



Towards a National Minerals Strategy

Mineral Resources in Greece: A Driving Force for Economic Development

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6th International Forum

Mineral Resources in Greece:
A Driving Force for Economic Development

The Greek land houses a wide portfolio of minerals with countless uses in industry and daily life



Lignite

*2nd in the EU,
5th worldwide*



Magnesite

*Largest exporter
in Europe*



Perlite

1st worldwide



Laterite

*One of the largest
producers in Europe*



Bauxite

*Key for the national
aluminum industry*



Aggregates

*Key for the
cement industry and construction*



Marble

*Global leader in quality,
acquiring market share*



Bentonite

*1st in Europe,
2nd worldwide*



Gypsum / Pozzolan

*Key for the
cement industry*

A plethora of minerals in several locations – metallic and lignite mines as well as industrial minerals (1/2)



METALLIC AND LIGNITE MINES (2010)



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

INDUSTRIAL MINERAL QUARRIES (2010)

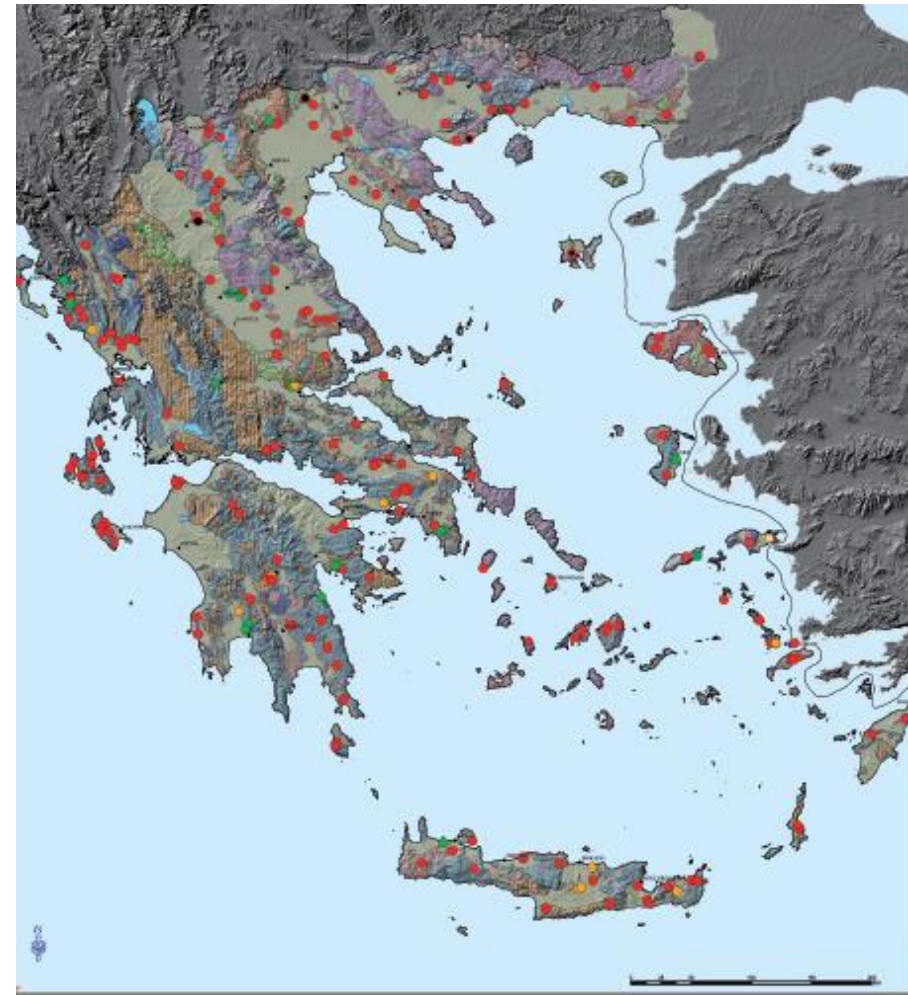


LEGEND: ● CaCO₃ // ● Pumice // ● Attapulgite // ● Quartz // ● Dolomite - Calcite // ● Caoline // ● Pos-solane // ● Perlite // ● Betonite // ● Gypsum // ● Glays



