

MINED MADE IN EUROPE IN EUROPE

Towards a Sustainable Value Chain



FOREWORD

Industry is the backbone of a sustainable EU economy. It provides the goods we use in everyday life, the jobs we need and is the main engine for trade. Sustainable and competitive industry is the root for smart, innovative growth in Europe, the quality of life of EU citizens and motivating sustainability across the world.

Euromines welcomes an ambitious EU Industrial Strategy aimed at a global-level playing field and stable, integrated, predictable and proportional legislation.

A coherent industrial policy is vital for ensuring sustainable access to and supply of both resources and energy at competitive prices.

A balanced approach to climate, energy and raw materials policies is required in order to both husband continued European technological excellence along the value chains and support innovation and investment by new and traditional industries.

Euromines continues to support a sector improving its performance in all areas, be it safety, environmental protection, resource and energy efficiency, or contributing to solutions for combating climate change. Its mixed membership of national mining associations and leading European exploration and mining companies provides a unique network leveraging experience and expertise in many areas. 2017 has seen a number of important projects, for example in the area of occupational exposure protection (our good practice guide) and waste management (Best Available Technology on Mine Waste Management).

But the organisation has also reached out across the Atlantic in support of the EU's Raw materials policy and the interest of various EU companies, by embarking on two EU funded projects on Canada and Latin-America designed to reinforce the political support for investments and trade in the raw materials and related sectors. Both projects will end in 2018 and should lead to further long-term cooperation.

2018 will bring new challenges, but with the gathering economic upturn the sector and the organisation can at last look forward to better days ahead.



Mark Rachovides, President

CONTENTS

COMPETITIVE INDUSTRY	6
Investments in Sustainable Value Chains	7
High Level Guidance	8
Industry at the Heart of Political Priorities	9
Fostering Sustainability, Trade and Investment	10
PROVIDING SAFE AND SUSTAINABLE EMPLOYMENT	14
People First	15
Protecting against Chemicals	15
Good Practice Guide on Reducing NO _x and CO Gases in the Extractive Industry	16
Revision of the Carcinogens and Mutagens Directive	16
Euromines Brochure on Safety Culture	17
AN INNOVATIVE INDUSTRY	18
Bringing Together Knowledge	19
Vision and Roadmap for European Raw Materials: Veram	19
MinLex	19
INTRAW	19
ENVIRONMENTALLY SOUND INDUSTRY	20
Caring About the Environment	21
Environmental Protection	21
AN ENERGY AND RESOURCE EFFICIENT INDUSTRY	24
Addressing the EU's Energy and Raw Material Supply Conundrum	25
Emissions Trading System (2021 -2030)	25
Energy Efficiency Directive	26
Electricity Market Design	26

EUROMINES IN BRIEF

WHO WE ARE

Euromines is the recognized representative of the European metals and minerals mining industry. Our members' main objective is to promote the industry and maintain their relations with European institutions at all levels. Euromines provides services to its members with regard to EU policy and forms a network for cooperation and the exchange of information throughout the sector within Europe. The association also supports contacts with the mining community throughout the world.

WHAT WE DO

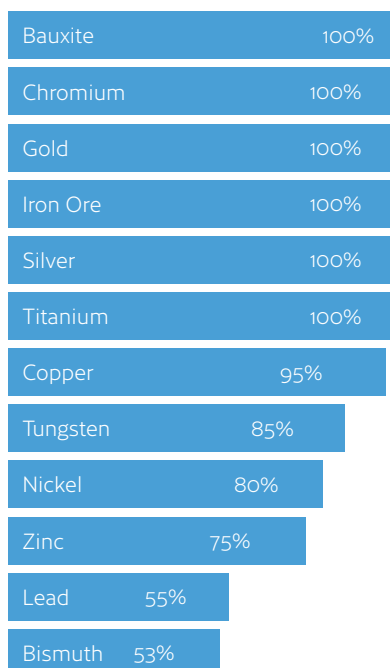
Euromines is the primary interface between the European Mining industry and the European authorities and international or intergovernmental bodies. The association works to establish common industry positions and initiatives, enhance constructive dialogue on areas of European and international policy affecting the industry and assert the industry's views and positions. As an advocate for the industry, Euromines promotes the benefits and societal value of both its activities and its investments.

Euromines members are diverse, National Associations, large and small companies who, within Europe and in other parts of the world, provide jobs to more than 350,000 people. Their activities and operations produce more than 42 different metals and minerals.

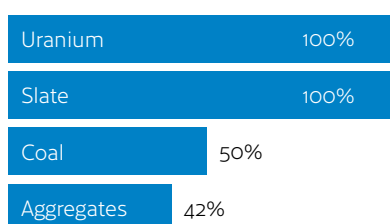
For some metals and minerals, Europe is the world's leading producer.

WHY WE DO IT

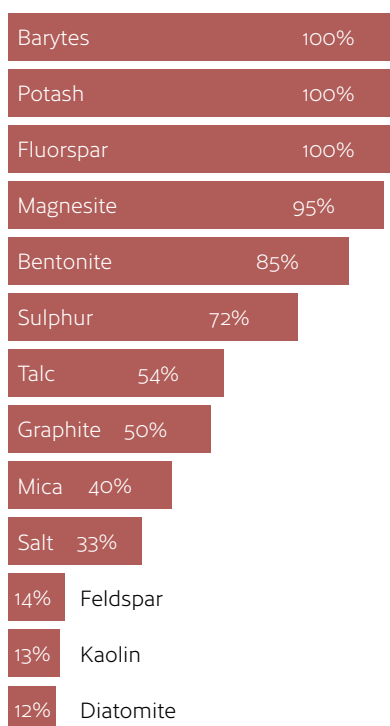
Euromines provides members with early warnings of policy change. The association also stimulates policy debate, articulates what's needed and creates opportunities to secure those needs. At the same time, Euromines seeks to protect and maintain the industry's reputation so that members can stay in business.



Euromines Representativity in Metals Mining
in % of EU production



Euromines Representativity in other Minerals
in % of EU production



Euromines Representativity in Industrial Minerals
in % of EU production

EUROMINES VISION & MISSION

EUROMINES' VISION FOR THE EUROPEAN EXTRACTIVE INDUSTRY

A viable and responsible extractive industry, which provides the essential economic, social and environmental assets for society's sustainable development.

