GREEK EXTRACTIVE INDUSTRY

INTERNATIONAL ENVIRONMENT PROFILE – PROSPECTS

MINISTRY OF ENVIRONMENT ENERGY & CLIMATE CHANGE

In cooperation with the State, the society and the enterprises of the extractive industry sector, we lay down public policies in order to turn the mineral resources into a catalyst for the national economic recovery and growth.

The three axes of the policy that is being implemented currently are the following:

1. To promote and reveal mineral resources and assign their exploitation through international tenders in order to maximize the benefits for the national economy.
2. To valorize the mineral resources through rational exploitation processes and apply the principles of sustainable development.
3. To ensure significant offsets for the local society and socially fair allocation in conformity with the relevant national revenue.

We laid down the foundations for an integrated Mining Policy. The recent new Regulation of Mining and Quarry Works is a modern tool for safe and rational extractive works based on the principles of sustainable development.

Moreover, the new Quarry Law shall be finalized soon.

We promote International tenders for the exploitation of all financially attractive state owned mining areas.

Also, we dynamically integrated geothermal energy, the most neglected type of green energy, into the country's energy balance, through two international concession rounds.

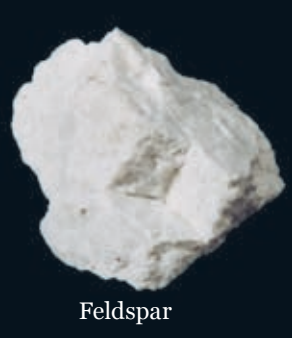
Our objective is to develop an economy that shall utilize, while respecting, the natural resources of the country thus contributing to upgrading the quality of life of the local communities. The available natural resources allow us to exploit them in order to face both the financial crisis and climate crisis change.

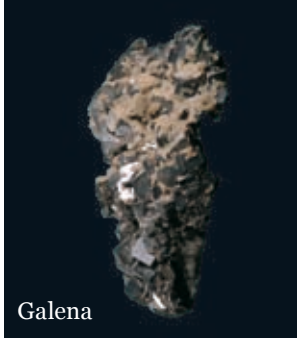
If based on a vision, plan, determination and constant persistence, the Mineral Raw Materials can lead us to the top and help us meet the challenges related to our modern, sustainable and competitive economy.

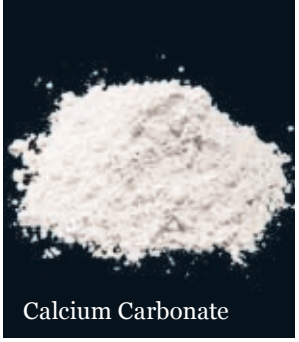
YIANNIS MANIATIS

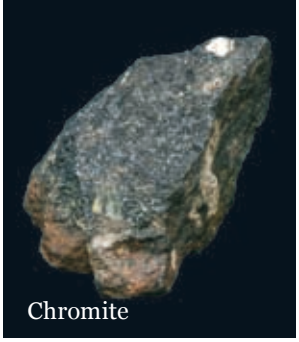
THE DEPUTY MINISTER OF ENVIRONMENT,
ENERGY & CLIMATE CHANGE

Ores and minerals of Greece


Feldspar


Galena


Calcium Carbonate

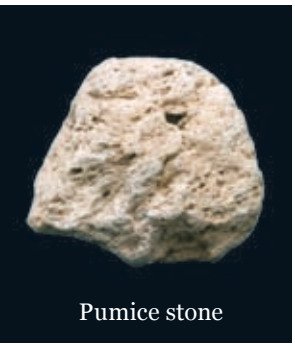

Chromite


Attapulgite


Bauxite

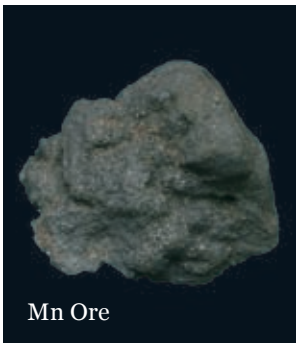

Pyrite


Kaolin


Pumice stone


Lignite


Magnesite


Mn Ore

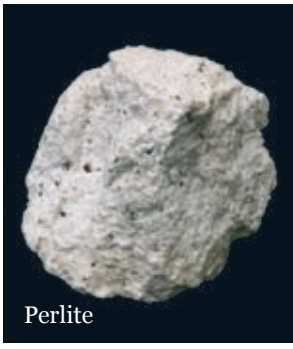

Marble


Sulfure


Bentonite


Iron-nickel ores


Olivine


Perlite

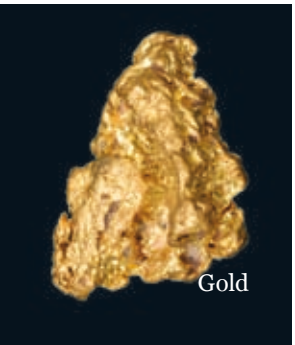

Huntite

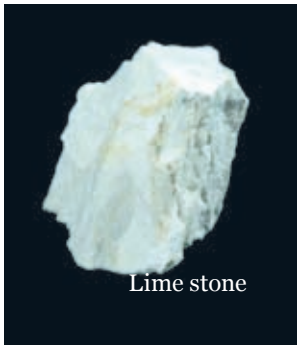

Talk


Fluorspar


Quartz


Sphalerite


Gold


Lime stone


Cupyrite


Pozzolan


Gypsum

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01 Introduction

The adequacy of Mineral Raw Materials is a prerequisite for the sustainable function, prosperity and progress of modern societies.

Greece is one of the EU Member States that has significant mineral resources with great industrial interest and a wide range of applications

The adequacy of Mineral Raw Materials (MRM) is a prerequisite for the sustainable function, prosperity and progress of modern societies. All aspects of the daily life, growth, progress and protection of the environment depend essentially on the availability of the MRM. The affordable MRM and the reliable and environmentally safe access to them are of paramount importance for the sound functioning of the economy both at European and global level. Such fields as constructions, chemical products, car manufacture, energy and renewable sources of energy, high technology electric appliances and electronics etc. depend exclusively on the availability of the MRM.

Based on the characteristics of the global economy, in particular those of the last decade, it is expected that the demand for MRM will continue to grow faster than before mostly because of the increase in the consumption level in the fast developing economies of China, India, South-Eastern Asia, Latin America and Russia. Today, it is clear that meeting the needs of a society for MRM in a sustainable way presupposes a concrete strategy whose main pillar is a targeted policy for the exploitation of its mineral resources

The role of the extractive industry is to satisfy a great number of these fast increasing needs. Nonetheless, the great demand for minerals, the specificities of the extractive activity to be undertaken exclusively in areas where there are deposit sites, the global environmental issues affecting the social impact of the activity, the multiple barriers that hinder access to them and are accentuated by the competition with other land uses and the imposition of restrictive measures or distortions in the international trade, in conjunction with geopolitical interests, demonstrate the need for applying best sustainable practices for MRM exploration and exploitation, strategies for the promotion of their efficient use and recycling and land-use planning policies for minerals.

In particular, with regard to the European Union (EU), the demand for raw materials is much higher than the respective production. As a result, the EU is fully or greatly dependant on the raw materials imports. Any disruption in the timely and on-going supply of the European market may affect its economy and its growth rate adversely.

Therefore, the EU has already undertaken initiatives to address the issue of the short and long-term availability of the necessary mineral resources actively. In this context, through its communication COM2008/699 “The raw materials initiative - meeting our critical needs for growth and jobs in Europe” (Raw Materials Initiative - RMI) to the European Parliament and the Council, the European Commission raised once again the issue of the shift to an economy based on a more efficient utilization of the European MRM under ‘sustainable’ conditions for both the deposits and the environment while stressing the need for securing a reliable and undistorted access of the EU to the raw materials of the international market.

More specifically, the successful implementation of the second pillar of the European Raw Material Initiative (“Fostering sustainable supply of raw materials from European resources”) requires from the Member States to plan their respective national policies with the objective of ensuring smooth access to the EU raw material deposits and sound production of the MRM that may be extracted from these deposits.

