a key factor of success in such projects.

All the issues discussed here are connected with important problems. These are worked on by, among other institutions: the Ministry of Economy, the Ministry of Environment, the Ministry of Foreign Affairs, the Polish Technological Platform on Raw Materials, and other collaborating partners. This discussion must be continued with focus on the objectives, policy on raw-materials, legal environment, institutions, and tools. The effects should come in the form of a final document proposing a positive solution to the issues involved in raw-materials management and making it possible to introduce changes in this country.

*Jan Kudelko, Ph.D., Eng, Professor, the Wrocław Technical University,  
Co-ordinator of the Polish Technological Platform on Raw-Materials.*



## Getting copper from Chilean market

The demand of the emerging world economies makes the mining industry attractive all the time. Even more so, it offers vast development opportunities to companies supplying products and services to the mining sector. This view was advertised by representatives of KGHM Polska Miedź S.A., Sierra Gorda SCM, the Polish Embassy in Chile, the Chilean Foreign Investment Committee, and other institutions at the Polish-Chilean Mining Investment Seminar held in Santiago de Chile on April 15-16, 2015. The Ministry of State Treasury and the Ministry of Foreign Affairs assumed patronage over the seminar organised by KGHM Polska Miedź and Sierra Gorda SCM.

Chile is a global power in terms of metal extraction. Its mining industry generates an annual income around USD50 billion. The growth of Chile's mining industry is three times faster than the growth of other industrial sectors. Copper producers who are counting players on the global market take advantage of this trend and keep investing in that country. The Chilean market continues to be open to alternative forms of business activity, although most projects are attracted there by the mere raw-materials.

– *Chile is a reliable and democratic country whose good investment atmosphere attracts increasingly more foreign companies. The transfer of know-how begins to play a key role in the context of permanently growing competition which comes from Britain, the Netherlands and other directions. Polish companies with innovative technological backing have an opportunity to establish their long-term presence on the Chilean market. An example for this is KGHM which has successfully completed its investment in the Sierra Gorda mine and, in this way, built a good reputation of Polish management in Chile* – said **Aleksandra Piątkowska, Polish Ambassador to Chile.**

Polish companies increasingly better compete with international concerns in the field of innovativeness and product quality. Collaboration between companies plays a major role in international expansion. Mutual promotion and access to practical knowledge of internationalisation is a key factor in the development of Polish businesses.

– *KGHM shares its best practices and contacts to give support to Polish companies which think of going global. I am happy they have been attracted also by the Chilean market. We want to share our knowledge so as to enable domestic entrepreneurs and research centres to develop on international scale. The Sierra Gorda mine is an excellent example of a consistently managed foreign expansion. This confirms that opportunities are at a hand's reach and collaboration and courage help to get them* – argued **Herbert Wirth, Chief Executive for KGHM Polska Miedź S.A.**



Aleksandra Piątkowska, Polish Ambassador to Chile



Sierra Gorda is one of the vastest mining projects in the Antofagasta region. The mine has employed the latest solutions to guarantee full efficiency of its processes.

– *Its implementation required more than 53 thousand workers. That team worked 18.5 million man-hours. The construction of the mine involved over 600 contractors, among them two from Poland: TELE-FONIKA Kable and Sempertrans. The Sierra Gorda construction will reach the end of its first phase by the middle of 2015. The facility will reach the full production capacity planned for that phase. The second phase will offer Polish companies an opportunity to establish collaboration with KGHM in providing goods and services for the needs of the mine's development. In this way, we want to help Polish entrepreneurs to embark on the Chilean market* – stressed **Maciej Ściążko, Director-General, Sierra Gorda SCM**.

The permanent economic growth of Chile, its political stability and legislative security provide perfect conditions for investment. Offers made by Polish entrepreneurs at the Seminar were in the first place addressed to off-takers of products and services that belong to engineering, designing, construction, support, optimization, and production process management.

– *I accepted the invitation to the Polish-Chilean Mining Investment Seminar with satisfaction. The geographical distance and cultural differences usually make winning new contracts difficult. But today's conference was a place of direct contacts with potential counterparties. The company Comarch is now making an advanced software for the management of key operation processes, among other functionalities. I can see vast opportunities for establishing collaboration with Sierra Gorda SCM by supplying innovative administrative solutions for the mine's expansion and management in a fairly short time* – said **Jorge Uribe, Director-General for Comarch Latam**, responsible for expansion in Latin America.