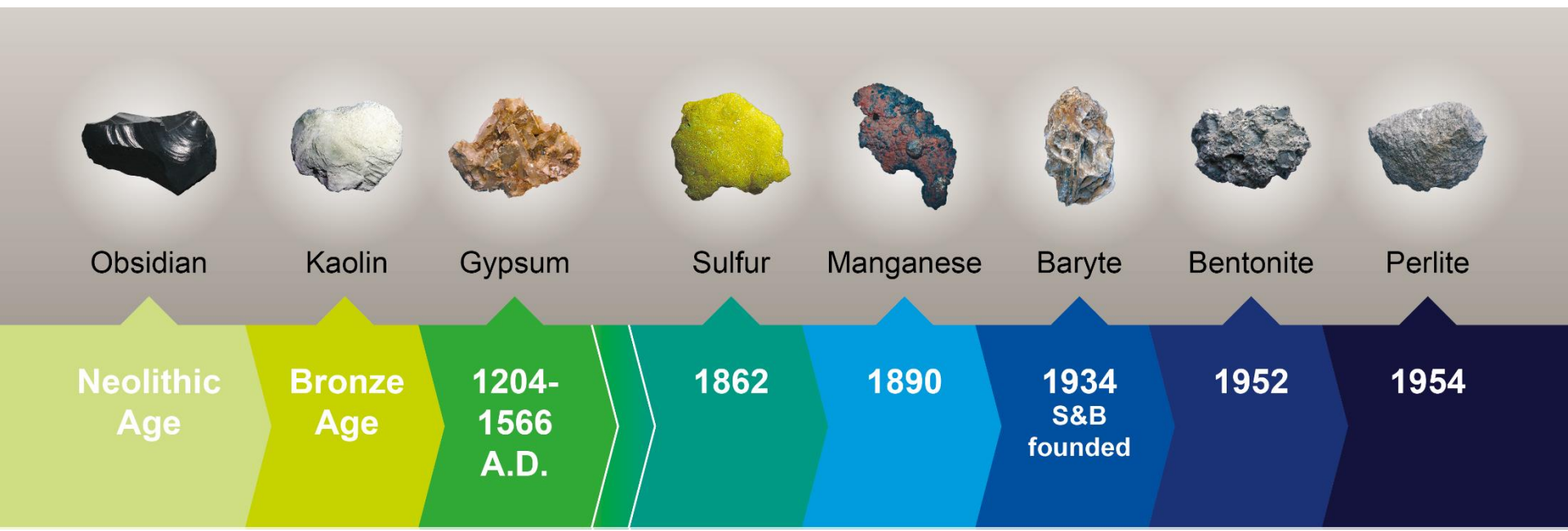
A plethora of minerals in several locations – marble and aggregates (2/2)

MAP OF MARBLE EXTRACTIVE ACTIVITIES IN GREECE



ΥΠΟΜΗΜΑ - LEGEND			
	Εξορυχτική επιμερίδα Τετραγωνική/Παραλληλίσκη επιμερίδα Ουλοειδής/Τριγωνική υπομερίδα		Αυθεντικό/Μεταμορφωμένο Λιμνογενές Πυλίτιο, Υπομεταμορφωμένο
	Μαλακή Ψευδίτη		Μαρμαριτό Μαρμαίτιο
	Αυθεντικό/Μεταμορφωμένο σκληρό Ταπεινά λιμνογενή		Προσφαιρικό ορυκτοειδές Πα-Αλφειά κοιλάδα
	Αυθεντικό/Μεταμορφωμένο σκληρό Μεταμορφωμένο		Γεωγενές, υπερμεταμορφωμένο Διασπασίμο, Απυριτωμένο
	Εξορυχτική επιμερίδα Ουλοειδής		Βασικό/Υποβασικό ορυκτοειδές Βασικό-Υποβασικό ορυκτοειδές
	Εξορυχτική επιμερίδα Ουλοειδής		Εξορυχτική επιμερίδα Ουλοειδής
	Εξορυχτική επιμερίδα Ουλοειδής		Εξορυχτική επιμερίδα Ουλοειδής
	Εξορυχτική επιμερίδα Ουλοειδής		Εξορυχτική επιμερίδα Ουλοειδής

Mining and minerals are interlinked with the history of mankind and an inherently sustainable activity



Each era is effectively named after different extracted minerals and metals; the same materials were used for flagship achievements of human civilization

- **Neolithic age until today:** Milos mining history and related economic activity through the centuries
- **Classical Antiquity:** Lavrio silver mines
- **Alexander the Great** and his father Phillipos: Paggaion gold mines