To this end, the European Commission suggests the adoption of indicators (the European Commission Feb 2011 Communication "Tackling the challenges in commodity markets and on raw materials") that will enable the Member States to map the implementation course of best practices, as formulated by the respective ad hoc Working Group, which was set up within the framework of the implementation of the second pillar of the RMI.

Also, the dialogue between European institutions, Member States and stakeholders about the development of a specific policy aiming at creating a Europe free of the pressing need to find huge quantities or resources (raw and other materials) in order to support the growth of its members is underway. The suggested policy is defined as a 'Resource Efficiency' and its main objective is to optimize the use of resources in all EU productive activities and thus reduce essentially the needs in the primary production of raw materials, reduce waste, protect the environment and improve the quality of life.

The Greek extractive industry is an important sector of our country's economic activity providing the necessary raw materials to a number of fields that are essential for the national economy, such as power generation, cement and aluminium industry, constructions and construction materials industry etc. Also, it is a highly extroverted field since its exports account for 65% of its total sales, which makes it an important production link both at the European and the international market.

In the above context, to respond to the situation and the modern needs, the Greek State developed, in cooperation with the Ministry of Environment, Energy and Climate Change executives and productive, professional and scientific bodies (Greek Mining Enterprises Association, Institute of Geology - Mineral Exploration and Survey, Technical Chamber of Greece, Geo-Technical Chamber of Greece) the main axes, the necessary directions and policies and the specialized actions required by a National Policy (NP) for the sustainable exploitation of the national mineral resources aiming at harmonizing the policy for the MRM with the principle of sustainable development and its coupling with the other national sectoral policies.

02 The **importance** of the **mineral raw materials** for the modern society

The material objects and substances that are mostly used on a daily basis are products or constructions based on mineral resources. This is not always easily understood because the mineral resources are not often used in their natural form and, therefore, they are not easily recognizable by the broad public. The dependence of the modern society on the mineral resources has greatly increased. This trend is not expected to change mostly because of the ever increasing population and the improvement of the quality of life in the developing countries.

It has been estimated that the average man uses about 400 tons of mineral resources during his life. Likewise, for a 2 gr electronic chip, we need around 1660 kg of minerals, fuels and chemicals and for constructing one km of national road, we need 30 000 tons of aggregates.

The prosperity, the security and the progress of the modern society depend to a great extent on the use of raw materials. The modern society uses minerals for building the main networks, constructions and infrastructure (houses, buildings, railway and road networks, airports, ports, water and energy transport networks etc.), for generating power, for processing waste, for the industrial production of wide consumption products, machinery, equipment, vehicles, chemical products, medicine, cosmetics, digital technology products and many other goods. Also, satisfying the essential nutrition needs through the food production is mostly based on mineral raw materials for the production of inorganic fertilizers, agricultural machinery, pesticides, irrigation systems etc.

Our needs for mineral raw materials and their products have increased due to the modern requirements and the adoption of technologies aiming at achieving the best protection of the natural environment. For instance, the use of bentonite, talc and calcium carbonate for paper recycling, bentonite for sealing the landfill base or the nuclear waste depositing sites, zeolite and bentonite for water cleaning.

Moreover, apart from the increased needs for basic metals and ores, the society is increasingly dependent on the so-called “high-technology metals”. These are found in relatively rare natural materials (Rare Earths, Platinum Group Elements etc.) that are necessary for manufacturing high technology products, including printed circuits boards, semi-conductors, high performance permanent magnets, mobile telephones, TV and computer screens, domestic appliances, photovoltaic systems, wind turbines and hybrid - electric cars.

03 Global challenges

The on-going increase in the global population, its particularly quick urbanization and the increase in the goods utilization rate in the modern life lead to an unprecedented demand for metals, industrial minerals, ornament stones, building materials and aggregates. On the other hand, with the course of time, the conflicts in the land uses get increasingly intense and the licensing processes for the extractive works more and more difficult, demanding and particularly time-consuming thus leading to reducing further the raw materials availability degree.

In spite of the continuous increase in the demand and the licensing-related difficulties, satisfying the future needs of the international society for MRM could be achieved through an increase in their primary production, their more efficient use and the improvement of their recycling processes and technologies.

The increase in the MRM primary production requires intensifying the research aiming at discovering new deposits, improving the exploitation of the existing exploitable reserves and exploiting at bigger depths deposits or deposits of poorer quality that due to technological developments, their geographical position, the demand and the price levels, the restrictive trade measures and other policies from producer countries may become economically exploitable.

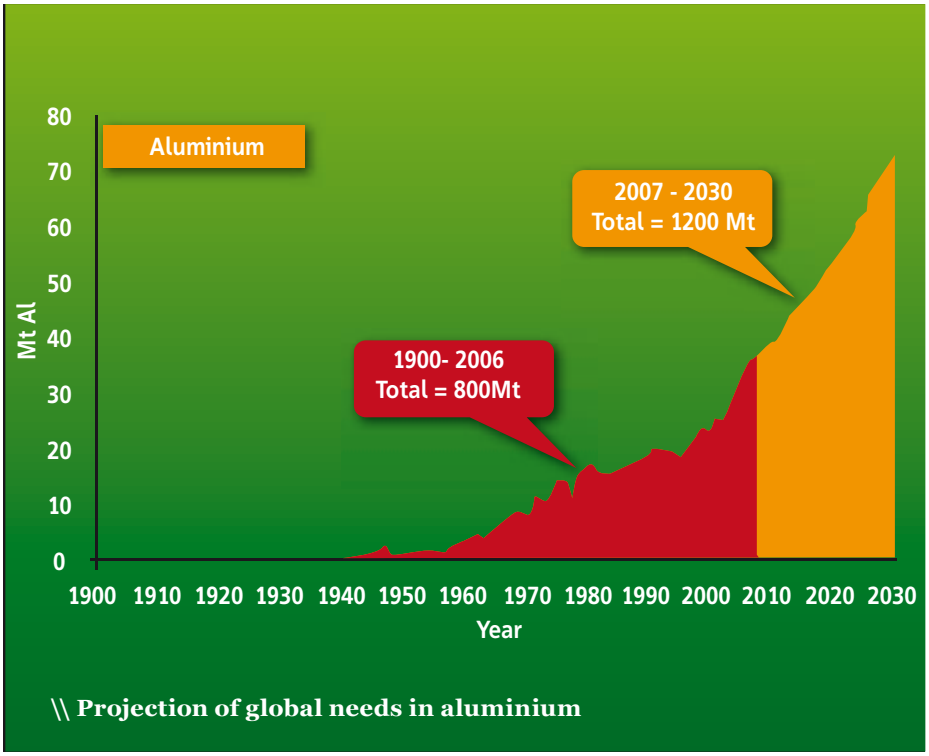
Given the foregoing trends, we expect in the future, on the one hand, a constant increase in the price of the mineral raw materials and, on the other, the constant improvement of the recycling efficiency and the MRM reuse in general as well as the exploitation of the secondary raw materials and the research on alternative materials.

The mineral raw materials are non renewable natural resources. Nevertheless, the products made by them have a limited, medium or great potential for recycling depending on the nature of the raw materials, the nature of the products and their final use.

For instance, the produced metals have a great recycling potential and a long life cycle. Yet recycling can only respond partially to the increasing demand for metals. As a typical example, we can refer to copper. Even though 80% of the produced copper is recycled, the recycled quantities only meet 1/3 of the current needs because of the fast increase in the demand for copper and the fact that its products average lifespan is higher than 30 years. Nonetheless, the increase rate of the demand for metals may slow down through an appropriate eco-design of the products and the improvement of the recycling efficiency.

The recycling of other categories of materials such as those originating from industrial minerals or the ores themselves if used directly for industrial purposes, is more difficult and very often practically impossible. In cases like glass, recycling saves mineral raw materials while in cases where industrial ores are used in direct uses (for ex. perlite as a construction material, attapulgite as an absorption material etc.) their recycling, recovery or reuse is particularly limited.

The possibility of recycling aggregates from old constructions or other sources is limited due to the quality requirements that need to be fulfilled, if they are to be used in anti-seismic constructions in countries with a high degree of seismic activity.