For **Robert Kozłowski, Trade Director at PeBeKa**, the Polish-Chilean Mining Investment Seminar was the first step on a long way ahead and its effects will be seen only after time. – *Our offer is specific. Drilling shafts and freezing the rock is addressed to a concrete client. When getting ores from open-pit mines becomes no longer possible, companies will have to start underground mining. We will come up with our services then. Until then, we are going to do a good reconnaissance of the Chilean market.*

*It is good to know that demand for raw-materials keeps growing every year. The world population will grow by 350 million people inside the coming 2 decades, which is twice as many as the population of the United States. Two hundred new cities with a population over 1 million will emerge and that is six times more than the population of present day Europe. The construction of an average family house takes 220 kg of copper, and making a car consumes from 20 to 45 kg of this metal. Civilisation cannot progress without copper. To meet this growing demand, investment in mining must be doubled and, consequently, so must the demand for products and services involved in the mining sector.*

The conference was also attended by companies for whom the Polish-Chilean Mining Investment Seminar was not the first business contact. – *I came to this Seminar because we are looking for new participants in the Chilean market. Polish companies come with interesting technological solutions, new products, and they are competitive. We have a long-time experience in collaborating with the Polish company Mine Master. I find our relations with Polish business very good* – confirms **Fernando Marchant, Corporate Director for Supplies at Codelco**.

**Manuel Viera Flores, Director-General for Metaproject** – *I can see a huge potential in Polish enterprises. We have already travelled to Poland to find suppliers there. We went to more than 30 meetings with potential*

trading partners. I was looking forward to today's meeting. The Chilean market needs new suppliers. Polish companies have high potentials and are innovative. We expect to start collaboration with KGHM Cuprum.

**Professor Witold Pytel, KGHM Cuprum** – At the beginning, I was very sceptical about today's conference. But now I see that a meeting of two worlds, a confrontation of technological thought with the mining industry in Chile is very likely to produce desirable solutions. I will follow the Polish-Chilean co-operation with much interest. Clearly, it is worth

to continue the well justified initiative of supporting the expansion of Polish business in Chile.

In their presentations given on the first day of the Seminar, company managers presented their business offers and needs. B2B talks were an opportunity for making detailed agreements between the parties. Plenary sessions were devoted to the discussion of KGHM's business strategy and benefits one can get from trans-border collaboration. The audience were also familiarised with the key aspects of probably the biggest copper projects in the world-the Sierra Gorda mine. An interesting item in the Seminar's agenda was a presentation by the Chilean Foreign Investment Committee, CIE Chile, on the investment climate in that country.

Participants in the Polish-Chilean Mining Investment Seminar in Santiago de Chile could see the size of the world-scale Sierra Gorda project during a study tour to the site on the second day of the conference, April 17, 2015.

The area of open-cast works at Sierra Gorda is now 1,500 metres wide, 1,300 metres long and 200 metres deep. The construction of an Ore Enrichment Plant has consumed 221,068 m<sup>3</sup> of concrete, 22,890 tonnes of steel, and 18,500,00 man-hours.

From its very beginning, the Sierra Gorda mine has yielded 5.9 million tonnes of sulphide ore, 49.3 million of oxide ore, and 272.3 million tonnes of gangue. Constructors also used 2,300 kilometres of electrical and control cables to build the Ores Enrichment Plant and laid 143 kilometres of pipeline carrying sea water for the production process. As soon as Sierra Gorda reaches full production capacity planned for the project's first phase, it will process 110 thousand tonnes of ore daily and produce 120 thousand tonnes of copper in a year. The mine will be one of the world's biggest manufacturer of molybdenum. When expanded, the facility will significantly increase its production potential.

– I imagined KGHM's investment project in Chile in exactly the same way. The Sierra Gorda mine is an impressive world-scale project. The added value here is that it was made by a Polish company. Polish business was not too quick in going beyond the national borders by that time. Doing business in South America used to be even less imaginable – said **Arkadiusz Dziębowski, Director-General for Oxyline Sp. z o.o.**



Participants in the Seminar on a 300-tonne truck carrying excavated material at Sierra Gorda mine

Sierra Gorda currently has 1,300 workers on its payroll and another 3,000 are serving there on indirect basis. Taking care of the workers is a key for reaching an operating excellence and a low impact rate.