EUROMINES' MISSION

- To promote a sustainable and prosperous extractive industry in Europe through operational excellence;
- To serve as a network for cooperation and for the exchange of information throughout the sector;
- To foster contacts with the mining community internationally to achieve its objectives;
- To participate in European and international policy-making.

EUROMINES STEERING COMMITTEE

Mark Rachovides	- President	- Dundee Precious Metals
Thorsten Diercks	- Vice President	- Vereinigung Rohstoffe und Bergbau
Roman Stiftner	- Vice President	- Austrian Mining and Steel Association
Leif Boström	- Member	- LKAB Minerals
Adam Brożek	- Member	- KGHM Polska Miedź S.A.
Corina Hebestreit	- Member	- Euromines
Pierre Heeroma	- Member	- Boliden
Sebastia Isart	- Member	- Iberpotash
Jani Lösönen	- Member	- Agnico Eagle Finland OY
Mikael Schauman	- Member	- Lundin Mining

EUROMINES TEAM

Corina Hebestreit	- Director
Johannes Drielsma	- Deputy Director
Petros Maraboutis	- Coordinator BAT (2015-2017)
Veronika Sochorova	- Communication Manager
Mirona Coropciuc	- Environment, Trade and Energy Manager
Kasia Palaczanis	- Public Relations Manager
Azi Bairami	- Office Manager



Photo © LKAB Group

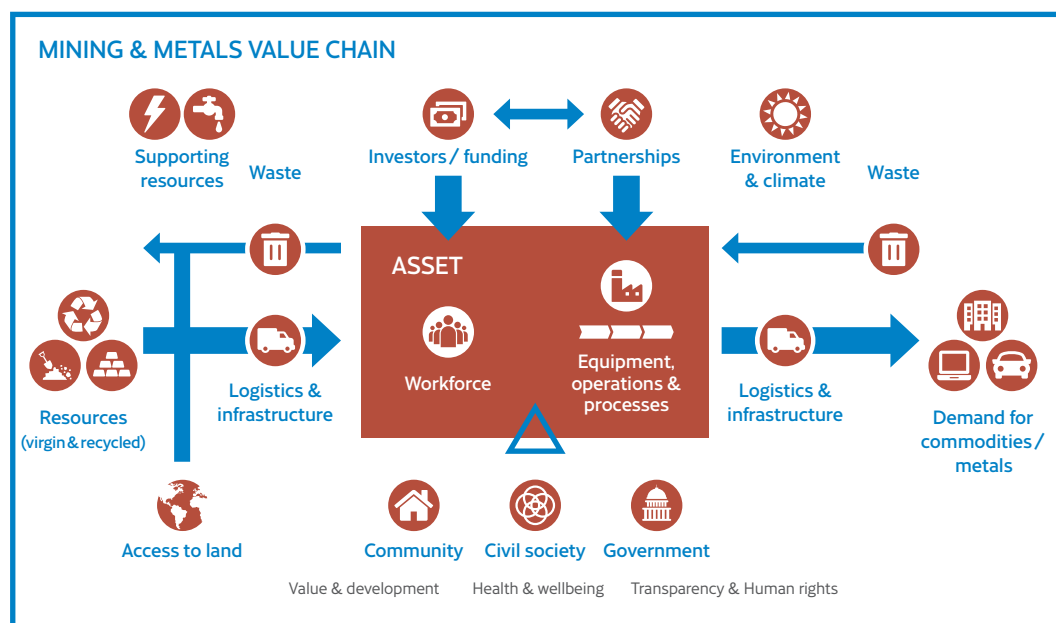
1 COMPETITIVE INDUSTRY

INVESTMENTS IN SUSTAINABLE VALUE CHAINS

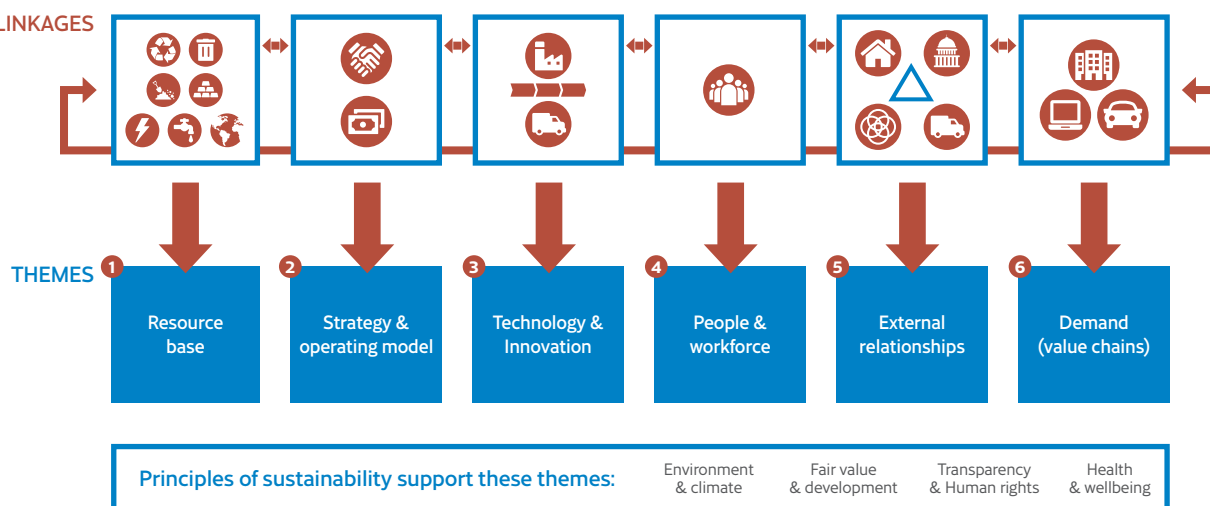
The extractive industry is an integral part of any economy and society. Standing at the beginning of most value chains, the sector is a critical supplier of essential materials and products and therefore also in Europe generates added value and growth through employment and economic growth and development and generates trade.

Figure 1

MINING AND METALS VALUE CHAIN AND TRANSITION TO A SUSTAINABLE WORLD



INTERLINKAGES



Source: World Economic Forum, Mining and Metals in a Sustainable World 2050

The mining sector faces significant demands and expectations from across the value chain and stakeholder groups – from shareholders and customers, to governments, communities and consumers. Still, it continuously improves during the journey to a sustainable world. And that is done in many aspects of its activities.

