The future of Mining in Europe

International Conference on New Technologies and Policies for Mining and Mining Products
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Dublin, 9 March 2015
Outline

• Who we are
• Raw Materials Initiative and European Innovation Partnership
• EU Mining Industry and its contribution
• EU Mining Industry and Innovations
• New Design and New Solutions
Who we are
Euromines – who we are

- Recognized representative of the European mining industry;
- Service provider to its members with regard to EU policy;
- Network for cooperation and for the exchange of information throughout the sector within Europe;
- Link to contacts with the mining community throughout the world.

Euromines represents large and small companies and their subsidiaries in Europe and in other parts of the world which provide jobs to more than 350,000 people.

Their activities and operations produce more than 42 different metals and minerals.
Our Key Messages

RESOURCES
• *We strongly believe that Europe has a viable resource base*

DEMAND
• *The demand for raw materials is continuously increasing*

STANDARDS
• *The EU should maintain an enabling environment that provides for achievement of the highest standards in the extractive industries*
Euromines as a member/partner/supporter

- **ETP SMR** (European Technology Platform on Sustainable Mineral Resources) – its current President Dr Corina Hebestreit appointed member of the Industrial Advisory Group for Horizon 2020.

- **ERAMIN** (Network of Research Ministers on Raw Material Research) launched its first joined call between Member States in 2013 making national RTD funding available and completing the research funded by the Commission.

- One of the flagship projects of the industry **ProMine** won a prestigious EU prize for best project awarded in Athens in 2014.

- Ongoing projects such as **I2MINE, EURARE, EUROGEOSOURCE, IMPACTMIN, MINERALS4EU**, and **POLINARES** will yield more results and can enhance the EU’s competence in mineral raw materials.
Raw Materials Initiative and European Innovation Partnership
The EU’s Raw Materials Initiative

European Raw Materials Strategy

Europe 2020
4 Flagships Initiatives out of 7 → raw material strategy synergies
- An industrial policy for the globalisation era
- An agenda for new skills and jobs
- Resource Efficient Europe
- Innovation Union

Ensure level playing field in access to resource in third countries
Foster sustainable supply from European sources
Boost resource efficiency and recycling
European Innovation Partnership (EIP) on raw materials

- Brings together, among others, EU countries, companies, researchers and NGOs to promote innovative solutions to Europe's raw materials challenge.

**Key objectives are:**

- Reduction of import dependency by improving supply conditions from EU sources, providing resource efficiency and alternatives in supply.

- Bringing Europe to the forefront in raw materials sectors and mitigating their negative environmental and social impacts.
EIP on Raw Materials: Key components

- **Technology-focused policy areas**
  - Exploration, extraction, processing, recycling
  - Substitution

- **Non Technology policy areas**
  - Improving Europe’s raw materials regulatory framework, knowledge and infrastructure base, e.g. access to land.
  - Promotion of excellence in resource efficiency

- **International cooperation**
  - Promoting appropriate international cooperation
Involvement of Euromines members

in EIP call for commitment
EU Mining Industry and its contribution
Europe is rich in resource! We are a Responsible Source!

Key Mineral Belts and Mineral Deposits of Europe

[Source: The Natural History Museum, London]
Meeting “base-load” demand

• Upgrading & maintaining infrastructure (health, transport, energy, ...)

• Accommodating increased urbanisation

• Deploying new sustainable technologies

• Sharing equitably the benefits of new technologies

• Re-balancing lifestyles and employment across EU regions

The mining industry consistently adds more to proven reserves than it takes away
Sustainable production, Environmental-friendly products

- Create possibilities to keep production in the EU and attract as much investment in new facilities as possible.
- Extraction of metals and minerals in the EU should be encouraged.
- Developing new mining technologies and exporting them to the rest of the world.
EU mines are the most efficient in the world

- EU companies are at the forefront of innovation in raw-materials supply

- World renowned development and manufacture of mining and mineral processing equipment

- Competing in a global market through stand-out productivity performance

- Meeting or exceeding the EU’s strict environmental & safety standards
Any Green Economy still needs Responsible Sourcing

[Source: Aachen University RWTH]
Resource Efficiency

- Resource Efficiency should yield optimum solutions to the trade-offs that exist between different environmental objectives and the environmental, social and economic imperatives of Sustainable Development.

- The result should be an economy that optimises its use of resources and, therefore, results in improved living conditions and reduced waste globally.
EU Mining Industry and Innovations
Almost every industrial branch needs products from the minerals industry.
Leadership in innovations

- Providing pilot plants and research on mining techniques is a way to stimulate innovation.
- EU mining provides raw materials for numerous greenhouse gas mitigation applications, such as for wind and solar energy farms.
- High-strength metals help build lighter cars with lower emissions.