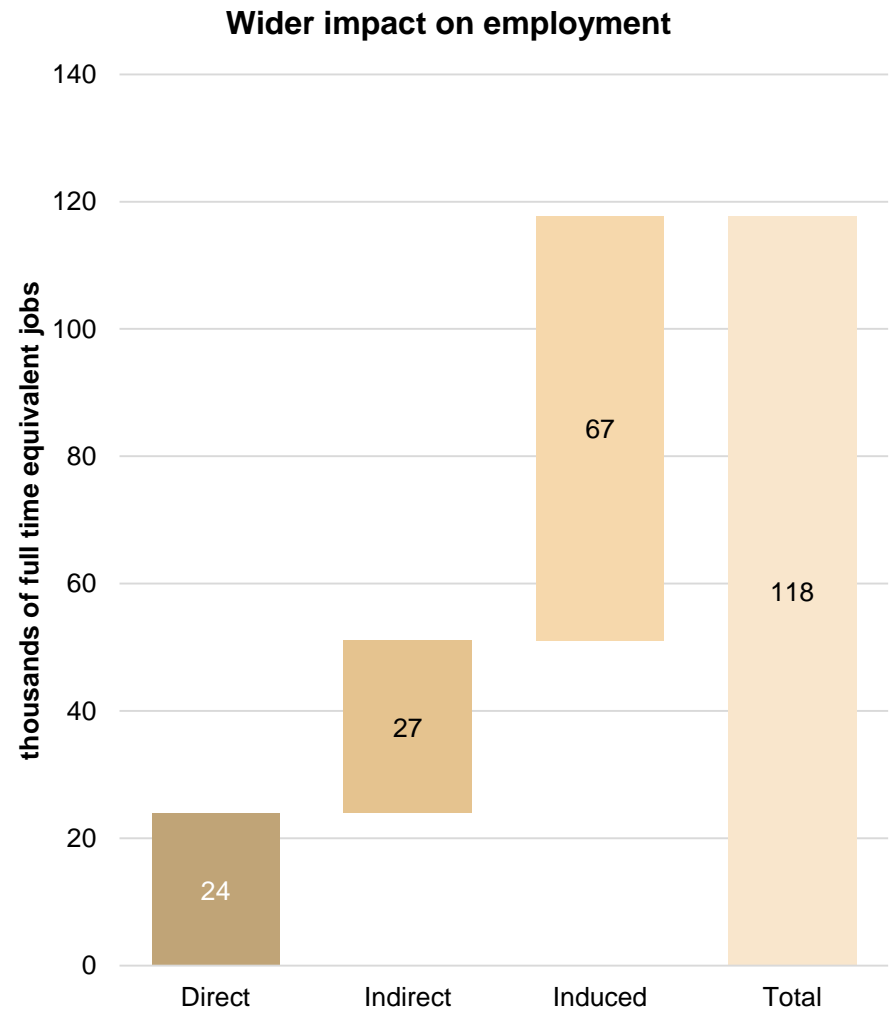
Mineral resource centered activity
has traditionally been a key driver
of economic development, employment
(in urban centers but mainly in the periphery),
*trade, and ultimately **competitive advantage***
for the Greek economy



Today, the Greek mining industry continues to thrive

The Greek mining industry at-a-glance:

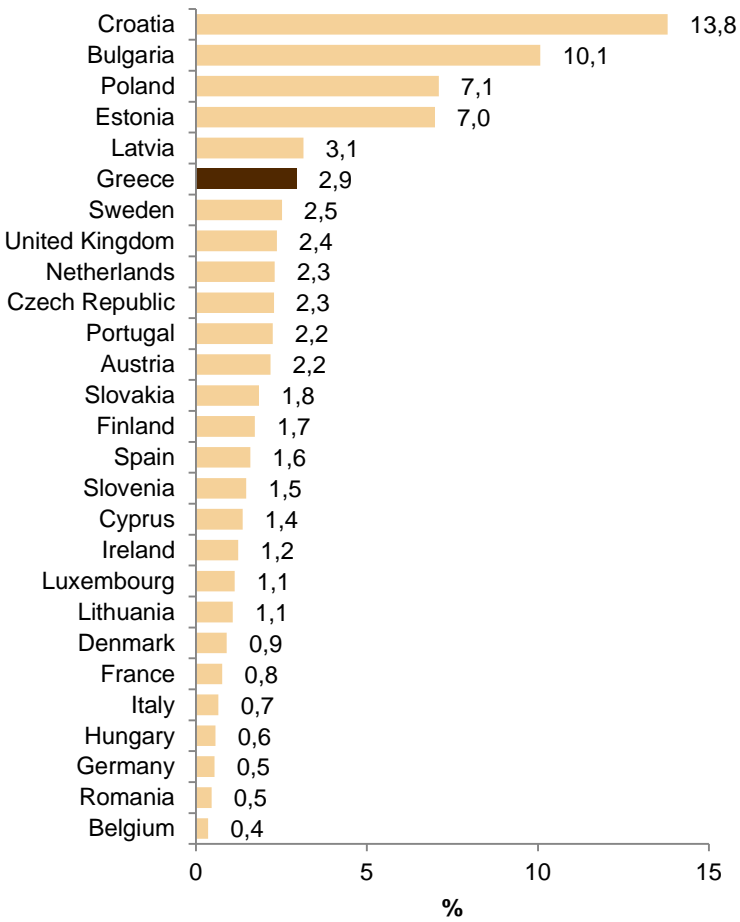
- Accounts for **3.4% of the Greek GDP**
- Comprises of more than **25 large mining companies** that are active in Greece and abroad
- Extracts over **30 different minerals**, 10 of which in quantities larger than 300,000 tons per year
- Generated a total **value of €2.3 billion in 2014**, roughly 50% of which was exported
- Constitutes almost **5% of total Greek exports**
- Employs directly roughly **20,000 individuals** and indirectly **80,000 individuals**