In 2017, Euromines was a significant contributor to the ICMC publication on “Mining and metals and the circular economy” and the European Commission’s Monitoring Framework for the Circular Economy, which is expected to be adopted during 2018. Euromines supported the use of several indicators from the EU’s existing Raw Materials Scoreboard, but expressed concern that other statistics may be used inappropriately to compare EU Member States with different industrial bases.

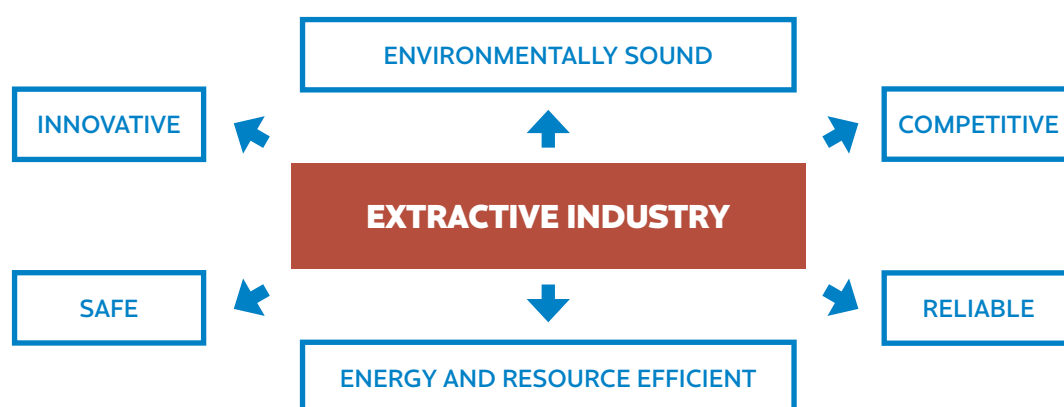


Figure
2

EXTRACTIVE
INDUSTRY
CONTRIBUTING TO
THE SUSTAINABLE
VALUE CHAIN

HIGH LEVEL GUIDANCE

Raw materials, like food, water and energy, are basic needs of our society, and it is of strategic importance to secure their sustainable supply for the wellbeing of future generations. A strong EU economy can only exist if there is a comprehensive, integrated and continuous raw materials policy.

The European Innovation Partnership on Raw Materials is a stakeholder platform that brings together representatives from industry, public services, academia and NGOs. Its mission is to provide high-level guidance to the European Commission, Members States and private actors on innovative approaches to the challenges related to raw materials.

Thanks to a continued focus of our experts in Working Groups and of our Members, Euromines has been able to leave its mark on a number of initiatives that will shape the future of the European Union. Euromines is an active member of the EIP on Raw Materials, including its High Level and Sherpa Groups and its Scoreboard and Ad Hoc groups. We are involved in all initiatives aiming at developing a strong EU Raw Materials Policy – from assessing the Critical Raw Materials to determining Best Practices on minerals policy and legal framework, land-use planning and permitting.

The EIP plays a central role in the EU's raw materials policy framework by reinforcing the Raw Materials Initiative and being instrumental in securing R&I funding. Through the implementation of the actions and targets, the EIP is bringing systemic change in the raw materials policy framework:

- **Creation** of a significant raw materials community ➡ close to 980 partners contributing to the Commitments
- **Facilitation** of considerable funding for raw materials R&D ➡ through Horizon 2020
- **Contribution** to the improvement of the regulatory framework ➡ e.g. via the Circular Economy Package

- **Development** of the Raw Materials Scoreboard ➡ raising awareness about the challenges related to raw materials
- **Improving** the framework conditions for boosting raw materials production in the EU ➡ the launch of the Raw Materials Information System and the set-up of the Raw Materials and Recycling Investment Platform
- **Framework Programme 7** (the R&I funding tool for the period 2007-2013) - €180 million for raw materials R&I
- **Horizon 2020** (the R&I funding tool for 2014-2020) - €600 million for research on the challenges related to raw materials.

INDUSTRY AT THE HEART OF POLITICAL PRIORITIES

President Jean-Claude Juncker:

"I want to make our industry stronger and more competitive. The new Industrial Policy Strategy we are presenting today will help our industries to stay or become the world leader in innovation, digitisation and decarbonisation."

In September 2017, the Commission unveiled an Industrial Policy Strategy that aims at empowering European industries to continue delivering sustainable growth and jobs. With the EU Industrial Policy Strategy, the Commission now brings together all existing and new initiatives into a comprehensive industrial strategy. The strong industrial focus of all of the European Commission's policies has been complemented by sector-specific measures like in the case of the space, defence, automotive and steel industries, and through a strong focus on Key Enabling Technologies.

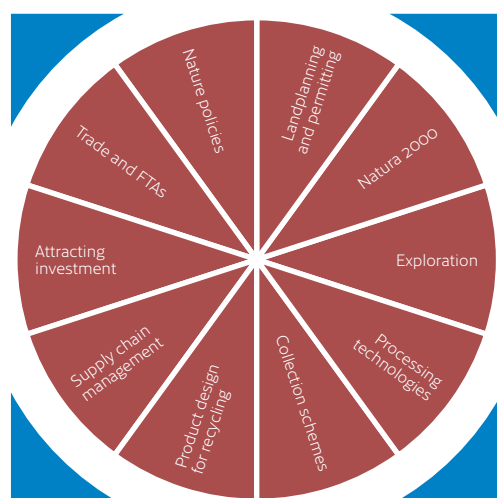
Raw Materials Initiatives underpin the industrial policy in many aspects, especially in the following areas:

- Priority 1:** A new boost for jobs, growth and investment
- Priority 4:** A deeper and fairer Internal Market with a strengthened industrial base
- Priority 6:** A balanced and progressive trade policy harnessing globalisation

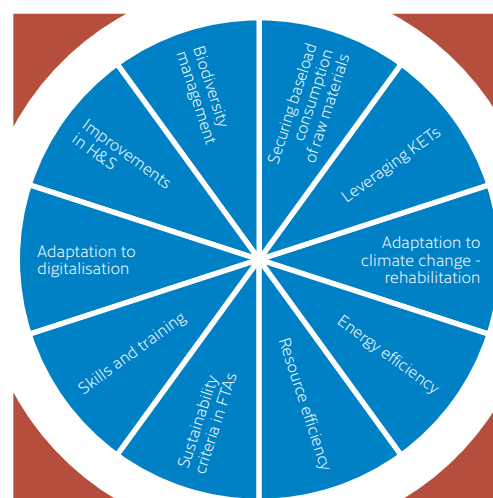
Figure 3

TWO MOTORS OF PROGRESS

Accessibility



Sustainability



JOINT INDUSTRY DECLARATION FOR AN AMBITIOUS EU INDUSTRIAL STRATEGY

The European manufacturing industry has tremendous capacity for research and innovation, boasts a skilled workforce and has earned a global reputation for quality and sustainability.

