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The contribution of the mining industry to the Greek economy

Executive Summary

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EXECUTIVE SUMMARY

The scope of the study is to evaluate the wider economic contribution of the mining industry in Greece and to examine the conditions for securing its sustainability, competitiveness and further development.

Introduction: The mining industry

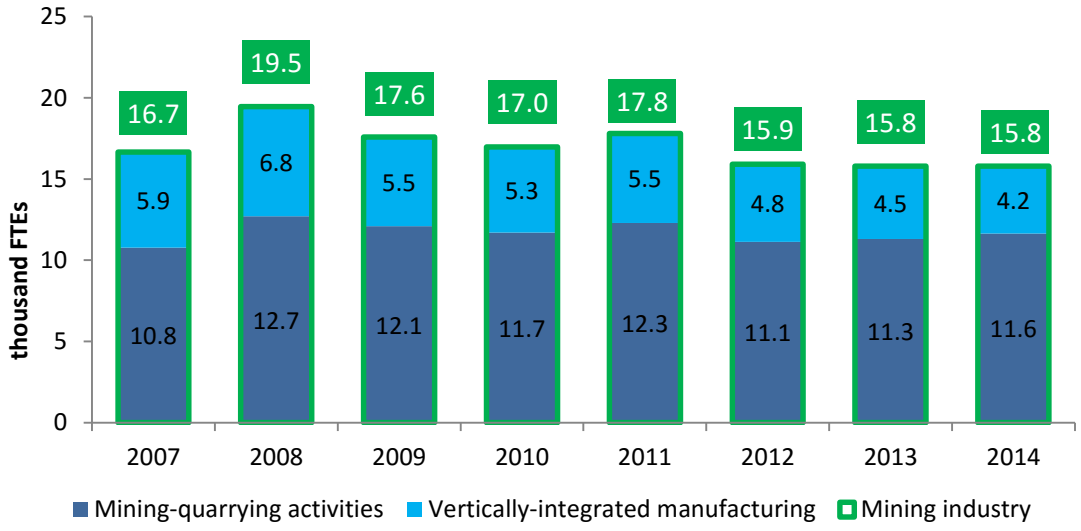
The extraction of mineral raw materials is a particularly significant economic activity for Greece, as it has a strong export orientation while utilising domestic resources. In addition, mining provides mineral raw materials that facilitate other significant domestic economic activities, such as electricity generation, manufacturing of basic metals, cement production and construction, providing a further boost to the Greek economy.

The contribution of the mineral raw material exploitation to the Greek economy goes beyond the narrow definition of the mining and quarrying sector. This contribution is better reflected at the mining industry level, which takes into account the vertical integration of mining and manufacturing activities. Hence, the mining industry, as defined in this study, includes the mining of mineral raw materials in solid form and the manufacturing of basic metals and cement with the use of domestic mineral raw materials. In essence, the definition incorporates the domestic economic activities that would most likely not have developed in Greece if it were not for the exploitation of mineral raw materials in the country.

Key figures

The total turnover of the mineral industry in Greece stood at €2.1 billion in 2013 while for 2014 it is anticipated to have increased to €2.3 billion (in nominal terms). Compared to 2009, turnover in 2013 was lower by 15%. This decline came primarily from a drastic reduction in cement production, as some of the other categories experienced strong growth. Between 2007 and 2014, the volume of production declined by 37.8% in aggregates, 24.4% in cement and 21.9% in energy minerals. However, the production of marbles and basic metals increased significantly, by 44.4% and 32.9% respectively.

Figure 1: Employment in the mining industry



Source: Eurostat, National Accounts, Greek Mining Enterprises Association, **Data processing:** IOBE

The value added of the mining industry declined to €795 million in 2014, in the aftermath of a continuous decline since 2007, when it stood at €1,597 million. The fall of construction activity, which led to a drop in the demand for cement, was the key driver for the decline, while the recovery in 2014 come from a boost in aluminum and to a lesser extent from a small growth in mining-quarrying activities. The share of the mining industry stood at 3.9% of the value added of the Greek industry sector in 2014. The mining industry had a strong presence in domestic investment as well, as between 2007 and 2014 it invested €2.1 billion overall in the Greek economy, representing 7.8% of total investment in Greek industry in 2014.

The employment in the mining industry approached 15,800 full-time equivalents in 2014 (FTEs).[1] The job loss during the crisis was relatively limited (-5.2% since 2007 – Figure 1), despite the significant reduction of gross value added (-50.3% during the same period). As a result, the share of the sector's employment in Greek industry increased from 2.9% in 2007 to 4.1% in 2014.

Exports

A characteristic of the domestic mining industry is its openness, which is not limited to the high share of exports in sales. The internationalisation of the mining industry is also revealed by the fact that some domestic enterprises are subsidiaries of multinational corporations, while others have joint ventures, mining activities and export trade networks in many foreign destinations.