- The European Innovation Partnership (‘EIP’) on Raw Materials is an important attempt to build on Europe’s strengths.
The importance of raw materials for the energy sector

**Wind Energy**
- 3 MW turbine: 600 kg Nd
- EU 2030: 350 GW: 3.5 kt/y Nd

**Electric Vehicles**
- 1 e-vehicle motor: 1.2 kg Nd
- EU 2030: 60 million vehicles: 6.8 kt/y Nd

Future EU energy demand-to-global supply (%) for 6 materials with wide expected use in energy technologies indicating the dominant supplier to the EU supplying country, with %-age of supply

- Competition for materials from other applications and regions
- Substitution possible but with significant loss of energy efficiency - Recycling more feasible in the short-to-medium term

European Association of Mining Industries, Metal Ores & Industrial Minerals
Societal Challenge 5 - Climate action, environment, resource efficiency and raw materials

"Ensuring The Sustainable Supply Of Non-energy And Non-agricultural Raw Materials"

- New solutions for sustainable production of raw materials
- Innovative and sustainable solutions leading to substitution of raw materials
- Coordinating and supporting raw materials research and innovation
- Cross-challenge topics

"Waste: A resource to recycle, reuse and recover raw materials"

- Recycling of raw materials from products and buildings
- Towards near-zero waste at European and global level
ETP SMR contribution

- Reshape a "traditional" industry from resource-driven to a knowledge-driven industry;

- Foster new jobs, including SMEs and New Member States

- Supply and secure the mineral resources needed by the EU economy while minimising the related environmental footprint (decoupling);

- Strengthen world leadership and competitiveness in minerals sector technology;

- Add value for customers and the society.
New Design ➔ New Solutions
Steel and concrete Architecture

L’Hemisfèric – IMAX Cinema, planetarium and laserium

- Planetarium is a half-sphere composed of concrete 110 meters long and 55.5 meters wide.
- The shutter is built of elongated aluminum awnings that fold upward collectively to form a brise soleil roof that opens along the curved axis of the eye.
Thank you for your kind attention.

In case of any questions please contact:

Skyscraper Architecture
Lift technology – KONE UltraRope™

Super-light rope technology
Carbon fiber core and special high-friction coating

• 2x longer lifetime,
• 60% reduction in moving masses,
• 15% reduction in energy consumption,
• Less sensitive to building sway.

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Superjumbo Aircraft

- To minimise the unladen weight, the Airbus A380 structures incorporate a range of new materials.
- The aluminum and fiberglass layers of Glare (new material, highly resistant to fatigue) do not allow propagation of cracks.
- Carbon fiber-reinforced plastic is used for the central box of the wings, the horizontal stabilisers, the fin, the rear fuselage section and for ceiling beams.
The BMW i8, first introduced as the BMW Concept Vision Efficient Dynamics.

The 2015 model year BMW i8 has a 7.1 kWh lithium-ion battery pack that delivers an all-electric range of 37 km (23 mi) under the New European Driving Cycle (NEDC).

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Diesel and petrol driven cars

- High-strength steel is used to improve crash protection while at the same time lower the weight.
- Aluminium can be used for body panels, engine blocks, roofs and wheels.
- Catalytic converters require to use of precious metals such as platinum, palladium and rhodium.
LED lamps use small quantities of rare earth powders as phosphors, these make up less than 1% of the overall weight, but are crucial for LED lamps' characteristics and functionality.

- LED lamps yield up to 80-90% energy savings due to the fact that their service life is 5-40 times longer than that of conventional light bulbs.
Wind power is not possible without innovative materials. A single wind turbine can contain up to several hundred tons of steel, several tons of copper and aluminium. The steel and aluminium used in the wind turbines remains in place for a period of 30-40 years. The blades are often made of carbon fibre and fiberglas. High-tech steel is used for slewing bearings and rings.
Solar PV is now the third most important renewable energy source in terms of globally installed capacity.

- Semi-conductor solar cells consist of tin oxide electrodes between which there are layers of nano-porous titanium oxide as the pigment carrier, zirconium dioxide as electrolyte, and platinum as catalyst.
Information and communications technology (ICT) industry

Smartphones
- Today's smartphones may contain up to 50 different metals although used mostly in very small absolute quantities.
- New technology metals, neodynium and dysprosium are used for powerful loudspeaker magnets.
- Cobalt and lithium are used for the battery.
- Indium is necessary for the LED display, and gallium for the processor.
Our households

- Daily home life depends on a vast range of natural resources extracted from the earth.
- One of the most famous example of household industrial design is the Juicy Salif, designed by Philippe Starck in 1990.
- It is considered an icon of industrial design that has been displayed in New York’s Museum of Modern Art. It is manufactured by an Italian kitchenware company and made from cast and polished aluminium.
Euromines’ Forward Vision

• Achieve 100% responsible and balanced sourcing of mineral resources for the EU.
• Retention of full value-chains will strengthen the economy.
• Mining will be essential to Europe’s industrial renaissance.
• Let the EU be the “international partner of choice” for sustainable transformation of primary and secondary mineral resources.
• The EU should attract the necessary inward investment.
• Mining employment is a high multiplier of wealth.
• Reasonable energy polices can ensure longer term returns.
• The EU must act to maintain the competitiveness of its industries.
We must shape the future of our industry in Europe, TOGETHER.

Thank you for your kind attention

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