\\ **Projection of global needs in aluminium**

It is more imperative than ever, that countries develop a coherent mining policy for the exploitation of their mineral wealth

modern civilization uses more complex technologies aiming at limiting the environmental footprint of the products and creating more environmentally-friendly infrastructure such as power generation without using fossil fuels.

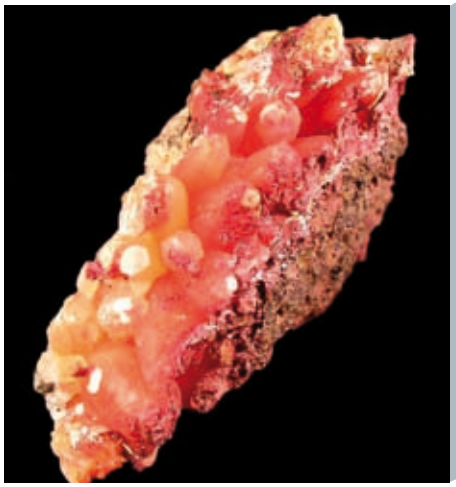
Nonetheless, the changes in the productive structures and requirements create new needs for mineral resources. The advantages of these changes include a more qualitative and quantitative diversification in terms of the needs for raw materials.

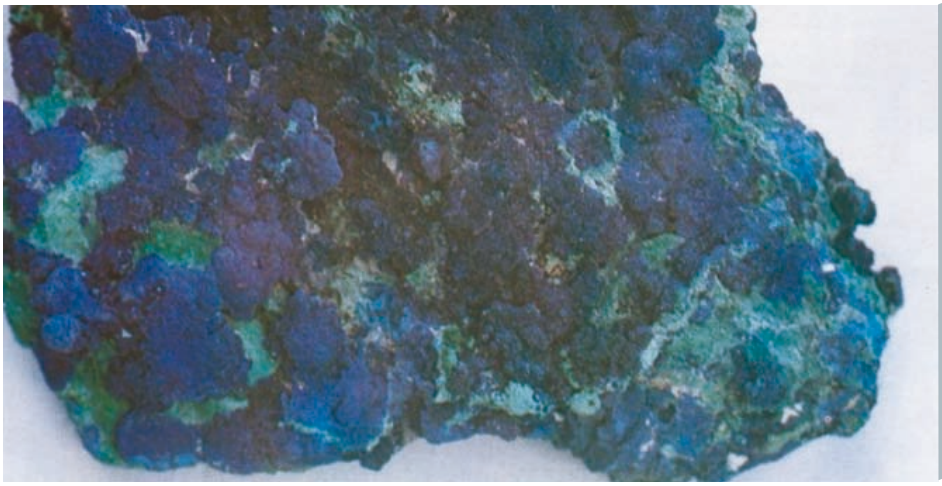
A typical example is the progress of the technologies used at the exploitation of renewable sources of energy (wind turbine, photovoltaics etc.) and the manufacture of hybrid cars that created new needs for rare earths in such quantities per year that were unthinkable twenty years ago.

The recycling of such materials can only satisfy a small part of the global needs. Covering the total demand requires large-scale exploration and extractive works and effective techniques for recovering them from waste and discards.

It is also known that such mineral resources as the rare earths that are required for high technology constructions or technological innovations have a limited availability mostly due to geopolitical and economic interests and to the industrial competition among big industrial powers on the world stage. Therefore, the smooth supply of such materials, especially in European countries, which have very small reserves compared to their needs, is considered to be particularly insecure.

Based on this, within the framework of the follow-up of RMI, the European Commission conducted a study, which resulted in the identification of the so-called "Critical Raw Materials'. Specific measures must be taken in order to satisfy the needs of the European industry for these materials either through the application of the adequate policies towards the producer countries or research initiatives aiming at their substitution by other less rare materials. To conclude, it is pointed out that the success of securing the supply of raw materials depends on their availability at that period of time, which, in turn, is determined by a number of decisive factors such as the available deposits, the current technological and economic conditions, the use and trade policies for RMR applied in each country etc. That is why, it is more imperative than ever that countries develop a coherent mining policy.





04 The **European policy** on the mineral raw materials

Since 2007, the European Union has acknowledged that the availability of mineral resources is a very important factor for prosperity and progress. The consolidated net turnover of such fields as constructions, chemical products, car manufacturing, aeronautics, machinery and general equipment constructions amounts to about 1.3 trillion euro and employs 30 million people.

In the recent years, some developing countries like China and India consume radically increasing quantities of raw materials and, as a result, have given a highly strategic character to their mining policies. In the medium term, this shall undoubtedly create competitive difficulties to the supply of raw materials by the European countries since their industry is greatly dependant on the imports of such materials.

The EU Member States consume around 25-30% of the metals produced worldwide, while, on the contrary, the metal production in the EU accounts for only 3% of the global production. Also, many critical metals are not at all produced in the EU. The share of the primary production metals and minerals in the total EU consumption is falling slowly as recycling becomes more efficient and new substitutes for many materials are invented.

However, it is expected that, given the market instability, the European industries will remain vulnerable for a long time while it is most likely that their supply flow with the necessary mineral raw materials will be disrupted.

Likewise, the sustainable supply of aggregates faces important challenges in Europe due to the big regional differences and discrepancies in terms of available exploitable deposits.

To improve the long-term availability of raw materials, the Communication of the European Commission to the European Parliament and the Council: The raw materials initiative — meeting our critical needs for growth and jobs in Europe" (Raw Materials Initiative) stresses that:

«Securing reliable and undistorted access to raw materials is increasingly becoming an important factor for the EU's competitiveness and, hence, crucial to the success of the Lisbon Partnership for growth and jobs».

This initiative has now become a policy on raw materials through the joint decisions of the EU institutions.

It is based on three specific pillars:

1. **Ensure access to raw materials from international markets with transparency and under the same conditions as other industrial competitors.**
2. **Set the right regulatory framework conditions within the EU in order to foster sustainable supply of raw materials from European sources and establish a unique EU geological database.**

3. **Boost overall resource efficiency and promote recycling to reduce the EU's consumption of primary raw materials and decrease the relative import dependence.**

Furthermore, the Commission recommends the following priority actions:

- Adoption of integrated measures by both the EU and the Member States to promote further the exploitation of significant European deposits of mineral resources.

A balanced relationship can be reached between the development and the protection of the enviroment.

The valorization of the countries' natural resources must be in accordance with the minimization of the environmental footprint

- Parallel support of the know-how and the development of new technologies
- Encourage transparency at the global market or raw materials.
- Waste reduction.
- Maximum exploitation of the produced materials.
- Maximum decoupling of the production from the consumption of natural resources.
- Promotion of sustainable exploitation of the mineral resources and recycling.
- Determine the raw materials that are critical (strategic importance) for the EU.

To specialize this policy, the European Commission took the following action:

- Following a relevant analysis taking into consideration all the data about the uses of the raw materials in the European industry, it identified fourteen "Critical Raw Materials", the availability of which greatly affects the smooth operation of the EU industrial production (Report on critical raw materials). To eliminate the risks related to any lack of such materials, the European Commission proposes specific policies on their supply, their more effective recycling, waste and discards utilization and, finally, research on substitutes.

- To implement the second pillar of the RMA and given that according to the European Commission it is necessary to ensure a favorable operation framework for the extractive activity through the optimization of the relevant legislation, the licensing process and the land-use planning, a working group was set up to record and agree upon the best practices between Member States, which were then recorded by the European Commission in an ad hoc document (Report "Improving Framework Conditions for Extracting Minerals for EU – Exchanging best Practice on Land Use Planning, Permitting and Geological Knowledge Sharing") in order to serve as guidelines for the implementation of the policy for the optimal use of the European mineral resources.

The document highlights the importance for Member States to develop a targeted and concrete policy for the exploitation of the mineral resources and establish a geological and spatial database in order to get information about the European resources of raw materials and their exploitation possibilities.

In this context, the identification of the European indicators that will help assess the application of the best practices is underway.