The sales in the global markets take up a significant share of the turnover of the companies in the mining industry. The value of exports reached €1.1 billion in 2013, exceeding 50% of the total turnover in the sector, while there are indications for growth in 2014 as well (by about 8%). The export orientation is particularly strong in products, such as marbles, industrial minerals and metals, where the export value has exceeded 70% of the turnover.

At the product level, each of the three products with the largest share of exports (cement, aluminium and nickel) take up about 1/5 of the total value of exports. Marbles and alumina come next with about 10% each while the magnesium products (refractories, dead-burned magnesia and caustic calcined magnesia) also have a significant share in exports.

The export orientation of the domestic mining industry draws on its significant competitive advantages, particularly with relation to the easy access to ports and thus to water transport (due to the extensive coastline of Greece), but also from the pivotal geographical position of the country. However, there is still a significant lack of basic infrastructure (mainly in terms of rail transport). The upgrade of the rail links between the production facilities of the mining industry on one hand and the domestic ports, but also the industry centres in Central and Eastern Europe, on the other, is anticipated to contribute significantly to further internationalisation and stronger presence of the sector on the global trade map.

Financial analysis

The economic crisis had a strong negative impact on all categories of financial indicators at the industry level between 2010 and 2013, however the trend in quite a few indicators turned

[1] The full-time equivalents are derived by adjusting the number of people employed part-time with the number of hours that they work over a set period of time.

positive in 2014. At the level of particular sub-sectors, the performance is mixed, primarily due to the different exposure of the sub-sectors to the variations in economic activity in Greece and abroad, in international commodity prices and in the cost of inputs (and energy in particular).

Indicatively, the decline in the sales of industrial minerals, observed since 2012, did not carry over to 2014, but the profitability indicators remained negative due to a significant negative impact from extraordinary financial expenses. In aggregates, the significant losses from 2011 eased gradually in the following two years, with the profitability indicators turning positive in 2014. The profitability in the category of marbles remained strong throughout the observed period. In contrast, the profitability in metallic minerals and in the manufacturing of basic metals declined significantly between 2010-2013, returning to positive levels in 2014. In addition, total assets increased notably in metallic minerals, due largely to the development of mixed sulphide ores in Chalkidiki.

Economic impact

The contribution of the mining industry to the Greek economy is not limited to the key economic figures of the constituent mining and manufacturing activities. Taking into account the indirect effects in sectors that participate in the value chain of the mining industry, together with the induced effects from the income generated by its operation, the total contribution of the mining industry to GDP is estimated at €4.1 billion (2.2% of GDP), out of which about €2.7 billion comes from mining-quarrying activities alone. If we also take into account electricity generation with lignite, which would not be possible without the support of the domestic mining sector, the contribution to GDP stands at €6.2 billion (3.4% of GDP). In employment terms, the contribution of the mining industry is estimated respectively at about 84,000 full-time equivalents (2.2% of domestic employment), out of which 55,000 FTEs come from the impact of mining-quarrying activities. The employment impact increases to 118,000 FTEs (3.4% of domestic employment) when we take into account the electricity generation fuelled by lignite (Table 1).

Table 1: Wider economic impact of domestic mining at national level

Magnitude (*)	Direct	Indirect	Induced	Total
Gross production value	4,702	2,203	4,757	**11,661**
Value added	1,656	1,164	2,767	**5,587**
GDP	1,837	1,207	3,164	**6,209**
Employment	28,268	27,173	62,275	**117,716**
Labour income	570	286	585	**1,442**
Tax revenue	214	70	414	**698**
Social security contributions	140	86	157	**383**
Import substitution	-2,673	1,000	420	**-1,253**
Balance of trade	3,632	-1,000	-420	**2,213**
Social product	1,303	712	1,719	**3,734**

Source: IOBE multiregional input-output model, Eurostat

Note: (*) in € million, apart from employment, which is expressed in terms of full-time equivalents.

It should be stressed that the economic contribution of the mining industry is particularly strong in certain administrative regions of the country. In particular, about 11% of the employment and almost 12% of the value added of Central Greece is attributed directly or indirectly to the activities of the domestic mining industry. The contribution is also significant in West Macedonia, particularly if we take into account the effects from lignite-fuelled electricity generation (22% of employment in the region in terms of total impact). The contribution of the mining industry is also particularly high in East Macedonia-Thrace, Thessaly and the South Aegean, but also in the Peloponnese when we take into account the lignite-fuelled electricity generation.