The European manufacturing industry provides every 4th workplace in the private sector and at least every 4th from the remaining jobs depends on services and suppliers feeding into this manufacturing.

80% of all research and innovation is varied out by industry. They are the motor for most implemented innovations and practical solutions.

Manufacturing delivers 75 % of EU exports.

As part of the European manufacturing industry, Euromines has signed a joint declaration calling on the European Commission to reaffirm this commitment, adopt an Action Plan to tackle industry challenges and commit to implementing this Action Plan in a timely manner. Euromines has been the rapporteur for skills and training in this coalition and has participated in a number of presentations and meetings with the Council WG on Competitiveness, the EESC and Commissioner Bieńkowska.

The coalition of associations have worked together, towards developing a common reaction paper to the European Commission's Communication on 'Investing in a smart, innovative and sustainable Industry: a renewed Industrial Strategy for Europe', that was announced by President Juncker. Representatives of the vast array of industrial sectors put together key objectives for an ambitious and competitive EU industrial strategy, which include business-friendly environment and governance, market-ready skills & training, research and innovation, access to finance, internal market, trade and international market access. The Signatories are counting on the continued cooperation with the European institutions and Member States towards implementing the new ambitious industrial strategy.

The upcoming Presidency conferences of Bulgaria and Austria in 2018 will take up this important issue.



Elzbieta Bieńkowska

FOSTERING SUSTAINABILITY, TRADE AND INVESTMENT

EU-LATIN AMERICA MINERAL DEVELOPMENT NETWORK PLATFORM

In the Mineral Development Network Platform (MDNP) project the EU, together with seven Latin American partner countries (Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay) are looking to intensify cooperation of the non-energy extractive industries. Both regions have different strengths in these industries, and they also face a number of challenges in today's economy. In these partnering countries, mining provides substantial revenue and jobs while supplying essential raw materials for fast-growing, cutting-edge sectors such as renewable energy, fuel-efficient transportation and smart technologies.

The aim of the MDNP project is to bring together, building on existing multilateral cooperation, all relevant stakeholders from entities and disciplines linked to the non-energy extractive industries in the EU and the participating LatAm countries. It will thereby support a continuous and structured cooperation between the EU and Latin America, reinforcing dialogue, promoting cutting-edge technologies, strengthening business, institutional and academic ties and opening new business prospects, thus leading to win-win situations between the two strategic partners.

On the basis of an ad-hoc, comprehensive analysis of the EU and LatAm extractive sectors, the MDNP will be designed to enable spaces for networking, information gathering and exchange of best-practices.



In April 2018, the Mining Exploration and Trade Show Conference (METS2018) will be organized for the first time in Madrid for all interested stakeholders. EU and Latin American partners will be able to meet in person, gather first-hand information, engage in discussions and promote their technologies, companies and organisations (www.mets2018.eu).

EU-CANADA MINERAL INVESTMENT FACILITY

This project aims at building strategic partnership to promote a more reliable investment environment between Canada and the EU across the non-energy extractive industry (NEEI). It leads to economic development of the sector in both the EU and Canada through increased investment flows, increased exploration, the opening of new mines, and increased trade in services and equipment.

Figure
4

EU-CANADA MINERAL INVESTMENT FACILITY PLATFORM



The second workshop of the EU-Canada Mineral Investment Facility Feasibility Study was held in Toronto, Canada in November 2017. The purpose of the second workshop was to present and discuss capital access, investment and business opportunities in exploration and mining, engage and network with all relevant stakeholders including industry, public authorities, academia and civil society, and allow all key stakeholders to share their opinion on the design, function, and scope of the proposed EU-Canada Mineral Investment Facility.

EUROPEAN INVESTMENTS IN CANADIAN EXPLORATION AND MINING

Source: Ernst & Young, 2017

Owner	Commodity	Exploration	Production	Total
BMC Minerals Ltd.	Gold	4	4	
KGHM Polska Miedz SA	Copper, Nickel	2	4	6
Landore Resources Ltd.	Copper, Nickel, Gold	7	7	
Minco PLC	Gold, Zinc	6	6	
Rambler Metals & Mining PLC	Gold, Copper, Zinc	5	1	6
Roche Bay PLC	Iron Ore	3	3	
Total EU		27	5	32
Canada Total		1930	107	2037
EU % of Canada Total		2%	5%	2%

CONTINUED STRATEGIC IMPORTANCE OF RAW MATERIALS

In 2017, a wide range of actions under the EU Raw Materials Initiative were implemented to help ensure their secure, sustainable and affordable supply. The list of critical raw materials for the EU is a central element of this initiative. An updated list of 27 critical raw materials for the EU was presented as a result of a third assessment. It followed the two subsequent Communications on raw materials, which established a list of 14 critical raw materials in 2011 and a revised list of 20 critical raw materials in 2014. The list of critical raw materials for the EU is subject to regular updates at least every three years in order to reflect production, market and technology developments, and the number of raw materials assessed has increased with each update.

The new list includes 9 more new materials than the 2014 list: baryte, bismuth, hafnium, helium, natural rubber, phosphorus, scandium, tantalum, vanadium. This brings the number up to 27 raw materials which are now considered critical by the Commission. 3 of these are entirely new to the list: bismuth, helium, phosphorus. The other 17 critical raw materials are included in the CRM table below. For the first time, individual assessment results are available for the 3 grouped metals: HREEs (heavy rare earth elements), LREEs (light rare earth elements), and PGMs (platinum group metals).

The list should help incentivise the European production of critical raw materials through enhancing recycling activities and, when necessary, to facilitate the launching of new mining activities. It also allows to better understand how the security of supply of raw materials can be achieved through supply diversification from different geographical sources via extraction, recycling or substitution.