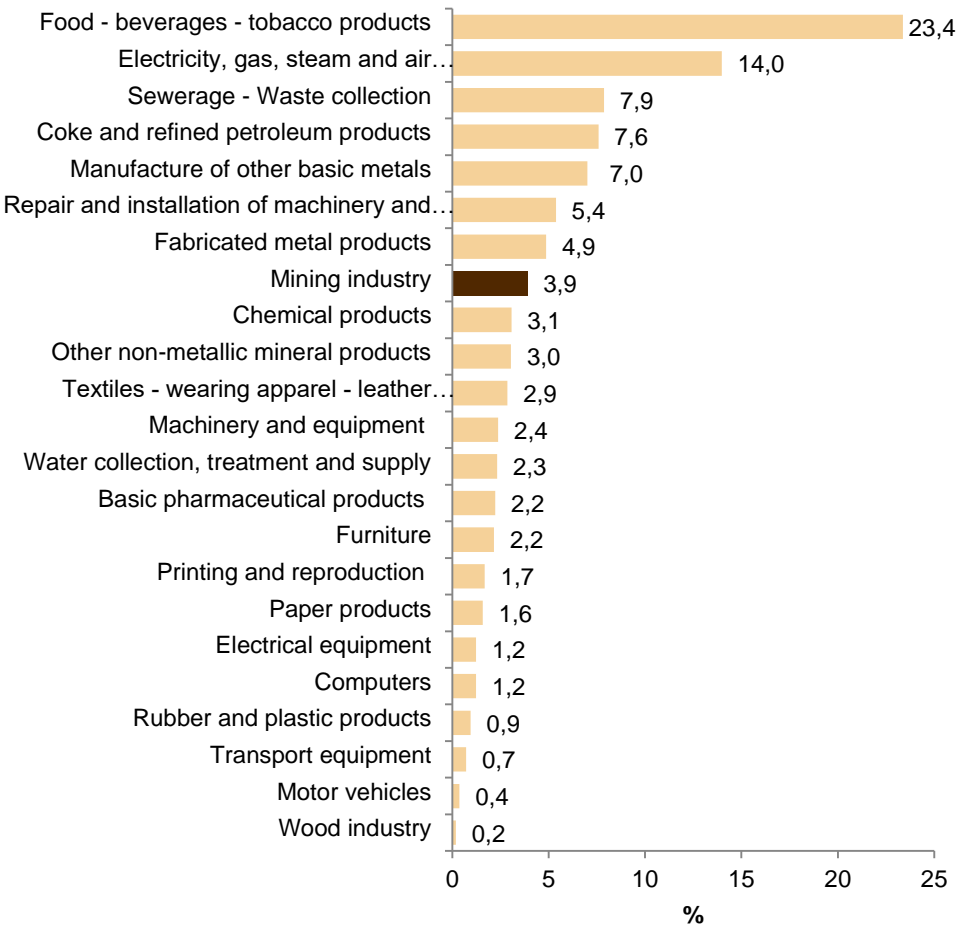
The mining industry is a large contributor to the national economy both compared to other EU countries and other industries domestically



Share of mining & quarrying in total industry GVA per EU country, 2014



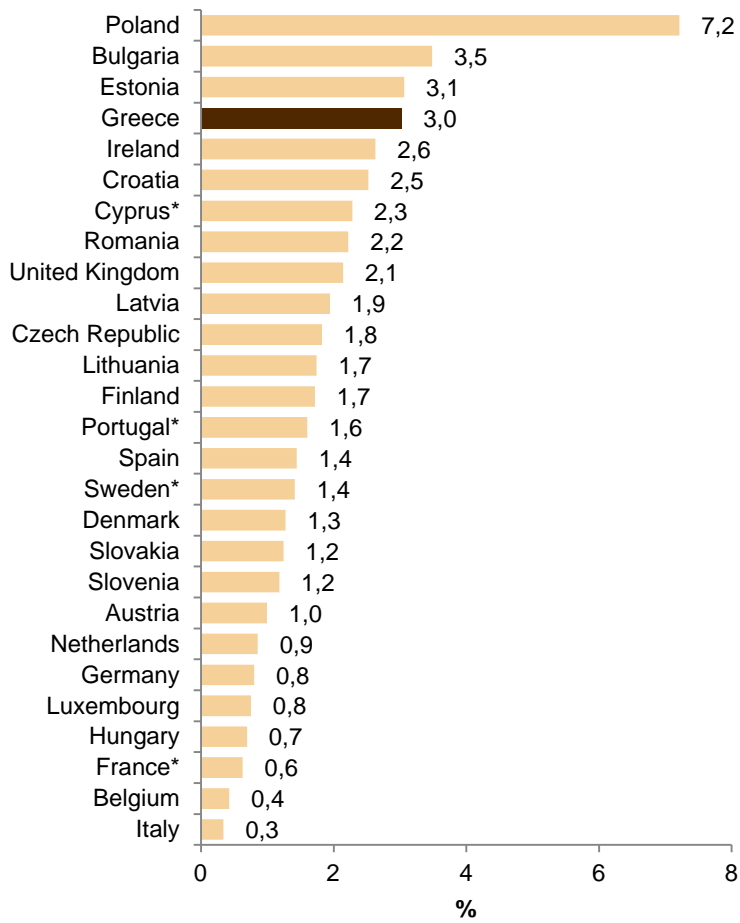
Composition of GVA per Industry subsector, 2014