Moreover, the European Commission issued guidelines on the application of NATURA 2000 decision-making framework in the case of extractive activities in the NATURA network (Non energy mineral extraction and NATURA – Guidance document).

It should be pointed out that the MRM are one of the main subjects and development objectives of the new European strategy on Innovation for 2020 (Europe 2020- Flagship Initiative Innovation Union). To this end, the role of the recent Communication of the European Commission ("Tackling the challenges in commodity markets and on raw materials"-(COM 25/2011)) is important. In addition, the Commission is considering launching a new partnership, "European Innovation Partnership: Non Energy Raw Materials for a Modern Society" whose main goals include the development and application of new environmentally-friendly technologies on the exploration, extraction, processing, waste management and the search for substitutes for at least three critical raw materials.

Additionally, the European Commission proposed to the other European institutions an enlarged policy on the resource effectiveness, including the MRM called Resource Efficiency with the objective of developing a single EU development strategy.

In this regard, a broad dialogue has been initiated among the Member States and the stakeholders.

05 The **Greek Mineral Resources** and their importance for the **National Economy**

Greece is one of the EU Member States that has significant mineral resources in terms of quality, quantity and variety of ores and minerals with a great industrial interest and a wide range of applications. This is a fact, which, if coupled with the needs of the European and international community for MRM, offers comparative advantages to our national economy.

The Greek extractive industry is an important sector of our country's economic activity (together with the corresponding manufacturing sector it accounts for 3-5% of the GDP) providing raw materials to a number of other equally important sectors such as power generation, cement industry, building/construction industry, non-ferrous metals (aluminium, nickel etc.), stainless steel industry etc.

It must be stressed that our country has sufficient aggregate construction materials while it also produces significant metallic ores, metals and industrial minerals, some of which are highly ranked worldwide in terms of reserves and output. Indicatively, it is pointed out that Greece is the only country in the world producing huntite/hydromagnesite, has the largest production of perlite, the second largest production of pumice stone and bentonite and the largest exports of magnesite in the EU. All the above minerals are of unique quality and are widely used in numerous industrial and environmental applications.

The country also has significant lignite deposits with a yearly production of over 50 million tons (5th largest worldwide), which allows it to satisfy most of its power generation needs.

The extractive sector is highly extroverted as the exports of primary and processed materials account for over 65% of its sales, while some companies of this sector are highly ranked at the European and international markets of bauxite, alumina, aluminium, nickel, caustic magnesia, bentonite, perlite, pumice stone and marbles.

In the last decade, there has been a trend of using industrial minerals in innovative, specialized environment-driven and high value-added uses (e.g. bentonite, perlite, attapulgite, amphibolites, olivenite, calcium carbonate, industrial clays for special uses etc.). As concerns the typical fields of minerals exploitation in our country, we may state the following:

- As far as bauxite is concerned, which is the raw material used for the important domestic production of alumina and aluminium, our country holds the 8th position amongst the countries with the largest reserves and is the EU's major bauxite producer (the output is permanently over 2 million tons yearly). Furthermore, given that the Greek bauxite belongs to the category of the monohydrates compared to most widespread deposits containing trihydrate (3rd global producer in this material), is a raw material of paramount importance for the stainless steel industry and the high alumina cements in which Europe has a pioneer position in the global market.
- In the nickel field, the production of ferro-nickel (FeNi) satisfied 7% of all the needs of the European market (2-3% of the western world) making it one of the major European producers and the only EU Member State producing its own (domestic) raw materials (Greek ferro-nickel deposits-laterites). The total output (17-20 thousand tons of nickel in alloy) is exported to the European stainless steel industries because the main

product, i.e. nickel. is, alongside the ferro-chromium, the main raw material in the stainless steel production.

- In the field of magnesite and the production of magnesium products, our country has important exports and is ranked among the world's major producer countries.

In the traditional marble field, our country is still a leader in the international markets thanks to its quality and rich variety of colors and types of Greek marbles, especially the white and the light-colored ones. Despite the recent adverse conditions because of the intense international competition, the crisis in the building and construction sector and the environment and licensing-related requirements, there are still about 190 quarries in the country with a total output of marble products of 1 million tons.

It should be highlighted that our country has important deposits of mixed sulfide minerals (lead, zinc, copper containing silver and gold) and epithermal gold, in many areas of Northern Greece (Halkidiki, Evros, Rodopi, Kilkis), which give great prospects to the mining sector. The value of the metals contained in the proven polymetallic reserves and also gold and silver is estimated to be over 20 bn euros with gold quantities amounting to 8.5 million ounces and silver ones to 65 million ounces.

Only the exploitation o the proven gold-silver resources in Northern Greece can turn our country into one of the largest precious metal producers in the EU.

Also, there is a major exploitation in the field of aggregates - construction materials where, in the recent years, the annual production varied between 50-90 million tons.

Besides, our country has a considerable geothermal potential that is also suitable for power generation in various areas e.g. the islands of the volcanic arc of the Aegean Sea (Milos, Santorini, Nisiros), Lesvos, Chios, Samothrace, Alexandroupoli etc. Such islands as Milos, Santorini and Nisiros have high enthalpy geothermal fields with a 150-350 oC temperature and a total geothermal potential of at least 250 MW(e).

It is pointed out that the geothermal energy is a mild renewable source of energy, whose use for power generation or thermal applications, brings about important environmental benefits. The use of the geothermal energy shall be intensified at a national level through two rounds of international tenders on the lease of research rights of the geothermal potential.

The extractive industry (lignite mines included) and the main metallurgies of the country employ directly 20-23 thousand employees (all forms of employment) and indirectly 90-100 thousand people.

\\ Restoration of quarry "Greek Magnesite"

The extractive industry is mostly developed in the countryside and does not require any particular incentives. It tries to generate value often in inaccessible and distant regions without the necessary specialized workforce which is valorized and evolves with the help of the scientific personnel that it employs.

Following these efforts dating back from the establishment of the Greek State, two centuries ago, the country's natural geological resources have become an economic wealth that is valuable for the national economy, the progress of the province and for securing the main material resources and national revenue for the Greek economy.

With respect to the essential question of employment, given that in average each job position in the mining sector supports about 4 jobs in the tertiary sector, the social and development contribution of the extractive works becomes of paramount importance for the country, especially the province where most of the mining enterprises are found. If we add to these the contribution of the units producing value-added products from the national industrial processing of domestic extracted materials (e.g. aluminium production from bauxite, nickel production from laterite, cement production from limestone etc), the role of the extractive sector becomes particularly important for the country's industrial base and national economy.

Annex I presents maps of the mining and quarry activities of the country.

Annex II illustrates the main MRM produced in our country.

There are indicative data about the production and exports in the last five years per sector and material. The data come from the statistical database of the Department of the Policy of MRM at the Ministry of Environment, Energy and Climate Change and the reports that are published on a yearly basis by the Greek Mining Enterprises Association.

The importance degree of the Greek mineral resources varies depending on the use, the origin, the consump-

tion place and the processing degree. This variation may be summed up as follows:

- Mineral resources for energy production
- Mineral resources produced and consumed as such at a local – regional level.
- Mineral resources produced at a local level but consumed at a national level after processing in areas that are close or distant from the extraction site.
- Mineral resources produced at a local level and exported without further processing.
- Mineral resources produced at a local level and exported in third countries after a domestic processing in areas that are close or distant from the extraction site.

Based on the above classification and importance of the country's produced mineral resources and apart from the 'critical mineral raw materials' at a EU level, there are four MRM importance degrees for the Greek economy.

- Energy ores that support essentially the power generation of the country.
- Metallic and industrial minerals that may be considered as 'important' for the national economy given that they are a main factor supporting the domestic industry and offer competitive advantages compared to third countries in terms of sufficiency and exports (bauxite, magnesite, ferronickel minerals, perlite, bentonite, mixed sulfide metals, gold).
- Marbles that are largely exported and satisfy the needs of the Greek market.
- Other MRM satisfying mostly the local and regional needs but also the needs of the domestic cement industry for raw materials.