Growth outlook

The forecasts for stronger growth in the European Union, together with the anticipated delay of the economic recovery in Greece to 2017, create a mixed short-term outlook of the mining industry. In particular, assuming that the product prices will remain unchanged, the output of metallic minerals, industrial minerals and marbles is expected to increase only slightly. In contrast, the output of cement and energy minerals is expected to decline somewhat. Stronger growth and a return to growth respectively is expected from 2017 for these two broad groups of products. As a result, the output of the mining industry overall is expected to be higher by 13.6% in 2020, compared with 2014, provided that the growth forecasts for Greece and the EU are realised as planned and the investment climate in the country is not jeopardised further.

Regarding the investment plans of the enterprises in the mining industry, there is a clear propensity for an investment growth in the coming years. In particular, according to estimates of 19 companies, members of the Greek Mining Enterprises Association (GMEA), more than €1.7 billion investment expenditure is planned over the next few years, most of which is scheduled for 2016-2017. However, the speed with which the investment plans will be implemented will depend on the economic conditions that will form along the way, both in Greece and in the world economy, as the enterprises of the sector already face significant financial, administrative and regulatory obstacles to their operation.

The mining industry and the environment

Taking into account that most of the mining activities in Greece concern aggregates, industrial minerals, energy minerals and metallic minerals without sulphurous elements, the main environmental issue that the mining industry faces concerns the rehabilitation of the natural environment after the end of the deposit exploitation period. The list of current and past rehabilitation projects in Greece includes the creation of woodlands, ponds, wetlands, arable land, museums and places for cultural events and entertainment. About 65,620 acres have been restored since the entry in force of Law No. 998/1979, with the share of restored land over totally utilised plots varying in the range of 35%-40%. Meanwhile, about 2.6 million trees have been planted in Greece since 2007 by the GMEA member companies.

The mining and processing of mixed sulphide ores and the burning of lignite for electricity generation create additional environmental challenges. In this regard, the environmental impact study for the exploitation of the mixed sulphide metallic minerals in northeast Chalkidiki envisages the application of best available techniques for the management of acid

mine drainage and the establishment of a programme that would monitor the characteristics of the groundwater in the broader area of the installations. Regarding the use of lignite in electricity generation, a programme for replacement, upgrade and modernisation of the fleet of lignite power plants is under implementation. As part of the plan, six old lignite plans have already been withdrawn, while other two plants have stopped operating since 2014 due to malfunctioning after a fire and are expected to be scrapped.

As the development of mining activities brings about significant changes in the local ecosystems, a significant number of domestic mining enterprises apply integrated environmental managements systems and make extensive efforts to improve their environmental performance, both as an obligation to comply with the legislation and as part of their corporate social responsibility programmes. Nevertheless, despite the actions of many mining enterprises, the degree of distrust in the compliance with the environmental regulations and generally in the proper functioning of the institutions remains high in Greece. The ineffective state control mechanisms further erode the level of social trust.

Mineral raw materials: European and national policies

The need for uninterrupted access to raw materials requires the application of a single integrated European policy framework. In this regard, the EU institutions have set specific strategies that aim for an unimpeded access to raw materials internationally, more efficient administration of the existing deposits, reduction of the environmental footprint of the sector and the cultivation of trust between the social partners.

Along these lines, the Greek Ministry of Environment and Energy announced the National Policy for the Exploitation of Mineral Raw Materials (NPEMRM) in 2012. The national policy is built on six strategic pillars that concern regional and national development, land planning issues, codification of the existing legislation, securing social acceptance by promoting dialogue, boost of research and education and lastly improvement of the efficiency of the management of mineral raw materials.