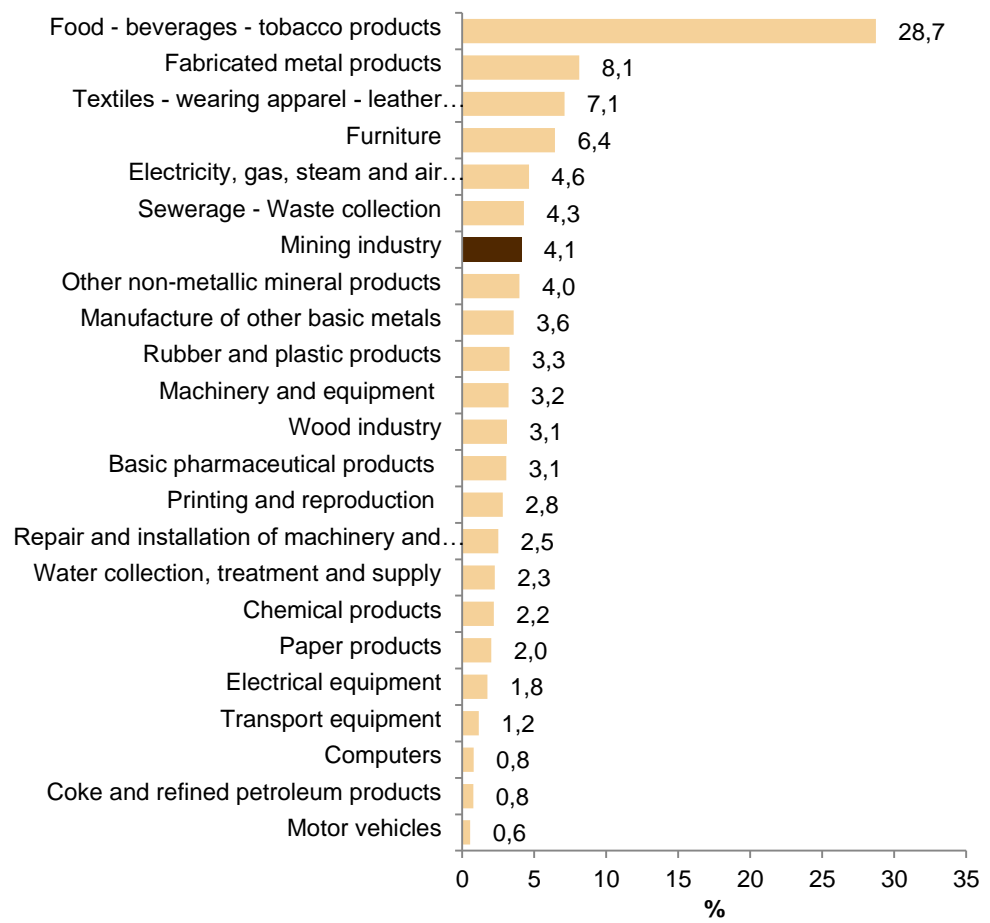
The mining industry is a top employer – especially in the Greek periphery: 4% of the Greek workforce, exceeded by only three countries in the EU



Share of mining & quarrying in total industry GVA per EU country, 2014



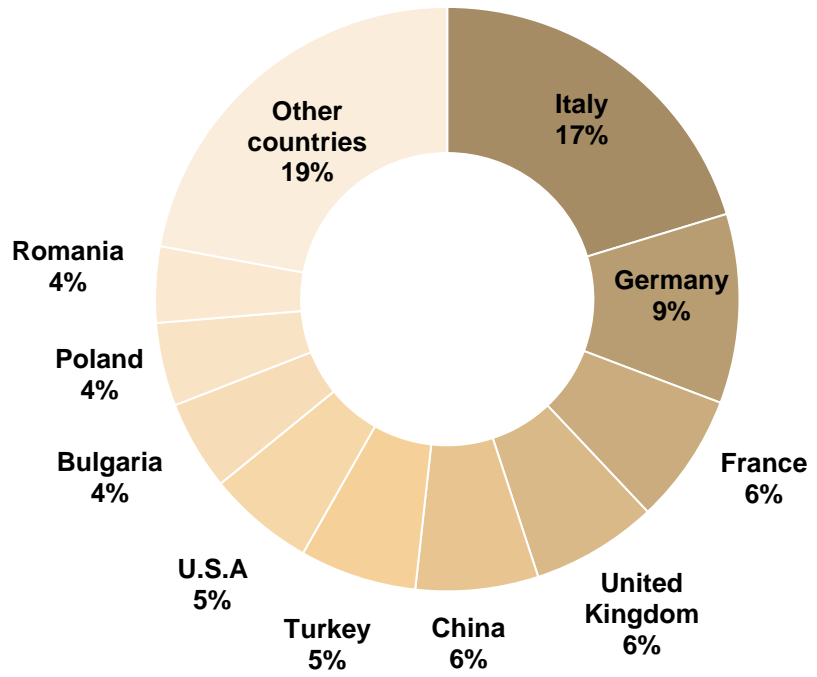
Composition of employment per Industry subsector, 2014