**Fernando Duisberg, GSI-GONAR Systems International Comercial Ltda.** – *I am deeply impressed by the order I can see at the whole area of the mine. Protection of the workers' health, respect for safety rules, orchestrated movements of machines and equipment, and protection of the natural environment are attributes of top-class management. My first minutes at the site confirmed that KGHM can run European-class projects in any corner of the world.*

Responsibility for reaching a zero impact on local communities is borne by both, Sierra Gorda crews and their sub-contractors.

– *Impressive-this is the way I can describe the impetus in building this mine. I have already seen many open-cast mines but none of them can match Sierra Gorda in terms of their safety systems. Today's visit showed me not only the development potential of this project but also its high standards* – added **Daniel Pelaez Arranz, Deputy CEO at Heliseco Co. LTD.**

Sierra Gorda will be one of the world's biggest manufacturer of molybdenum and the biggest producer of the Cu-Mo concentrate. Permanent perfection and definition of opportunities and challenges contributes to increasing the value of the company's operation processes.

– *My expectations of the Chilean mine have come true. I expected this investment to be well thought-over and well cost-estimated. The industrial solutions applied there are economically justified. My first impression during our visit to Sierra Gorda was just shattering! I can see a plane for collaboration with KGHM in carrying out the second phase of the construction of this Chilean plant* – admitted **Michał Ochęduszko, American Sales Manager for Famur S.A.**

Understanding mutual expectations and business needs is the key for starting open business talks in which relations between counterparties are playing a crucial role.

– *Long-term collaboration with a trusted partner is what really matters in international business. Polish companies should proudly demonstrate the quality of their national economy on the global market. I invite those interested to get involved in the expansion of the Sierra Gorda project in Chile. It pays to walk unfrequented roads because that's where chances for success are. On behalf of KGHM, I thank you for accepting the invitation to the Polish-Chilean Mining Investment Seminar* – concluded **Herbert Wirth, CEO, KGHM Polska Miedź S.A.**

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The Polish-Chilean Mining Investment Seminar was attended by representatives of over thirty companies from Chile, among them: Afaccess, Agroquinto Ltda. ENAMI-Empresa Nacional de Minería, SCM Minera Lumina Copper Chile and Grupo TQS. Poland was also represented by more than thirty companies, such as: Grupa Azoty SA, PKO Bank Polski, Kopex SA, Mostostal Zabrze, Famur S.A., Mine Master, and Ponar Engineering. The Seminar familiarised Polish companies with KGHM's expectations and needs related to the Sierra Gorda project implementation. It offered them an opportunity to become suppliers of goods and services not only for the second phase of the project but also for new trading partners in Chile.

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The Polish-Chilean Mining Investment Seminar was organised by Sierra Gorda SCM and KGHM Polska Miedź S.A. Professional support in the organisation of the event provided the Chilean Foreign Investment Committee and the Think Tank Poland Go Global! Honorary patronage was assumed by the Ministry of State Treasury and Ministry of Foreign Affairs.

## Postulates of scientific milieu

# Problems of Poland's policy on raw-materials security

The policy and strategy on raw-materials and problems of Poland's raw-materials security have been discussed and studied for a long time now. The Committee of Mineral Economy Sustainable Development of the Polish Academy of Sciences PAN has proposed many postulated and conclusions in this area. These were included in the report „Poland's policy on raw-materials: a paper on what does not exist but is badly needed”, written by an independent team of experts led



From left to right: Krzysztof Galos, Marek Nieć, Krzysztof Malinowski, Eugeniusz Mokrzycki, Antoni Rogalski, Bogdan Ney

by Professor J. Hausner, Ph.D., and J. Steinhoff, Ph.D. The report pointed to the reasons why there is no mineral policy here, identified its basic problems, and suggested directions for the available solutions. At the same time, the Ministry of Economy published its „Assumptions for the Plan of Action to ensure Poland's security of non-fuel minerals.” The document indicates the main areas where such actions should be carried out. Both documents require discussion over the issues which often get completely different opinions. An important role in creating and implementing the policy on raw-materials is played by the geological and mining law which, in its current shape, does not enable rational management of mineral deposits.

On June 2, 2015, the Committee of Mineral Economy Sustainable Development of the Polish Academy of Sciences PAN and the Mineral and Energy Economy Research Institute of the Polish Academy of Sciences PAN organised, under patronage from PAN President Professor Jerzy Duszyński, held a debate on „The problems of Poland's policy on raw-materials security-postulates of the scientific milieu.” It was presided over by Dean of the 4th Department of Technical Sciences PAN, Professor Antoni Rogalski, Ph.D., Eng.