As a result, the national mining policy on mineral raw materials needs to take into account not only the key points of the European initiative for raw materials (R.M.I.) but also the foregoing analysis on the importance of the various mineral resources with particular emphasis on materials affecting directly the Greek economy and regional development. By doing so, the national policy on mineral resources will be able to lead to the adequate planning for the exploitation of the country's mineral resources in accordance with the standards of European and other countries with significant mineral resources.

The long-term objective of the national policy on the exploitation of the country's mineral resources is to secure the smooth operation and further development of a domestic extractive sector in order for it to be sound and dynamic, able to meet the domestic needs for raw materials, be competitive at an international level and able to develop important exports, support the national and regional development, exploit rationally the available natural resources, reduce its environmental footprint and ensure the social acceptance of its work.

As established from the above, the Greek extractive sector has always had a particularly dynamic presence thanks to the adequate quantities of proven and potential mineral reserves, the infrastructure and the significant existing extraction works, the remarkable experience according to the European standards, the know-how of the extraction process and exploitation methods, the existing specialized personnel and the technologically advanced equipment used in the operational works. The exploitation of our mineral resources is a national choice within the framework of the principles of sustainable development and the new European policy on the MRM, as broadly defined above.

06 The Greek **extractive industry** and sustainable **development**

The need for a more balanced approach and the setting of economic, environmental and social parameters for securing sustainable development seems to be imperative.

The extractive activity is per se inextricably related to the concept of sustainable development as it deals with non renewable resources while having to secure the on-going supply of the necessary materials to the society by guaranteeing the adequate reserves required for meeting the current and future needs and making efforts to minimize its environmental footprint.

A national policy for the exploitation of the mineral resources must be compatible with the strategy for sustainable development that was adopted by the EU. This policy must focus on the more effective exploitation of the mineral resources, the improvement of the environmental performance, the safe operation of the mines and the accidents prevention, the mining waste management and the recycling process. A main factor for the efficient implementation of this policy is the acceptance of the extractive activity by the local societies as a balanced growth factor.

More precisely, the main axes of an integrated policy for the MRM within the framework of sustainable development are:

- Improvement and dissemination of geological knowledge.
- Access to the deposits through an adequate land-use planning policy.
- Establishment of a modern legal framework providing for clear licensing processes to be implemented within a reasonable time frame and including commitments about the protection of the environment.
- Set up effective mechanisms supervising the application of the environmental terms throughout the exploitation period and 'after closure care'.
- Rational management of the existing reserves and research & technology development for more efficient extraction and processing processes.
- Exploration for new MRM deposits.
- Use of alternative materials to substitute the existing ones, development of new uses for the existing products, recycling.
- Ensuring good health and safety conditions at the extraction sites.
- Rational waste management (production prevention, safe storage or disposal, beneficial use etc.).
- Environment protection, restoration and care after the completion of the extractive works ('closure plan').
- Monitoring and control of the law enforcement.

Therefore, the policy of sustainable development for the MRM must ensure the implementation of the European directives, the main axes of the European initiative for the raw materials and suggested 'best practices' of the European Commission forming a new modern orientation framework of exploration and exploitation of the mineral resources.

A prerequisite for the sustainable development of the extractive industry and the achievement of the goal to meet the needs of the society in raw materials is the discovery of new deposits. To this end, it is necessary to make an important investment for carrying out exploration in order to identify new exploitable deposits and maintain the necessary production in MRM.

This process is long, entails a high risk and requires large investments. That is why the exploration must be supported by the State and the society through the acknowledgment of the importance of the extractive industry for the smooth growth and the development of incentives and a clear legislative framework that shall govern the acquisition of rights for exploration and exploitation and shall establish effective, non-time-consuming licensing procedures.

Even though the extractive companies invest regularly on the exploration for new exploitable deposits, the main knowledge on mineralogy and reserves for each country is provided by State agents that keep on enriching their knowledge about the national mineral resources with the assistance of innovative technologies thus contributing decisively to the attraction of private investments for further exploration and exploitation of MRM deposits. As a result, it is necessary to study further the potential of the country's deposits through new research programs by the competent bodies (Institute of Geology - Mining Research and Survey) using the most advanced methods (e.g. remote sensing, geophysics) and the creation of an open access geology database.

An essential factor of the sustainability of the extractive activity is the 'social approval' that is indispensable for its sound operation.

Informing all stakeholders is essential for drafting policies on the management of mineral resources while the coexistence of mining activities and local societies is an issue of multilateral interdisciplinary approach and an objective that is promoted through institutional tools within the EU (Aarhus convention on the environmental information, Directive 2004/35/EC on the environmental liability etc.).

The policy on the sustainable development of the MRM must acknowledge the need for promoting the social dialogue with all stakeholders (local society, NGOs, enterprises, workers, provinces, central and regional administration) in order to get the 'social approval' after a consensual consultation, which will also help the enterprises of the sector be financially sustainable in the future.

Within the framework of the efforts aimed to reduce the environmental footprint of the extractive activities, it is necessary to apply new more effective environmental restoration technologies and develop alternative land uses of old exploitation sites to the benefit of the local society.

The harmonization of the extractive activity with the principles of sustainable development led the enterprises members of the Greek Mining Enterprises Association to the adoption of a Code of Ten (10) Principles of Sustainable Development, which provides for the constant improvement of their performance in all economic, environmental and social fields and the establishment of the publication of the final results based on yearly measurable indicators in the Annual Report of the Association (see Annex III).

Also, many companies of the extractive sector were certified on a voluntary basis with quality management, environment and health & safety standards.

With respect to the sustainable development of the aggregates sector, apart from the foregoing general policies, and given that these materials are plentiful all over Greece practically, the objectives of the relevant policy must include inter alia the following:

- Securing sufficient quantities of aggregates meeting the adequate quality standards for the sound operation and development of the urban areas both at a local and regional level. To this end, it is necessary to ensure a long-term planning of production areas, sound and lawful operation and management practices in conjunction with acceptable prices for the final consumer taking into account the location and distance covered.
- Rationalization of the current aggregates production and marketing system and strict observance of a clear licensing framework both for the operation of the quarries and the quality standards of the produced materials, in order to give the enterprises of the sector the possibility to invest on the use of better and more environmentally-friendly production technologies (including recycling), while eliminating the unfair competition.

An important factor for achieving the objectives of the extractive industry within the framework of sustainable development is education and innovation.

With regard to the required workforce, the Greek extractive sector faces many problems related to the lack of personnel in many of the professional specializations that are essential for its operation.

Even though the high level scientific and technological personnel is sufficient (there are five universities and one higher education school of geosciences in the country), there is a lack of personnel with specific skills and knowledge on this field. There is also lack of specialized technicians (machinery operators, superintendants, shot-firers etc.). It is therefore necessary to train workers on the modern extractive practices and technologies.

Solving this problem requires a long-term process and adjusting all educational programs into the production requirements. Establishing special training schools for specialized workers and low level supervisors can be a solution to the problem.

The achievement of the sustainable development goals by the extractive industry requires the emergence of new generations of executives and scientists that will focus on its priorities by means of adequate educational orientations aiming at maintaining the geoscientific knowledge in Greece at a high level and promoting research and innovation at cutting-edge fields like:

- Non disturbing and technologically advanced exploitations.
- Innovative production processes, automation and optimization of the mining metallurgical process.
- Eco-efficient use of materials, energy and water.
- Minimization of emissions.
- Optimization of chemical –industrial processes.
- GIS.
- Mining research innovative technologies.
- Improvement of use of Greek raw materials – new uses, competitive advantages, increase in the value added.
- Recycling and alternative raw materials.
- Management, measuring, evaluation and remediation of the environmental impact.

07 Development potential of the Greek extractive industry. Barriers, challenges, prospects

Thanks to its current dynamics, the size of the existing and potential exploitable national reserves of minerals and ores, the infrastructure and important existing extractive projects, the significant - according to EU standards - mining experience and the advanced know-how of extractive processes – exploitation methods - especially in the underground works, the existing specialized personnel and the cutting-edge equipment used in the operational works, the Greek extractive sector has become essential for the development of the country, the national economy and the regional development and boasts international recognition at the European and global market.