Why critical raw materials are important:

- **Link to industry** - non-energy raw materials are linked to all industries across all supply chain stages.
- **Modern technology** - technological progress and quality of life rely on access to a growing number of raw materials. For example, a smartphone might contain up to 50 different kinds of metals, all of which contribute to its small size, light weight and functionality.
- **Environment** - raw materials are closely linked to clean technologies. They are irreplaceable in solar panels, wind turbines, electric vehicles, and energy-efficient lighting.

However, what has been missing so far, apart from the Commission's efforts to remove trade restrictions from other exporting countries, is a more targeted industrial policy facilitating access to these raw materials within the EU.

CONTRIBUTING TO SUSTAINABLE REGIONS - EUROPEAN MINERALS DAY

The 2017 European Minerals Day Launch took place on 21 and 22 September, hosted under the Estonian EU Presidency, kindly hosted by Nordkalk and Kunda Nordic Tsement at their operations in Kurevere and Kunda. It welcomed representatives from the European Commission, Estonian government, partnering sectors, academia, NGOs, media and local administrations. The balanced and insightful presentations by the guest speakers was complemented by visits of both quarry operations, the cement plant and port in Kunda, a blasting in Kurevere and introduction to the local biodiversity projects on birds and orchids. The Launch event told the story of the minerals industry's contribution to sustainable regions and well-being of the local communities, while making the link to the EU Industrial Policy Strategy and EU Action Plan for People, Nature and the Economy.

CRITICAL RAW MATERIALS

AS LISTED ON THE 2017 LIST OF CRITICAL RAW MATERIALS FOR THE EU

Antimony
Baryte
Beryllium
Bismuth
Borate
Cobalt
Coking coal
Fluorspar
Gallium
Germanium
Hafnium
Helium
HREEs
Indium
LREEs
Magnesium
Natural graphite
Natural rubber
Niobium
PGMs
Phosphate rock
Phosphorus
Scandium
Silicon metal
Tantalum
Tungsten
Vanadium

New in 2017

New in 2014

More than 130 quarries and plants in 27 countries opened their doors welcoming around 30.000 children and adults to celebrate the 2017 European Minerals Day and have the rare opportunity to explore the world of minerals and experience how they are sustainably extracted. Typical activities included school visits, guided tours, workshops, exhibitions, biodiversity projects, and many more.

For the participating companies, it represented a good opportunity to show their commitment to sustainability and how this is applied in daily operations, notably in the areas of health and safety, resource efficiency, innovation, regional development and biodiversity.

The European Minerals Day is a commitment under the European Innovation Partnership on Raw Materials, seeking to enhance understanding, acceptance and trust of mining operations. The Open Days offer an opportunity to the public to experience how the minerals sector contributes to:

- **Innovation:** Minerals are at the core of technological progress and leading-edge industrial sectors.
- **Regional Development:** Minerals operations are at the heart of local economies and provide for jobs and growth with many businesses depending on them.
- **Biodiversity:** The minerals sector helps to enhance biodiversity and contributes to eco-system services.
- **Resource efficiency:** Minerals companies sustainably manage their resources, from the way they extract and process the minerals and also contribute to resource efficiency and energy savings throughout the value chain.
- **Safety:** The no 1 priority of the minerals sector.

CONTRIBUTING TO SUSTAINABLE REGIONS – THE EUROPEAN COAL MINING REGIONS TRANSITION PLATFORM

41 regions in 12 Member States are actively mining coal, providing direct employment to about 185,000 citizens. However, over the past few decades the production and consumption of coal in the EU has been in steady decline. Planned and ongoing closures of coal mines and the commitment by a number of Member States to phase out coal use for power generation are expected to accelerate this downward trend. In view of this, the Platform for Coal Regions in Transition is designed to assist Member States and regions in tackling the challenge of maintaining growth and jobs in these affected communities. It will enable multi-stakeholder dialogue on policy frameworks and financing and cover areas such as structural transformation, including economic diversification and reskilling, the deployment of renewable energy technologies, eco-innovation and advanced coal technologies.

As part of the Clean Energy for All Europeans Package, a number of actions were announced to boost the clean energy transition by bringing more focus on social fairness, new skills and financing for the real economy. In December 2017, the European Commission launched a Platform on Coal Regions in Transition to help regions with coal mining activities identify, develop and implement projects with the potential to kick-start a viable economic and technological transformation, and to enable multi-stakeholder dialogue on policy framework and regulations.



Photo © KGHM Polska Miedź

2 PROVIDING SAFE AND SUSTAINABLE EMPLOYMENT

Including the uranium, coal and lignite mines the extractive industry in Europe provides around 350.000 jobs in more than 50 metal mines, many hundreds of industrial mineral mines and quarries and thousands of aggregate and stone quarries.

PEOPLE FIRST

The extractive industry continuously strives towards healthy and safe working conditions. In 2017 important changes happened on the legislative level – an update on the Chemical Agents Directive and Revision of the Carcinogens and Mutagens Directive. Euromines actively participated in the consultations and took proactive steps aimed at promoting good practices in the H&S area by publishing a brochure on safety culture and best practices guide on reducing NO_x and CO gases in the extractive industry.

PROTECTING AGAINST CHEMICALS

The European Commission's directive on chemical agents was amended in January 2017 with a fourth list of indicative occupational exposure limit values (IOELVs). The revised Annex includes long-term IOELVs for 31 substances for the inhalation route of exposure with a reference period of 8-hours time-weighted average. 8 of these were already indicated in the opinion of ACSH of May 2015.

The list includes

Carbon monoxide, IOELV: 8h - TWA: 20 ppm (23 mg/m³) / 15 min - STEL: 100 ppm (117 mg/m³).

Nitrogen monoxide, IOELV: 8h - TWA: 2 ppm (2.5 mg/m³) / 15 min.

Nitrogen dioxide, IOELV: 8h - TWA: 0,5 ppm (0.995 mg/m³) / 15 min - STEL: 1 ppm (1.91 mg/m³) .

Due to current difficulties of the sector to implement such limit values, after long discussions, presentations and argumentations, the Commission agreed to propose a Recital and specific Article granting a transitional period of 5 years for the application of the IOELs in the extractive and tunneling industry.