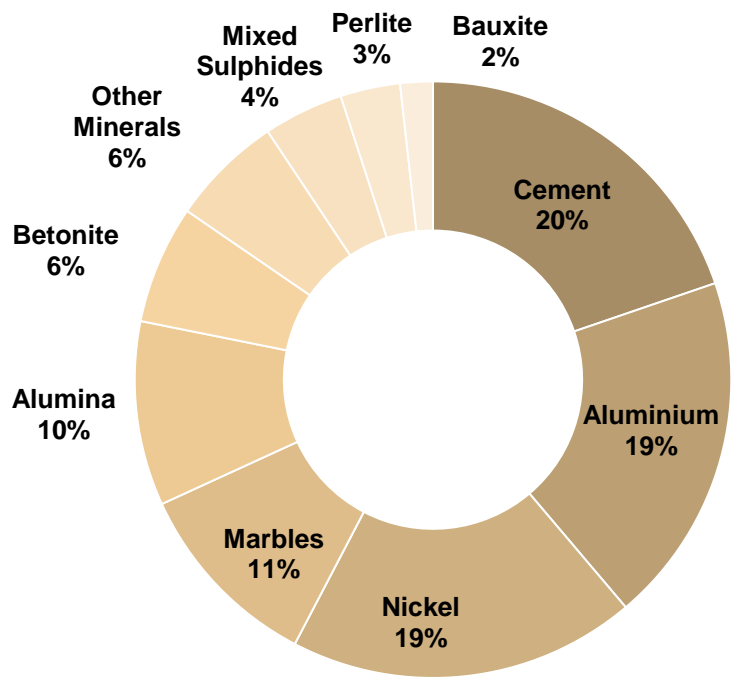
Roughly half of total sales are abroad – mainly in Europe; 75% of total sales in the products that are exported to a diversified group of countries



Exports in value terms per country of destination, 2014



Exports in value terms per mineral, 2013





Mining companies have both invested and been a magnet for investment

... fixed assets

- Total expenditure for resource exploration €4.7 million (2015)
- Plants / Warehouses / Ports

... equity

- Kerneos / European Bauxites (2015)
- Rhone Capital / S&B (2012)
- IMERYYS / S&B (2015)
- Sibelco SCR / Ankerpoort / White Minerals S.A. (2013)
- Thermolith / SIDENOR / Macedonian Olivinites S.A. (2012)

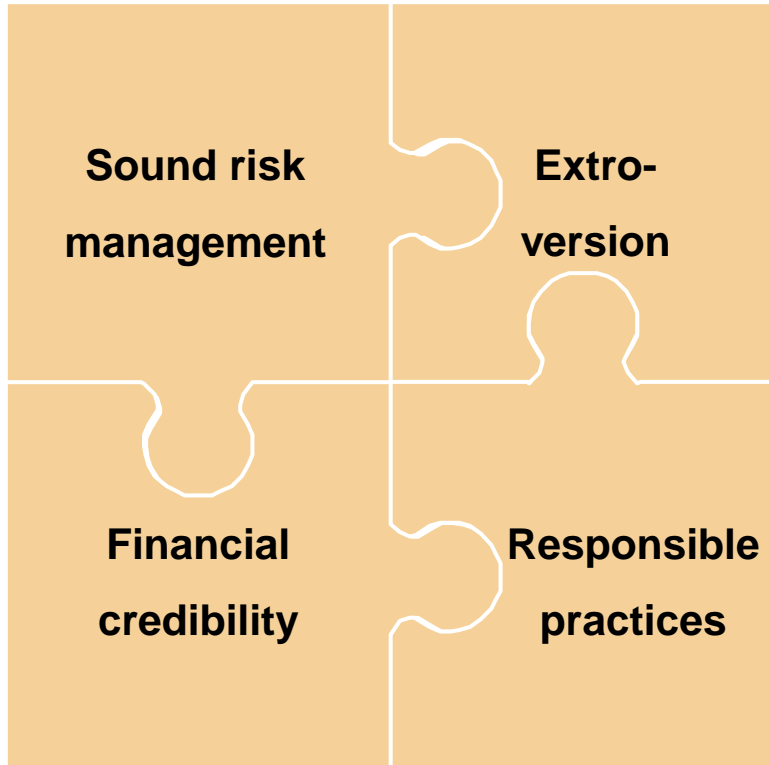
... human capital

- 4 companies run graduate programs (350 positions each year) in country plagued by youth unemployment
- 130,000 hours of training in 2015 (8.3 hours per capita)