Its position can be strengthened even further by ensuring, in the future, the raw materials that are required for the development of the domestic and European industry and contribute substantially to the global market.

To this end, it is indispensable to solve its long-standing problems and lift the current barriers while addressing the relevant challenges.

The main problems are the following:

- The lack of a coordinated policy for the development of MRM by the Greek State. The adoption of this national policy on the exploitation of the mineral resources will make up for this lack. The challenge that still needs to be faced is the full and effective implementation of this policy as soon as possible.
- The time-consuming and complex permit granting process for extractive projects and the frequent unpredicted developments and reversals. Today, there is a new law on environmental permit granting (Law 4014/2011) that seems to address the existing problems. The challenge lies in implementing this Law through the necessary Ministerial Decisions and Presidential Decrees and putting it in place as soon as possible.
- The current overregulation concerning the operation of the extractive works. This is a problem of almost all aspects of the State and the challenge consists of simplifying the procedures as a whole through the simplification of laws thus contributing to the reduction of bureaucracy.
- The lack of an integrated land-use planning at a regional and local level that allows for and projects the long-term various land uses taking into account the available mineral resources and the possibilities of having access to the reserves of the raw materials.
- The existing prejudices and sterile criticism against the exploitation of the country's mineral resources. It is a challenge for all stakeholders and mostly the State to change this mentality by means of an honest open dialogue and the provision of comprehensive information about the development of the national mineral resources and its numerous

Thanks to its current dynamics, the size of the existing and potential exploitable national reserves of minerals and ores, the infrastructure and important existing extractive projects, the significant mining experience and the advanced know-how of extractive processes, the Greek extractive industry has become essential for the development of the country and boasts international recognition at the European and global market

benefits. In the same context, the State undertakes initiatives with the support of collective representation from the sector, the Universities and the research institutions of the country in order to correct wrong past choices defaming the sector. The Corporate Social Responsibility actions should be enriched and supported financially and functionally. Additionally, it is necessary to ensure an effective licensing process that shall minimize the environmental footprint due to the extractive activity.

- The problems related to the accessibility to raw materials as the country has an extensive network of protected regions. It is a top priority for the public administration to apply in the most fruitful way possible the EU guidelines.
- The poor and ineffective control mechanisms that make local societies even more reluctant towards the extractive works. The establishment of an effective and extractive-specific control body will help greatly to overcome many of the above problems.
- The public opinion's negative stance towards the sector works. The greatest challenge for the companies and the State is to change the view of the public opinion and make the extractive works acceptable. This is a difficult and complex task and may only be achieved through sincere efforts by all stakeholders to apply the principles of sustainable development.

In spite of the drop in the demand for raw materials in many international markets and mostly the extended economic recession in our country, the Greek extractive sector has a potential and strong future. It may contribute greatly to reversing the current harsh reality in our country. To this end, what is needed is a clear, structured national policy for the exploitation of the mineral resources that will satisfy the need for protection of the environment and will ensure the accessibility to raw materials thus making it possible to overcome the existing problems and ensure the sustainable development of the extractive industry.

The current recession may – under specific conditions – be considered as a development challenge and opportunity for the Greek extractive/metallurgical industry that must redefine its strategy and tactics within the limits of the 'road map' of the European initiative on raw materials (RMI).

\\ "Public Power Corpotation" Rehabilitation of a lignite mine

08 National policy on the exploitation of the mineral resources

The National Policy (NP) for the strategic planning and exploitation of the mineral resources acknowledges the importance of the Mineral Raw Materials (MRM) that contribute to progress and development, ensure a high living standard and create a competitive national and regional economy and new job positions. The NP must also ensure that the MRM are produced and distributed to the society in conformity with the constitutional principle of sustainable development.

The NP must be stable and transparent; it must also be able to be adjusted depending on the social and economic conditions or with a view of protecting the natural and anthropogenic environment.

Moreover, it must also be in harmony with the other National Policies, mitigating the conflicts that hinder the growth of the National Economy. Such a policy and all its different aspects of implementation can only be the outcome of a wide dialogue, information and public consultation both at a national, regional and local level. Additionally, this policy requires as a basic tool a simplified, codified and updated regulatory framework.

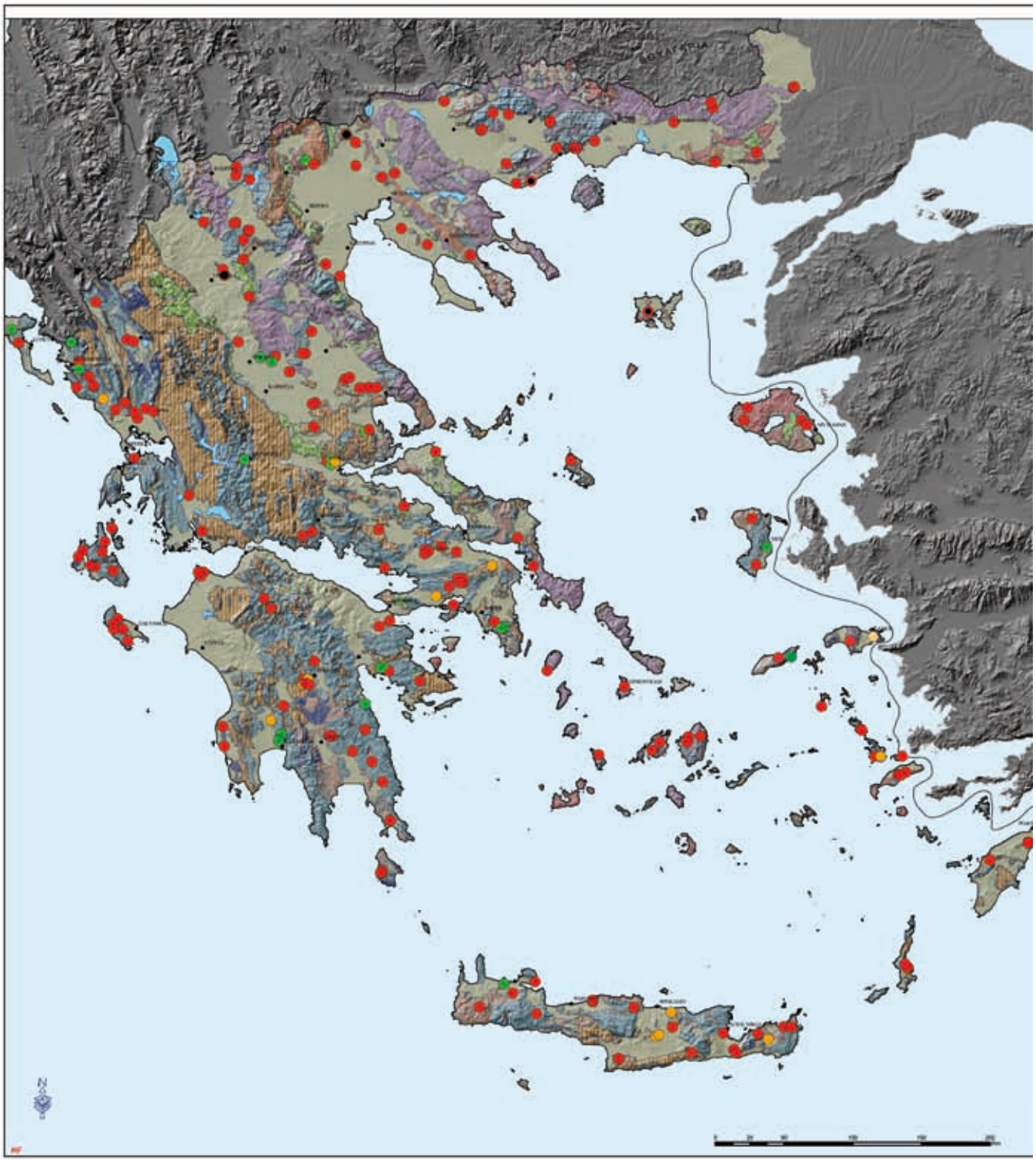
The main goals of this policy are the following:

- The sufficient and constant supply of MRM to the society in a sustainable financial way that is harmonized with the national sectoral development policies of other activities.
- The enhancement and implementation of the best practices that prevent or reduce and, finally, rehabilitate, to the greatest extent possible, the impact of the extractive industry to the environment and human health.
- The MRM saving through best eco-efficient production practices.
- The upgrade and support of all University departments and faculties of geosciences through the adequate funding by all types of available programs of the Ministry of Education, the General Secretariat of R&D, the National Strategic Reference Framework (NSRF), etc.
- The ensuring of the use of MRM for the longest possible time through effective use practices, un extension of their life-cycle and recycling.
- The maximization of the development benefit and minimization of the negative effects of the mining activity.
- The harmonization of the specificities and needs of the local societies with the development potential created by the mining activities at a local and regional level. The adoption of policies and measures that shall maximize the benefits from the actions at a local level in many ways (and not merely in terms of finance and employment).
- The arrangement of the quarry and mining sites in such a way as they may be suitable for other planned uses after the completion of the extractive activities.
- The land use planning for the raw materials processing, when it is carried out outside the mines or quarries.