Article 6

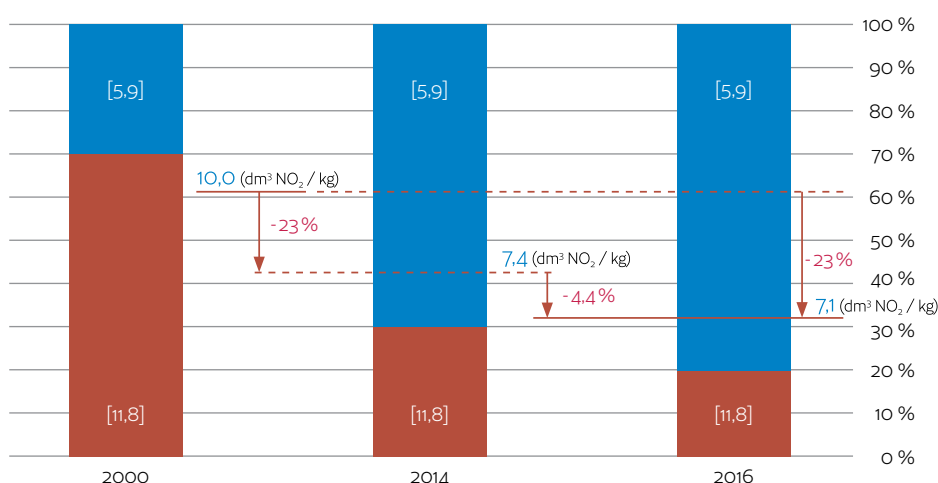
In underground mining and tunneling, Member States may benefit from a transitional period ending at the latest on 21 August 2023, as regards the limit values for nitrogen monoxide, nitrogen dioxide and carbon monoxide.

GOOD PRACTICE GUIDE ON REDUCING NO_x AND CO GASES IN THE EXTRACTIVE INDUSTRY

Keeping workers healthy is essential to the success of mining companies, and Euromines members are driven to meet the highest standards for worker health and safety. For this to happen, hazards such as toxic chemicals in the workplace need to be identified, and the risks from any possible exposure associated with them need to be adequately controlled. The concentration of NO, NO₂ and CO at workplaces in underground mines arises predominately from the use of explosives and from vehicles and mobile machines equipped with diesel engines. In the underground mining sector, the use of diesel engines in the short-to-medium term will remain necessary. But during the last few decades of diesel engine operation, a significant amount of research and improvements were made in the area of the work environment and effective diesel engine operation.

Reduction of NO_x emissions from blasting works

NO_x content converted to NO₂ [Source: Central Mining Institute Experimental Mine "Barbara" research unit notified in the European Union under the number 1453]



Figure

5

The annual use of explosives

16 thousand tons

The daily use of explosives (24 h)

50 tons

The number of blasting works in the mine faces / daily (24 h)

600

(example from KGHM operations)

■ Nitroglycerine explosives
■ Emulsion explosives

[5,9] Contents (dm³ NO₂ / kg)
[11,8]

REVISION OF THE CARCINOGENS AND MUTAGENS DIRECTIVE

The revised Directive introduces in its Annex I "work involving exposure to respirable crystalline silica dust generated by a work process" and sets a Binding Occupational Exposure Limit Value of 0.1 mg/m³ for respirable crystalline silica. The NEPSI Agreement is recognised as a valuable and necessary instrument to support its implementation. The directive was approved on 25 October. Member States will have two years to transpose the directive in their national laws. The directive sets exposure limits for a further 11 carcinogens in addition to those covered by the existing 2004 directive, among which a Binding Occupational Exposure Limit Value for Respirable Crystalline Silica generated by a work process at 0.1 mg/m³. Article 18a specifies that the European Commission will evaluate the need to modify this limit value as part of the next evaluation of the implementation of the Directive. Euromines acknowledges the European Binding Limit Value of 0.1mg/m³ which aims to protect workers and defines a unique maximum level across the EU. Recital 19 of the Directive acknowledges the positive role of the Good Practices of the Social Dialogue "Agreement on Workers' Health Protection Through the Good Handling and Use of Crystalline Silica and Products Containing it" (known as the NEPSI Agreement) as a valuable and necessary instrument to complement these new regulatory requirements and support their implementation.

EUROMINES BROCHURE ON SAFETY CULTURE

Written rules, standards and procedures are necessary in achieving safe working environments. However, they alone are not enough. The answer is ultimately found in a company's culture – the unwritten standards and norms that shape mind-sets, attitudes, and behaviours.

Working together, mining companies, unions, employees and the regulatory authorities have made significant strides in improving the safety performance of European mines and quarries, also called "Social dialogue". The work is on-going and challenges remain to be achieved, but the common goal in protecting human life drives the work further.

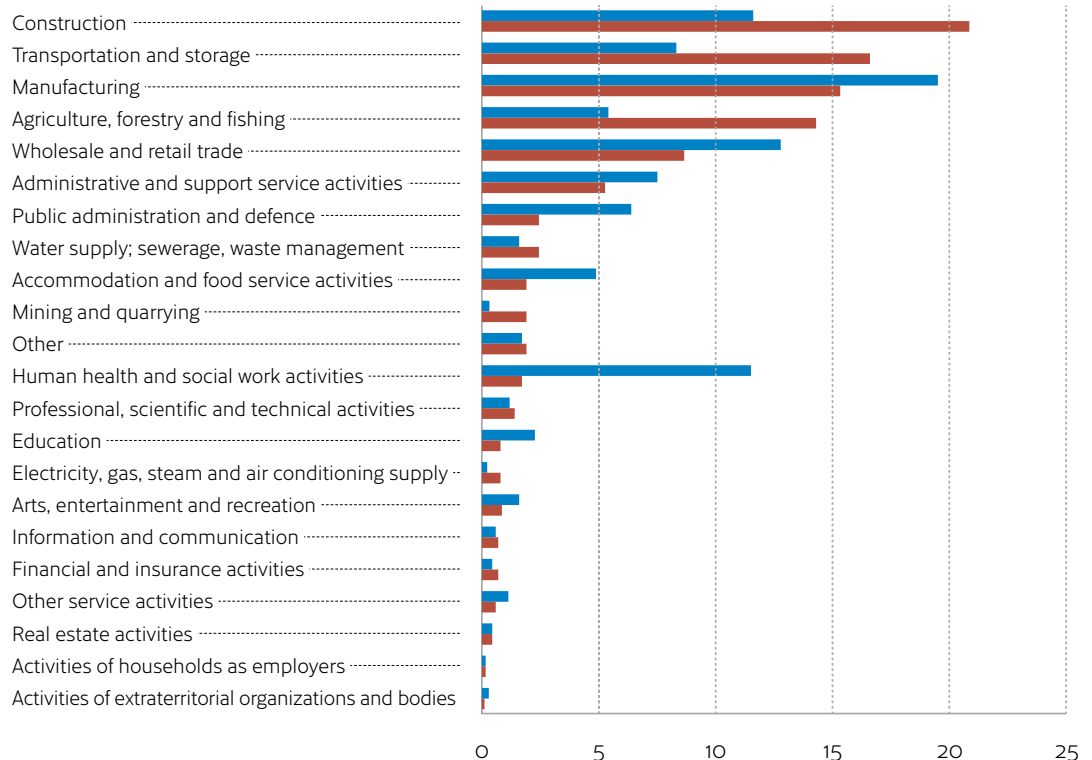
To achieve safer workplaces, continuous improvement is essential. In an industry such as the extractive industry which around the world often operates 24 hours a day, the need to manage risk never ends. Even the best safety framework should be viewed as a work in progress. Developing a culture of safety is therefore a journey with many challenges remaining that push the companies to move forward and to improve. We know that we cannot rest from the objective of driving incidents to zero which can be achieved by going beyond compliance and creating a culture in which all of the workforce owns safety (and not only complies with safety procedures).