The debate was based on lectures „Aims, directions, and tasks of the mineral policy” (Marek Nieć, Krzysztof Galos), „Legal conditions of mineral policy” (Krzysztof Szamałek), „Critical minerals for the European Union from the perspective of Polish economy needs” (Krzysztof Galos, Tadeusz Smakowski).

The policy on raw-materials is a foundation of the nation's mineral security. It should be a long-term action taken to cover the population's demand for raw-materials and their products which are necessary for its current and future daily needs and for improving their living standards in line with the rules of sustainable development. It should be done by providing production companies with access to raw-materials from

domestic and foreign sources, which are indispensable in their business, and by providing conditions for a rational use of these materials as well as their innovative management.

The definition of the following should be the starting point for work on the mineral policy:

- current and forecast domestic demand for mineral raw-materials,
- available sources of those minerals (at home and abroad) present in both primary (underground) deposits and secondary sources (recovery and recycling),
- barriers and threats to obtaining required minerals at home and abroad.

Mineral deposits as the basic, primary source of raw-materials are a national heritage. Government administration is its manager and it should plan its mineral deposits management and pursue a rational concession policy so as to ensure meeting the demand for raw-materials. This requires a precise definition of the state's dominium (ownership of deposits) and its imperium (adequate instruments of management and institutions) which serves the national interests. A major change must be made in the field of getting raw-materials from secondary sources which are so important for metals (aluminium, lead, iron, copper) and non-metallic materials from waste (gypsum, kaolin, feldspar minerals, and crushed-stone aggregates).

It becomes necessary to define the materials needed for local purposes (especially construction), the key raw-materials crucial for the nation's advanced industrial processing (e.g., iron and aluminium concentrates, potassium salts, phosphorites) and those critical minerals which are imported but the risk of their supplies is high (phosphorites, silicon, magnesium, magnesites).

National security of raw-materials and energy, as well as sustainable economic development, depend on wise management of the mineral deposits and this, in turn, depends on:

- appropriate prospecting, recognition, and documentation of deposits,
- deposit protection ensuring future access to it,
- possibly best use of the deposit during extraction,

It is especially important to ensure future access to undeveloped deposits. Protection of such deposits and promising areas cause public tension and conflicts, just like any new mining projects. This is a major problem observed all over the European Union.

Good knowledge of the whole mineral basis is indispensable to assess the national security of raw-materials and to provide adequate economic policy. The assumption that prospecting should be done only by business makes the process incidental and linked with fluctuating market conditions. Knowledge of the whole mineral resources is also necessary to attract potential concession's operators to come over and start prospecting and extraction. Forecasting the potential discovery of mineral deposits, prospecting, and preliminary recognition in this country should be one of the main tasks of the Polish Geological Survey.

This requires:

- advanced strong scientific background supporting the relevant studies,
- active geological works (especially drilling),
- continuous financing of the necessary works,
- definition of the directions of studies and licensing policy addressing the current and expected needs of the national economy.

Consistent, modern law which protects the interests of the nation, investors, and natural environment, is the foundation of the state's policy on raw-materials. The current Geological and Mining Law (in force since 2012) has been amended several times but still does not address the above-mentioned requirements. Designing adequate legal regulations should be done in a process of multi-lateral, broad debate not affected by current political and economic developments. Knowledge of the geology of deposits and mining, and of the

general mining industry, is necessary to properly design and interpret that law. This knowledge happens to be insufficient and it leads to many wrong wordings of paragraphs in the law and their wrong interpretation which makes rational deposit management difficult and leads to many wrong administrative decisions. A wrong practice of the recent years is that regulation of the Mining law's subject-matter is done with new laws, such as, for instance, putting a tax on the extraction of copper and silver ores and, after 2016, also a new tax on hydrocarbons. Such practices undermine the role of the Ministry of Environment which should be the authority that bears full responsibility for the management of mineral deposits. The state should define the legal rules of allowing investors to prospect and extract minerals from particular deposits and define its requirements of such investors. Meanwhile, however, these rules seem to be dictated by the investors. It is, therefore, necessary to adopt unequivocal provisions on mineral deposits on the state's dominium and imperium levels to address the principal clash of interests between the state (rational deposit management) and the investor (maximum profit). The analysis of these phenomena and trends leads to a conclusion that Chairman of the Council of Ministers must appoint a codification committee to work out a uniform and comprehensive „Geological and Mining Code” that would provide the necessary legal framework for the policy of raw-materials.