GMEA members are planning €1.7 billion worth of investments by 2019



“The Resilience Recipe”



Promising Outlook

- World population projected to increase to 9.7 billion by 2050, according to the UN
- Lignite production is projection to increase until 2020
- Positive outlook for metals (especially aluminum)
- Substantial increase in marble and industrial mineral sales accelerated by the recovery of the Greek economy in 2017

The industry is well-positioned to play a vital role in the Greek recovery



A National Minerals Policy is key to unlocking this potential

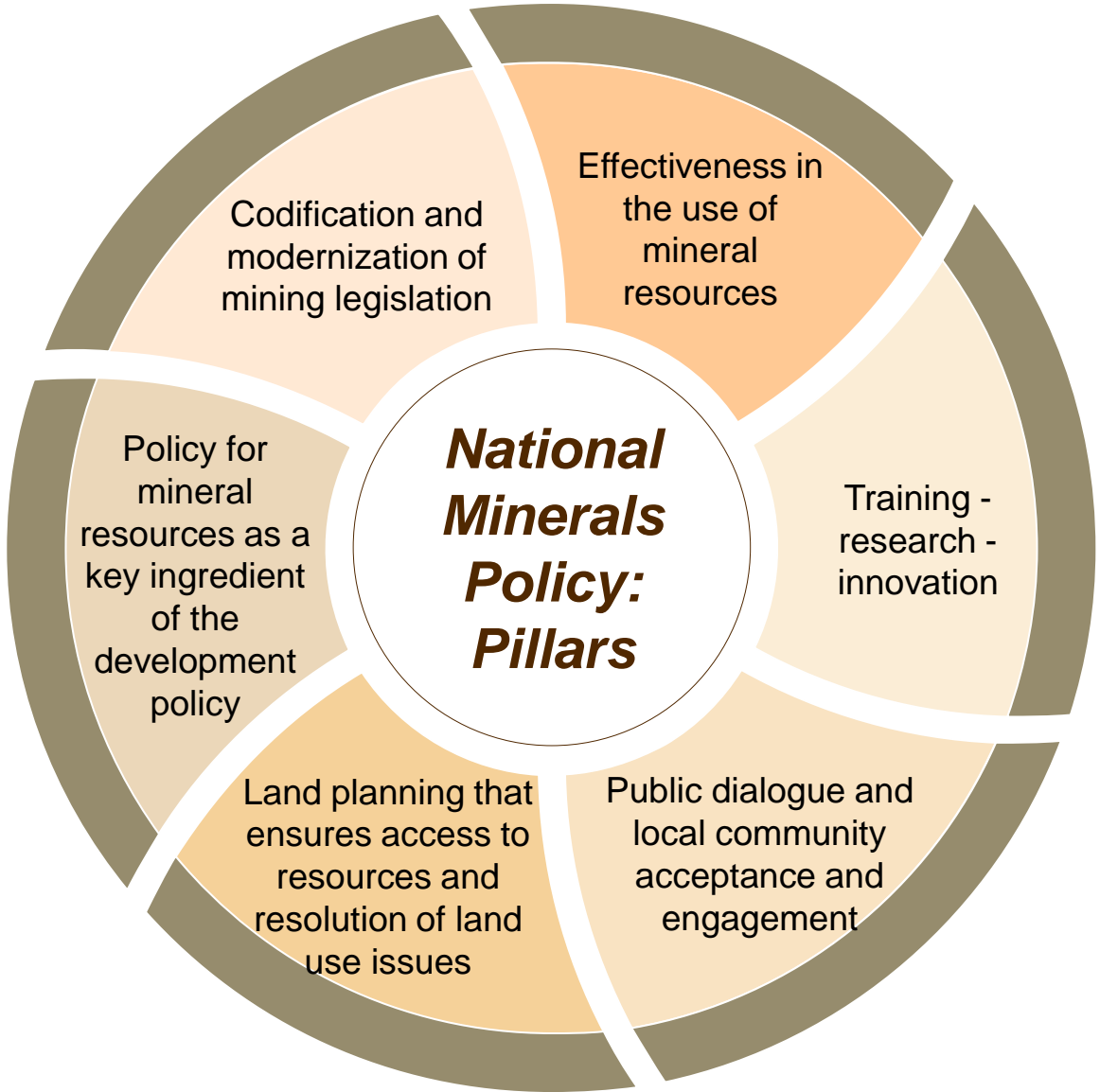
The provisions of a national minerals policy must reflect the **national strategy for mineral resources** built around the following objectives:

- Ensure optimal exploitation of resources
- Actively promote innovation
- Safeguard sustainable development
- Impose rigorous healthy, safety, quality, and environment standards
- Consider reasonable offsets for the local society
- Foster enterprise
- Encourage R&D in new minerals and/or applications
- Render the industry competitive globally
- Promote the circular economy



Implementation of such a policy would spur innovation, improve productivity, and deliver substantial benefits to the Greek economy

The National Minerals Policy currently in place ticks many of these boxes in line with EU policies and regulations...