Figure 6

**SITUATION
IN EUROPE**
FATAL AND NON-FATAL
ACCIDENTS AT WORK BY
ECONOMIC ACTIVITY,
EU-28, 2014
(PERCENTAGE OF
FATAL AND NON-FATAL
ACCIDENTS)

■ Non-fatal accidents
■ Fatal accidents



Source: Eurostat 2016



Photo © Boliden AB

3 AN INNOVATIVE INDUSTRY

Mark Rachovides for Mining Journal, August 2017:

"We're now working on very specific projects to demonstrate the value of bringing together people's knowledge"

BRINGING TOGETHER KNOWLEDGE

The extractive industry strongly believes that innovation drives its competitiveness and contributes to sustainable growth and job creation. Automation, robotics, and research into new machinery make the industry more efficient and safer for its workers. More than ever determined to embrace innovation, Euromines and its members are involved in a number of research platforms, networks and projects.

VISION AND ROADMAP FOR EUROPEAN RAW MATERIALS: VERAM

The VERAM project aims to include all relevant aspects of non-food, non-energy raw materials related research and innovation. It challenges the current compartmentalisation into scientific disciplines and fragmentation into industry sectors to increase synergies and facilitate uptake of research results. It provides an innovation reference point for the European Institute of Innovation & Technology (EIT) Raw Materials (formerly the KIC Raw MatTERS), to coordinate the network involved in the European Innovation Partnership (EIP) on Raw Materials Commitments and relevant proposals funded under Horizon 2020. It provides a platform for identifying gaps and complementarities and enable their bridging.

One of the main deliverables of the project was the presentation of a common long term 2050 Vision and Roadmap for relevant raw materials including metals, industrial minerals, aggregates, and wood. The Vision and Roadmap have the objective of highlighting the path to achieving the European Commission's ambitious target of 80% reduction in CO₂ emissions by 2050.

Two leading European Technology Platforms (ETPs): ETP SMR (Sustainable Minerals Resources) and FTP (Forest Technology Platform) are joining forces to develop a common vision and roadmap with the support of ECTP (European Construction Technology Platform), represented by UNIVPM, SusChem (ETP for Sustainable Chemistry), represented by Cefic, and EuMaT (Advanced Materials ETP), represented by VITO. This partnership provides VERAM with expertise from downstream applications and additional knowledge on secondary raw materials.

MINLEX

The objective of the study was to identify main constraints, causes of delay and inefficiencies in permitting procedures of the EU28. An Inventory of relevant national legislation, public authorities and lead court cases (including appeal instances) was put together. In July 2017 the conclusions were published according to which:

- the EU's Raw Materials Strategy framework provides a strong basis for achieving a sustainable supply of minerals;
- implementation issues act against a level playing field in the EU;
- few M States have substantially modified their permitting systems;
- the NEEI remain adversely affected by the uneven EU playing field.

INTRAW

The INTRAW project has been formulated with the objective of mapping best practices and boosting cooperation opportunities on raw materials with technologically advanced non-EU countries (Australia, Canada, Japan, South Africa and the United States) in response to similar global challenges.

The ultimate goal is to set up and launch the European Union's International Observatory for Raw Materials as a definitive raw materials knowledge management infrastructure. As a permanent international body, the Observatory will aim after the project completion for the establishment and maintenance of strong long-term relationships with the world's key players in raw materials technology and scientific developments. Its core activities will be to monitor continuous cooperation possibilities and to promote these through funding schemes and incentives between the EU and other technologically advanced countries.



Photo © Agnico-Eagle Finland

4 ENVIRONMENTALLY SOUND INDUSTRY

CARING ABOUT THE ENVIRONMENT

The European mining industry is committed to taking all necessary steps to reduce its environmental impact. Waste management, water protection, air emissions, and biodiversity are key issues in this sector.

ENVIRONMENTAL PROTECTION

WATER

Throughout 2017, Euromines participated in the Common Implementation Strategy of the European Commission and Member States for the Water Framework Directive. Notably, Euromines assumed leadership of consideration of natural background concentrations within upcoming CIS Guidance on how to apply Environmental Quality Standards for metals and was influential in keeping the new CIS Guidance on the application of Article 4(7) exemptions consistent with EU legal requirements.

A new shortlist of substances potentially posing a significant risk to surface water quality across the EU as per Article 16 of the Water Framework Directive was drafted in 2017. Emerging pollutants and other substances, for which current monitoring is insufficient, were addressed with a view to adopt a limited “watch list” of substances for targeted monitoring by Member States. Of particular interest to Euromines was the potential to list free-cyanide, uranium, selenium and/or silver on one of these lists. A Commission Decision adopting the watch list is expected to be adopted in the spring of 2018, but no revision of the Priority Substance list will be made until after the review of the Water Framework Directive in 2019.

Thanks mainly to pro-active industry research co-sponsored by Euromines, free-cyanide will not feature on the 2018 watch list. The study investigates the origin of, and factors influencing, natural background concentrations of free cyanide in surface waters. The last of four work packages involving field monitoring got underway in April 2017 and will be completed in 2018. Euromines kept the European Commission briefed of progress throughout the year.