*Politicians should come to understand the truly long-term and international nature of raw-materials management. Ad hoc decisions often get priority over economic problems. This, to some extent, also applies to issues related to minerals. From the viewpoint of national economic development, a right policy on raw-materials is one of the fundamental problems to solve. The Polish Academy of Sciences wants to speak out its rational and professional voice in the debate on minerals.*

**Professor Antoni Rogalski, Ph.D., Eng.,**  
Dean of Department IV Technical Sciences, PAN



*The state's policy on raw-materials should be a long-term action taken to cover the population's demand for raw-materials and their products which are necessary for its current and future daily needs and for improving their living standards in line with the rules of sustainable development. This should be achieved by: providing access to raw-materials obtained from domestic and foreign sources and providing conditions for a rational use of minerals and their innovative management.*

**Professor Marek Nieć**  
Chairman, Committee of Mineral Economy Sustainable Development PAN,  
Deputy-Chairman, Minister of Environment's Mineral Resource Committee.



*The state has so far defined the legal rules on which it planned to allow investors to prospect and extract minerals from particular deposits but a recent trend is that these rules are rather dictated by the investors. It is, therefore, necessary to adopt unequivocal provisions on mineral deposits on the state's dominium and imperium levels to address the principal clash of interests between the state (rational deposit management) and the investor (maximum profit).*

**Professor Krzysztof Szamalek, Ph.D.,**  
Professor in economic geology, Warsaw University and the Polish Geological Institute National Research Institute PIB, Deputy Chairman of the Committee of Mineral Economy Sustainable Development PAN.



*Setting up a list of key raw-materials on which advanced industrial processing depends and critical raw-materials which are vital for Poland's economy but the risk of their supply interruption is high, should be the starting point for the design of the policy on minerals. One of the pillars of such a policy should be determining the current and forecast national demand for those raw-materials.*

**Krzysztof Galos, Ph.D.,**

*Professor at the Mineral and Energy Economy Research Institute of the Polish Academy of Sciences PAN, member of the Committee of Mineral Economy Sustainable Development PAN.*



*When discussing mineral raw-materials, it is important to adopt the right definition of the subject discussed, that is, what we actually mean when referring to a particular group of minerals (mineral raw-materials sensu largo), taking into consideration: the vertical structure of such a group-from their sources (primary, secondary, waste) to extraction, processing and to further processing down to the form in which these raw-materials are being used-excavated material, concentrates, metals, metal alloys, chemical compounds, etc.*

**Eng. Tadeusz Smakowski, M.Sc.,**

*Specialist at the Mineral and Energy Economy Research Institute of the Polish Academy of Sciences PAN, member of the Committee of Mineral Economy Sustainable Development PAN.*

**CONCLUSION from the debate on the  
„Problems of Poland's policy on raw-materials security – postulates of the scientific milieu”  
to be delivered to President of the Polish Academy of Sciences PAN,  
Professor Jerzy Duszyński, Ph.D.**

The current law on mineral deposits and mineral raw-materials management is scattered among many separate legal acts. This makes rational use of mineral deposits difficult and often totally impossible, especially deposits which are owned by the State Treasury. The current Mining law is inconsistent and contains many loopholes, errors, and faults. Imprecision of definitions and wordings causes ambiguity of the regulations and their interpretation, as well as problems in their application.

The Mining law is an important instrument of the state's policy on the management of mineral deposits and ensuring the nation's raw-materials security. Having stressed the above, we **request the Polish Prime Minister and the Minister of Environment to appoint a committee to codify the Mining law.**

The new law should meet high legislative standards, rely on the latest geological and mining knowledge of the rational use of mineral deposits and it should adhere to the relevant international standards. The proposed committee, made of experts in geology and mining, should be responsible for designing a

**„Mining Code”**

governing the whole area of geological and mining operations involved in prospecting, extraction, and protection of mineral deposits, as well as the proper and rational management of raw-materials.