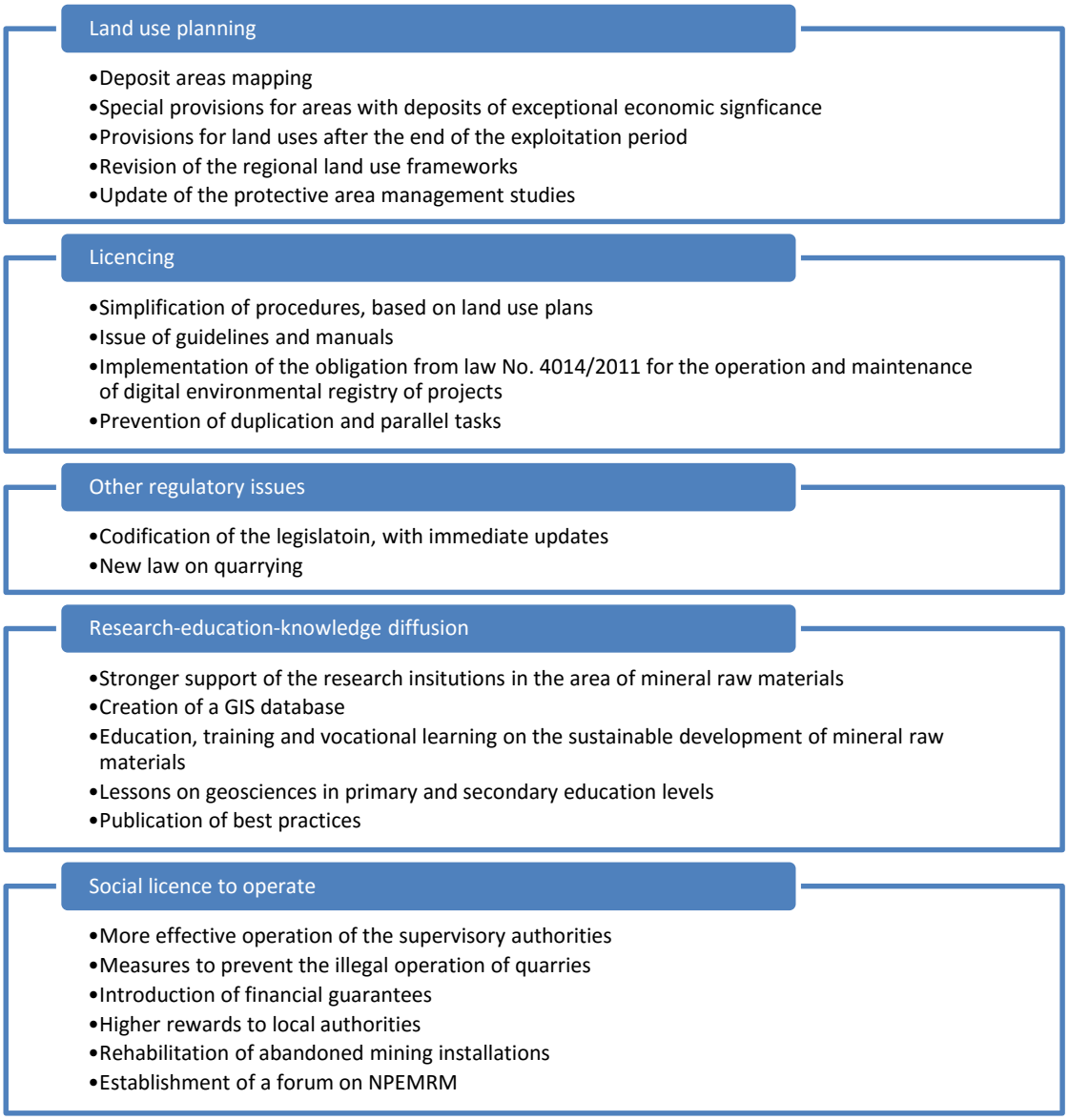
The national policy on mineral raw materials broadly follows the European policy. It can be seen as an attempt to boost the contribution of the mining industry to the growth of the Greek economy. Nevertheless, the national policy did not materialise in the form of legislative texts and thus is not implemented in practice. As a result, there are still significant obstacles to the further development of the mining industry.

In particular, the licencing procedures for the exploitation of raw materials remain time-consuming, without clearly defined methodology. Overregulation and red tape in the existing regulatory framework contribute to the delays in the licencing process. The convoluted legal system is directly linked with the numerous appeals in the courts, causing significant delays in the implementation of investments. Meanwhile, the Institute of Geology and Mineral Exploration (IGME) has not been fully utilised and, as a result, the information on the raw material potential in the country is relatively limited. Together with the unfavourable trends in non-labour cost (such as fees, loyalties, other taxation and the cost of energy), the pending issues in the regulatory framework impede the competitiveness and the growth of the mining industry in Greece.

Policy implications

The elimination of the existing omissions in the regulatory framework and in the broader policy for mineral raw materials is a key prerequisite for a fuller utilisation of the growth potential of the mining industry. The specification and the implementation of NPEMRM is a key step in this direction. The actions envisaged in NPEMRM could be grouped in five policy priorities – land use planning, licencing, other regulatory issues, education-research-knowledge diffusion and the social licence to operate (Figure 2).

Figure 2: Policy priorities and specific actions



Summing up, the mining activity in Greece is considerable, with a significant economic contribution. The contribution is particularly strong in regions, such as Central Greece and West Macedonia, which host many of the sector's activities. Given the strategic importance of securing access to mineral raw materials globally, the mining industry has the potential for further development, respecting the principles of sustainability. However, a fuller use of this

potential requires the implementation of a series of measures, envisaged in the national policy on mineral raw materials. These measures aim at safeguarding business operation, facilitating new investment, protecting the environment and securing social cohesion. The absolute need for new investment and sustainable development in Greece today should mobilise all stakeholders in the direction of a fuller utilisation of the mining industry's potential.

The full text of the study is available in Greek at:
http://iobe.gr/docs/research/RES_05_F_31032016_REP_GR.pdf.