Also, the NP for the exploitation of the MRM must:

- Be based on the knowledge about the country's mineral reserves. This knowledge presupposes that all deposits of MRM are registered in a documented way and the relevant data are available in functional geospatial information system, which is compatible with the European MRM geological database.
- Take into account the specificities of the mining activity affecting decisively the location and the "sustainable" management of the activity requiring special interventions stemming from a) their localization in positions chosen by Nature itself b) the fact that the MRM are only 'renewable' at a geologic time scale and c) the fact that the exploitation of MRM leads to a visible footprint whose impact must be minimized.
- Take into account that the mining industry is vulnerable and inextricably linked to the national and international economic and political conditions and thus take into consideration the trends and variations of the international market of raw materials.
- Follow the European developments on issues related to the orientations and conditions of the MRM strategic development.
- Develop reliable and adequate conditions for attracting investments aimed to the best exploitation of the country's mineral resources.

ΛΑΤΟΜΕΙΑ ΑΔΡΑΝΩΝ ΥΛΙΚΩΝ ΕΛΛΑΔΑΣ
AGGREGATES QUARRIES IN GREECE



MAP OF MARBLE EXTRACTIVE ACTIVITIES IN GREECE

WHITE MARBLE

SEMI WHITE MARBLE

GRAY - BLACK MARBLE

BEIZE - BROWN MARBLE

PINK - RED MARBLE

GREEN MARBLE

MULTI-COLOR MARBLE

TRAVERTINE

ALABASTER

SLATES

SAND STONES

IGNIOUS ROCK

MARLY LIMESTONE

METALLIC AND LIGNITE MINES (2010)

LEGEND: ● Feldspar // ● Huntite // ● Manganese ores // ● Mixed Sulfides // ● Magnesite // ● Ferrous Nickel Ores // ● Bauxite // ● Lignite

INDUSTRIAL MINERAL QUARRIES (2010)

LEGEND: ● CaCO3 // ● Pumice // ● Attapulgite // ● Quartz // ● Dolomite - Calcite // ● Caoline // ● Pos-solane // ● Perlite // ● Betonite // ● Gypsum // ● Glays

ANNEX II

Greek extractive activity Products, Production, Exports

Typical examples of the main products demonstrating the dynamic presence of the Greek extractive field over time:

- **LIGNITE:** the largest extractive activity in the country, the second largest in the EU and the 5th worldwide. It covers 57% of the domestic power generation with the lowest cost compared to any other source of energy thus contributing essentially to the development of the country and the competitiveness of the national economy.
- **FERRO-NICKEL:** one of the largest outputs in Europe from domestic raw material (laterite) which is exported in its entirety to the European stainless steel industries thus satisfying about 7% of all needs of the European market.
- **BAUXITE:** the largest mining output in the Country and No1 in Europe. It is a raw material of particular importance for the Greek economy, the domestic alumina- aluminium output and an important exporting product.
- **MARBLE AND MARBLE PRODUCTS:** of international reputation. In spite of the high international competition and the development problems in the country, their total output still holds a leading position in the international market.
- **AGGREGATES:** they are essential for the cement industry and the constructions and contribute greatly to the regional development.
- **MAGNESITE, MAGNESIA:** it holds the top position in terms of exports in EU covering a wide range of industrial and other applications.
- **PERLITE:** the largest output worldwide accounting for 25% of the total output worldwide.
- **BENTONITE:** the largest output in Europe and the second largest worldwide and has a wide range of industrial uses.
- **PUMICE STONE:** insulating material with an important output meant for the Greek and the international market.
- **POZZOLAN, FELDSPAR, QUARTZ, GYPSUM, KAOLIN, CALCIUM CARBONATE, HUNTITE, ATTAPULGITE:** exploitation with an ecological present and future satisfying the basic needs of the domestic and international industry.
- **MIXED SULFIDES:** after a long interruption, the historic production in the region of Halkidiki restarted dynamically supporting important exports of ore concentrates.
- **COPPER, SILVER, GOLD:** important deposits in Northern Greece that are going to be exploited in the coming years as there are currently significant investment proposals.

Extractive activities in Greece per sector

• AGGREGATES – CONSTRUCTION MATERIALS

In the Greek countryside there are about 70 authorized quarry sites with approximately 200 quarries and processing units with a total annual production of over 50 million tons (before the financial crisis, the production ranged between 80-100 million tons) including all products (stone, sand, gravel, quarry gravel, 3A). They mostly support the regional construction activity, the regional works and the Greek cement industry, which has also a presence in the province.

• MARBLE QUARRIES

There are about 190 quarries, especially in the country-side, producing 1 million ton of marble products yearly. This activity is mainly developed in the Prefectures of Drama, Kavala, Kozani, Ioannina, Magnisia, Voiotia, Evoia, Argolida, Arkadia and Cyclades. It satisfies the needs of the domestic construction activity and makes exports of over 25 million €.

• METALLIC ORES

These are either primary materials or vertically integrated products that correspond directly to the needs of the international and Greek industry and metallurgy and include: feldspars, bauxite, magnesite, magnesium oxide and dead-burned magnesia, laterite as a raw material of ferro-nickel and lead, zinc and iron pyrites concentrates made of mixed sulfide ores. The total annual production amounts to 5.5 million tons. This activity is developed mostly in the Prefectures of Thessaloniki, Fokida, Voiotia, Fthiotida, Evoia and Halkidiki.

• INDUSTRIAL MINERALS

They have considerable industrial applications and meet the needs of the domestic industry and international demand. Many of these products are amongst the most important worldwide in terms of importance and output (e.g. perlite, bentonite, pumice stone, calcium carbonate etc.). This activity is developed mostly in the Prefectures of Grevena, Thessaloniki, Aitolia and Akarnania, Zakynthos, Cephalonia, Larissa, Halkidiki, Attica and in the regions of Crete, Northern and Southern Aegean. The total annual output totals 6 million tons approximately.

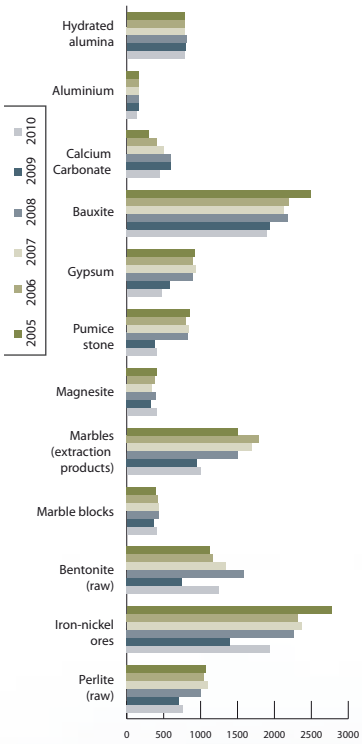
• ENERGY ORES (LIGNITE)

They actually support the country's power generation. About 55 million tons of lignite are produced yearly especially in the Prefectures of Kozani, Florina and Arkadia. It is estimated that these region earn over 380 million euros/year from this activity (salaries, commissions, procurement, indirect employment, services, social contributory works and development fee collection).