## The 7th European Economic Congress in Katowice-April 21, 2015.

### Europe's security of raw materials



Participants in the session on Europe's raw-materials security: from left to right: Lyle Braaten – CEO, Copper Corporation; Sławomir Brodziński – Undersecretary of state, Chief Geologist, Ministry of Environment, Poland; Anna Keller-Sikora – CEO, Amarante Investments Sp. z o.o.; Jerzy Markowski – Deputy Minister of Economy 1995-1996; Marcin Moskalewicz – CEO, Oil Pipeline Operation Company „Przyjaźń;” Zbigniew Paszkowicz – Deputy CEO for prospecting and extraction, Group Lotos SA; Lars Schernikau – Director for Energy Trade HMS Bergbau AG; Janusz Steinhoff – Deputy Prime Minister, Minister of Economy 1997-2001

### Statement by Janusz Steinhoff, Ph.D., Eng. Chairman of the National Chamber of Commerce, Deputy Minister and Minister of Economy in the years 1997-2001.

**Poland needs a policy on raw-materials. To have one, this country needs a government document addressing a number of problems. The White Paper written by Sławomir Brodziński, Under-secretary of State at the Ministry of Environment and the Chief Geologist, is a step on in the right direction.**

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When compared with the standards seen in other countries, Poland is gifted with a pretty good legal regulation of mineral mining and other things related to prospecting and recognition of mineral deposits. Poland is rich in some minerals-lignite, hard coal, copper. And it is one of the biggest producers of silver. But the government document I have mentioned must address a variety of problems that will be reflected in the government strategy. I am speaking about the problem of fiscalism, land use, protection of strategic deposits, rational state geological services, and a precise division of competence inside the government administration. I would assign a special role to the Minister of Environment as owner of the natural resources



who should become the main author of the state policy on minerals, though in collaboration with the Minister of Economy who should be responsible only for regulatory, not proprietary functions.

Like all Europe, we are open to foreign investment. Our law does not distinguish between Polish and foreign companies, and sees no difference between state-run and private business. We must remember, however, that the Union law gives us many problems with, say, licensing, prospecting, recognition, and extraction of minerals from their deposits. Poland's policy on raw-materials should be compliant with the realities of the European Union's policy on minerals, coherent with its energy policy, but it also should address all the issues related to security of raw-materials which should not be confused with self-reliance, because the latter is not possible.

*I am speaking about the problem of fiscalism, spatial management, protection of strategic deposits, rational state geological services, and a precise division of competence inside the government administration.*

We can see various forms of protectionism in the global trade of raw-materials. Please remember, that China has 97% of the deposits of rare earth elements and this is a political problem difficult to solve because every country wants to consume the benefit of having such a resource.

The policy on raw-materials should also take into consideration the realities which result, unfortunately, from certain irrational provisions in the Climate and Energy Package. I think, the CO<sub>2</sub> emission is a global, not local problem and it should be solved globally. It also has some effect on the policy on raw-materials, especially in this country where most energy is generated from solid fuels like hard coal and lignite.

### ■ Union's role in building security of raw-materials

I have many times criticised the Climate and Energy Package for the discrepancy between its restrictions and the provisions of the later climate summit meetings. The Union should have earlier focused on its common energy policy and consistently built competitive markets of electric power and gas, solved the problems of secure purchases of energy carriers for Europe, gas in particular. That would have produced synergies. And we would have been able to finance the implementation of some very expensive provisions of the Climate and Energy Package.

The consequences of the Climate and Energy Package will push for heavy investment in the power generation sector requiring the construction of new and modernisation of existing production capacity. The efficiency of those installations must be increased, that's for sure. This is the only way of reducing emissions without changing the energy carrier.

And all that must be co-ordinated with the energy policy. It is difficult to invest in power plants, it is difficult to plan building new mines without knowing what will be the future cost of CO<sub>2</sub> emission and without knowing whether construction of power plants burning solid fuels will turn out economically viable. This is a problem of coherence between the climate policy and policy on energy and raw-materials. We must look at it as one whole.

I am critical about taxation on the production of copper and silver because it has strongly reduced confidence in our state. It is difficult to plan building a mine when the whole business plan can be ruined by a sudden introduction of new taxes.

As regards access to deposits, I must mention the problem of competence in the local communities and competence of the state. I remember that in early 1990s, when we were writing the first Mining law, we had

an ardent debate over the powers local communities should be given here. And we included a paragraph saying that the land-use plan must be approved by the municipal legislative body. Today, decades after, I believe this paragraph should be amended in relation to some minerals of key importance to the national economy. In this case, the central authorities should have more powers, while the empowerment of local community should consist in a reasonable indemnity system.