...however, its implementation has been hindered by several shortcomings



- Time consuming and unnecessary complex licensing process for exploitation of mineral resources
- Bureaucracy and multiple – often conflicting – laws for the same issues or select aspects of the same issues
- Inability of the legal system to distinguish justified versus unjustified appeals that create a huge disincentive for new investments
- Antiquated quarry code that does not account for new trends and discoveries in research and exploitation of minerals
- Lack of comprehensive urban planning that does not reflect the potential of mineral resources
- Absence – due to the ineffectiveness of IGMR (IGME) – of thorough knowledge and understanding of the potential of mineral resources and their degree of exploitation
- Social resistance towards new mining projects for fear of subpar environmental practices that is perpetuated by insufficient audit mechanisms
- Last but not least, unstable tax and labor law that adversely impact competitiveness and investment in all industries - not exclusive to mining



The National Minerals Policy should pave the way for sustainable management of mineral resources in Greece



A comprehensive and coherent **National Minerals Policy** should pave the way for **sustainable management of mineral resources in Greece**; the key elements of such a policy would be the following:

<i>Land Planning</i>	<i>Licensing</i>	<i>Other Legal Issues</i>	<i>Research - Training - Knowledge</i>	<i>Social License to Operate</i>
<ul style="list-style-type: none"> • Map existing mineral resources • Special provisions for regions with high value resources • Provisions for post-mining land uses • Revision of regional urban planning • Update management studies for protected areas 	<ul style="list-style-type: none"> • Streamline processes based on urban planning • Issues specific directives and manuals • Avoid overlaps • Implement Digital Registry for Environmental Works (based on N.4014/2011) 	<ul style="list-style-type: none"> • Codify legislation • Frequently update all relevant resources • New quarry law • Ease in the startup of new activities 	<ul style="list-style-type: none"> • Reinforce / Support research institutions • Create GIS database • Train on matters of sustainability in universities • Include modules in the secondary education curricula • Best practice sharing 	<ul style="list-style-type: none"> • Effective function of inspecting authorities • Avoid illegal mining • Establish financial guarantees • Rationalize allocation of benefits to local institutions • Rehabilitate old mining sites • Establish a forum for the Policy

However, without systematic implementation and elimination of some weaknesses of the Greek Administration none of the aims will be accomplished



To that end, several critical success factors have been identified – some of which address weaknesses of the Greek Administration:

- Access to land / port and other logistics infrastructure
- Stable and equitable tax environment
- Fast and coherent legal decisions
- Access to innovation and research funding
- Upgrade and support of all University departments and faculties of geosciences and vocational education primarily but also information technology

The implementation of the National Minerals Policy would position both the industry and the Greek economy to reap significant benefits



- Ensure continuity of supply of raw materials
- Shield from raw material price volatility
- Ensure compliance with EU policies and regulations
- Create new job positions – besides mining in logistics, exploration, research etc.
- Set the foundation for attracting investment
- Eliminate antagonistic relationships with other prominent local industries (eg: tourism) and promote joint value creation
- Promote better utilization of infrastructure (especially transportation)

***Verheugen
Directive, 2007***

The mining industry could emerge as the national champion for the broader benefit of the Greek economy and the Greek people

To reach the national champion status we do not need to re-invent the pick, we must be brave towards the implementation of the policy (1/2)



Lavrio Silver Mines



The Parthenon

5th century B.C.



Penteli Marble



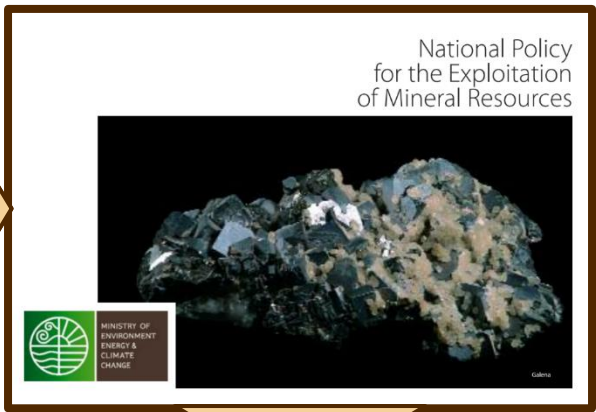
Pericles

Largely thanks to mining the 5th century B.C. was the “Athenian Golden Age”, an age of prosperity, establishment of democracy, and significant progress in sciences, philosophy, arts and culture

To reach the national champion status we do not need to re-invent the pick, we must be brave towards the implementation of the policy (2/2)



**T
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D
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Y**



With world class reserves, substantial logistics advantage, extroversion, and the implementation of the National Minerals Policy... just imagine what we can do now.....



Thank you for your attention!

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