PRODUCT	2005	2006	2007	2008	2009	2010
Hydrated alumina	**782**	**780**	**789**	**807,5**	**796**	**785**
Aluminium	165	164,5	168	162,3	129	137
Calcium carbonate	**300**	**400**	**500**	**600**	**600**	**450**
Aggregates	90.000	100.000	90.000	85.000	70.000	50.000
Feldspar	**99**	**56**	**38**	**35,7**	**27,12**	**23,05**
Attapulgite	7	7	7	25	28	30
Bauxite	**2.495**	**2.194**	**2.128**	**2.174**	**1.935**	**1.902**
Gypsum	915	900	940	900	580	470
Dead-burned magnesia	**67**	**51**	**42**	**46,7**	**51,8**	**63,9**
Kaolin	44	40	40	-	-	-
Caustic magnesia	**73**	**69**	**72**	**70,5**	**57,5**	**67**
Pumice stone	852	801	838	828	381	413
Magnesite	**410**	**373**	**340**	**396,5**	**326,3**	**400**
Lignite	69.064	64.100	66.100	65.000	64.000	53.600
Marbles (extraction products)	**1.500**	**1.790**	**1.690**	**1.500**	**950**	**1.000**
Marble blocks	398	420	440	430	360	400
Mixed sulfides		**180**	**214**	**272**	**231**	**236**
Mixed sulfide concentrates		69	144	82	60	58
Bentonite (raw)	**1.125**	**1.166**	**1.342**	**1.580**	**750**	**1.250**
Bentonite (activated)	880	962	1.113	1.262,8	850	1.020
Nickel (in an alloy)	**19**	**18**	**18,67**	**16,6**	**8,3**	**13,96**
Iron-nickel ores	2.776	2.320	2.367	2.262	1.398	1.942
Olivine		**35**	**40**	**40**	**33,3**	**25**
Perlite (raw)	1.075	1.049	1.100	1.000	700	760
Perlite (processed)	**600**	**700**	**650**	**600**	**450**	**480**
Pozzolan	1.459	1.525	1.520	1.059	830	540
Refractory products	**26**	**30**	**31**	**35,6**	**31,6**	**36,3**
Silicate	113	110	52	52,5	38	6
Quartz - quartz products	**15**	**14**	**15**	**16,2**	**14,3**	**12,1**
Huntite- Hydromagnesite	9	25,7	15	19,6	10	16,35

OUTPUT 2005-2010

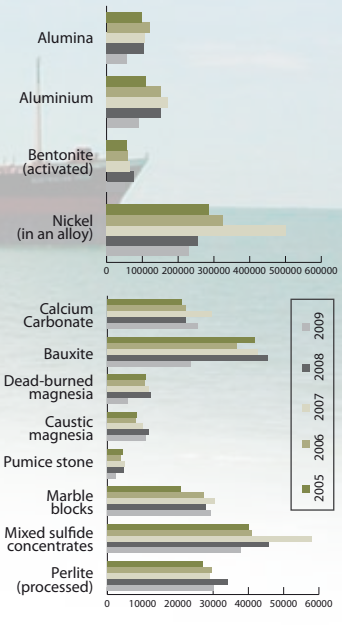
Ores, Industrial minerals, Enrichment products, Metallurgic products and Marbles (in thousands of tons)



PRODUCT	2005	2006	2007	2008	2009
Alumina	97.952	120.000	106.497	105.675	57.309
Aluminium	**109.815**	**153.000**	**171.302**	**151.284**	**89.114**
Calcium Carbonate	21.000	22.400	29.742	22.400	25.800
Feldspar	**187**	**189**	**270**	**254**	**254**
Attapulgite	480	640	800	1.300	1.463
Bauxite	**41.887**	**36.872**	**42.595**	**45.400**	**23.649**
Gypsum	425	660	416	400	300
Dead-burned magnesia	**10.818**	**10.674**	**11.696**	**12.465**	**5.762**
Kaolin	-	-	-	-	-
Caustic magnesia	**8.327**	**8.019**	**10.165**	**11.837**	**11.014**
Pumice stone	4.400	3.839	5.079	4.758	2.307
Magnesite	**1.164**	**1.006**	**887**	**1002**	**482**
Lignite (dry)	2.515	2.500	-	-	-
Marble blocks	**20.789**	**27.470**	**30.498**	**27.904**	**29.275**
Mixed sulfide concentrates	40.000	41.125	58.000	45.800	38.000
Bentonite (raw)	**1.000**	**700**	**700**	**800**	**500**
Bentonite (activated)	57.500	59.800	66.000	75.100	50.818
Nickel (in an alloy)	**287.185**	**324.717**	**502.373**	**255.000**	**230.127**
Olivine		-	-	-	54
Perlite (raw)	**2.100**	**2.100**	**2.700**	**3.000**	**2.400**
Perlite (processed)	27.010	29.500	29.200	34.200	30.140
Pozzolan	**-**	**-**	**-**	**-**	**-**
Refractory products	6.162	6.812	7.362	8.865	7657
Quartz - quartz products	**445**	**262**	**165**	**155**	**155**
Huntite- Hydromagnesite	1.476	1.960	2.481	1.278	1620
TOTAL	**742.637**	**854.245**	**1.078.928**	**808.877**	**608.200**

EXPORTS 2005-2009

Ores, Industrial minerals, Processing & Enrichment products, Metallurgic products and Marbles (in thousands €).



Code of Principles for Sustainable Development

The extractive industry is a business activity of vital importance to human well-being as it provides products that cover society's basic needs. To ensure that current as well as future requirements of society are met, the extractive enterprises need to be able to operate within a predictable legal and institutional framework, which enhances entrepreneurship, ensures environmental protection and strengthens social cohesion.

The above requisites are in line with the principles of sustainable development, as defined by the European Union (E.U. Strategy for Sustainable Development, Goetheborg 2001), which aims at the balanced improvement of business performance in all three of its pillars: Economy, Environment and Society.

The members of the Greek Mining Enterprises Association recognize that sustainable development constitutes a vital objective for society and accept their own role in the achievement of this goal.

For this purpose, the member companies of the Greek Mining Enterprises Association adopt the present Code of Principles for Sustainable Development and we commit to strive for the continuous improvement of our performance in the economic, environmental and social areas of activity by:

1. **Incorporating** sustainable development considerations within member companies´ decision making processes.

2. **Implementing** principles and practices of business ethics as well as sound systems of corporate governance.

3. **Fulfilling** consistently our institutionalized obligations and providing credible and systematic reporting and information to all those who are affected by or could affect the activities of our companies.

4. **Fostering** a sincere dialogue with those affected or affecting our business activities in a spirit of mutual understanding of the views of the various parties involved.

5. **Adopting** the development and implementation of proper and scientifically based methods in mining planning and design for the effective protection of the environment and the conservation of biodiversity.

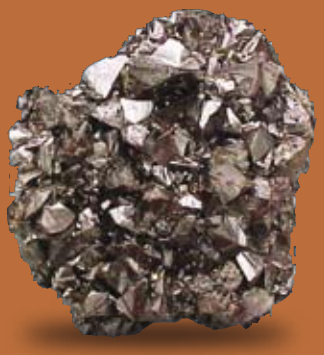
6. **Facilitating** and encouraging the design of products and production processes, the use and recycling of products and the disposal of wastes, in a responsible manner.

7. **Investing** in natural, technological, financial and human resources aiming at the development and continuous improvement of effectiveness and efficiency in depth of time.

8. **Striving** for the continuous improvement of our performance in the area of occupational health and safety.

9. **Providing** regular reporting for monitoring progress in the economic, environmental and social performance of the extractive sector, with special emphasis on health and safety.

10. **Contributing** as "active corporate citizens" in the social, economic, cultural and institutional development of the local communities in which we are active.



GREEK EXTRACTIVE INDUSTRY

INTERNATIONAL ENVIRONMENT

PROFILE – PROSPECTS

MINISTRY OF ENVIRONMENT ENERGY & CLIMATE CHANGE

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