### ■ Instability of law

We should make the law easy to interpret and stable. The tax burden, meaning the rates and structure of the taxes, should also be made more realistic. Let us make it clear: the Union law is also too casuistic and many EU member-states also have problems with its interpretation. The desire of successive Polish governments has been to improve this law and make it even more open to foreign investors.

### Statement by Eng. Sławomir Brodziński-Undersecretary of State at the Ministry of Environment, the Chief Geologist of Poland.

**I was made the Chief Geologist nearly 1.5 years ago. So, I want to focus on initiatives put forward by the government in the recent several years and on directions which I, the Chief Geologist, imagine to be followed.**

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A number of documents were produced at various levels of state and government administration in the recent years. The one to be mentioned first because of its rank is the National Security Strategy 2014 developed by the Presidential Chancellery. Two documents, known as integrated strategies, also deserve mentioning: the Strategy for Innovation and Economic Efficiency 2013, written by the Ministry of Economy, and the Strategy for Energy Security and Environment 2014. And we must not forget to mention the National Development Strategy. It is a document initiated by the Ministry of Infrastructure which has also proposed a National Spatial Planning Concept. And I should also mention the document on Poland's energy policy in its two editions, one ending in 2030, the other-in 2050, in which the Minister of Economy plays the main role. Perhaps I will also mention an initiative of the Ministry of Environment, specifically, the concept of a White Book of Deposit Protection which is being written by authors close to my office. Let me say now, that being an engineer myself, I tend to carry out tasks, preferably small but concrete ones, rather than discuss general issues. This is why I hope the White Book, when it is finished later this year, will provide a very good material for discussion over the policy and strategy on raw-materials. We have not had one after 1989 and, I believe, it is very bad for the Polish economy and for the Polish sector of mining and geology.

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The Ministry is, in a way, responsible for the excessive fiscalism too because the charges are caused not only by taxes but also by the functioning of the Mining law. We have recently done a study to measure this burden on all the mining sectors which obtain minerals and are owned by the State Treasury. In 2014, these charges accounted for PLN700 million paid in various ways, part of it goes to the central budget, part to the National Fund for Environmental Protection, and part to the municipalities (fees for the concession to use land for mining purposes and proceeds from selling geological information). The biggest money is paid by lignite industry (over PLN290 million). We have checked these amounts for hard coal mining recently and

found them 50% smaller. I do not want to say whether it is much or not too much in the context of the mining sector's vast operations, especially in the phase of prospecting and recognition.

Let me try to wrap up the discussion of concessions. A Canadian and a U.S. investors spoke about two similar issues, that is, the problem of duration of the concession-granting process. Please note what has been emphasized earlier, that the amended Mining law in last January introduced the open door procedure in which competing applications are being compared. This will end the wars between investors applying for concession areas which are close together. In the open door procedure, applicant A will ask for a concession for prospecting and recognition in a particular area. His application will be published, the competitors may apply for the same area and the same mineral (mind you, sometimes they apply for different minerals). And then, the concession-granting authority can choose between those two using precise and publicly-known criteria. And I fully support what Mr. Schemnikau was saying that Poland badly needs a system protecting her strategic deposits without distinguishing between fuels and non-fuels, just like, in my opinion, the policy on raw-materials should not be distinguished in this way either. But a situation in which a village chief shapes the national policy on raw-materials is beyond comprehension. It must be solved in some other way and our White Paper initiative serves this purpose because it prepares the political circles and all the other stakeholders, including the local residents, for a situation where the state's powers are carried out jointly with adequate compensations paid to the people for the defined groups of minerals. I am speaking of the strategic deposits only, not about the thousands of them. The strategic ones make up a group of a dozen or so.

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One thing has not been mentioned but it should be. It is the ecology of the broadly interpreted mining operations. Surely, being the Chief Geologist, an educated mining engineer employed by the Ministry of Environment, I appear in a dual role. Please, remember that 40% of Poland's territory is subject to various forms of environmental protection. In Finland, which is often mentioned here as an example to follow, environmental protection covers 9% of the country thanks to that country's excellent raw-materials policy and its similar implementation. This area in Denmark, an even better ecological example to follow, is even smaller. We should, therefore, understand that pursuing a concession policy in this country is a huge challenge for the concession-giving authorities.

*Text compiled from transcripts of video footage released by Imago PR, the company serving the 7th European Economic Congress organised by PTWP Group S.A. Full transcripts of all presentations delivered at the session Europe's raw-materials security are available on: [www.geoland.pl](http://www.geoland.pl)*