BIODIVERSITY

The beginning of 2017 saw the European Commission adopt its Action Plan for Nature. Euromines collaborated with other business sectors Europe-wide to submit specific proposals to address permitting issues, some of which were retained in the final Action Plan. EU Guidance on application of Article 6 of the Habitats Directive will be updated, and the European Commission will meet bilaterally with different parts of Member States’ administrations to improve permitting processes generally and to enable investment for extractive operations in particular. So, although the legislation will not change, Euromines members would do well to inform themselves of the arrangements in their own Member States and engage with these important implementation discussions.

ENVIRONMENTAL PERMITTING

In 2017, Euromines led consideration of natural background within EU Guidance on water standards and Water Framework Directive exemptions. Of interest was the potential blacklisting of free-cyanide, uranium, selenium and/or silver. A new Priority Substance list was delayed until 2019. Industry research is investigating background concentrations of free-cyanide, which will not feature on the Watch List in spring 2018.

2017 saw Euromines proposals enter the EU Action Plan for Nature. The Commission will update guidance and meet bilaterally with Member States to facilitate investment in extractive operations. A new programme for implementing the Environmental Liability Directive was adopted in 2017.

ENVIRONMENTAL LIABILITY DIRECTIVE

A Multi-Annual Work Programme (MAWP) 'Making the Environmental Liability Directive more fit for purpose' was adopted by the European Commission in 2017. Euromines provided input to the drafting of key terms and concepts. The European Parliament meanwhile adopted a Resolution stating that transposition of the ELD by Member States had not resulted in a level playing field and that it should be reviewed and expanded in scope. Euromines has restated its position that all mining waste management activities falling within the scope of the Mining Waste Directive are already covered by Annex III of the ELD and are therefore already subject to a strict liability regime.

MINING WASTE

Throughout 2017, Euromines requested consultation before EU documents on Mine Waste management were released. Non-industry experts misunderstand good-practice – with consequences for safety. In September, Euromines submitted case studies emphasising incentives to generate a minimum of mine waste. Revision of the related Best Available Techniques Reference Document culminated in December. Euromines introduced Risk Assessment allowing determination of BAT locally, and corrected proposals that threatened stability of dams. The EU institutions discussed needed inspection guidelines under the Mine Waste Directive. Euromines supported guidance based on a 2012 Commission study, which for safety reasons derogates from the Commission's 2001 Recommendations on Environmental Inspections.

BEST AVAILABLE TECHNIQUES ON WASTE MANAGEMENT

The end of 2017 represented the successful culmination of over four years' work by Euromines and its members to support the revision of the Best Available Techniques Reference Document for the Management of Waste from the Extractive Industries in accordance with Directive 2006/21/EC.

Significant contributions to the drafting team of the European Commission Joint Research Centre were made, introducing a general Environmental Risk Assessment approach that allows design of BAT in relation to local circumstances and significant strengthening of the BAT proposals related to physical stability of tailings dams.

Despite good technical progress with the JRC, the final meeting in Seville still featured several disagreements between the Technical Working Group and Member States on the one hand and DG Environment on the other. This resulted in registering several so-called Dissenting Views, which will be documented in the final document.

INSPECTION GUIDELINES FOR THE MINE WASTE DIRECTIVE

The continued need for EU Guidelines on how to carry out inspections in accordance with Article 17 of the Mine Waste Directive was discussed by both the European Commission and the European Parliament during 2017. In both forums, Euromines experts supported swift adoption of guidance based on the recommendations of a European Commission study from 2012. However, this will require some derogation from the generic European Commission Recommendations on Environmental Inspections which are justified for reasons of safety and/or proportionality that are specific to the sector. The current Recommendations do not cover safety aspects and their authors had no knowledge of or competence in inspection of extractive waste facilities when they were written.

EXTRACTIVE WASTE MANAGEMENT PLANNING GUIDANCE

The European Commission DG Environment confirmed that it plans to release Guidance to Article 5 of the Mine Waste Directive by the end of 2018. In September 2017, Euromines submitted a collection of examples to help development of the Guidance, emphasising the strong incentive that mining companies have to generate as little mine waste as possible depending on knowledge of the ore body, market demand for co-products and provisions for secure mine closure. Euromines recommends that guidance focus on procedures for the preparation of extractive waste management plans that properly take into account the nature of the waste and local conditions.

PRODUCT ENVIRONMENT FOOTPRINT

Meanwhile, the European Commission's 2014-16 pilot of its method to calculate the Environmental Footprint of organisations and products extended inexorably throughout calendar year 2017. At the end of the year, several aspects of the Footprinting appeared still to be not working. In 2016, Euromines had agreed on a notable change of the PEF rules with the European Commission to avoid misleading claims about resource depletion, but at the end of 2017 the agreed temporary means of assessing resource use remained unworkable in practice. In the meantime, Euromines brokered some consensus amongst stakeholders that the longer-term focus of PEF should shift from extraction of resources upstream to conservation and stewardship of resources over the entire life cycle. In 2017, the European Commission allocated funding to the development of such a method by 2020, and the metals and mining industries globally intend to contribute during 2018 & 2019. European academia also started addressing the issue in 2017 with funding from the European Institute of Innovation & Technology (the SUPRIM project), for which Euromines, Boliden and Las Cruces Cobre are industry partners. This work has already attracted much interest from United Nations Environment and the Society of Environmental Toxicology and Chemistry, and Euromines has made significant contributions to the direction of the research. In summary, industry leadership on resource assessment in Life Cycle Assessment is now globally recognised, but the job of correcting its use in EU policy continues.



5 AN ENERGY AND RESOURCE EFFICIENT INDUSTRY

ADDRESSING THE EU'S ENERGY AND RAW MATERIAL SUPPLY CONUNDRUM

Energy prices play a big role in the overall mining costs. Most mining sectors are fully integrated into global value chains where additional costs cannot be passed on to their customers. Therefore, in any jurisdiction globally, mining requires competitively priced energy in order to benefit host communities over the long-term.

EMISSIONS TRADING SYSTEM (2021–2030)

Euromines welcomed the Parliament and Council provisional agreement on the Commission proposal to revise the EU Emission Trading System (2021–2030) pledging to reduce greenhouse gas emissions by at least 40% domestically by 2030 while protecting the competitiveness of the industry.

For the period 2021–2030, the Carbon Leakage factor will continue to be 100% for those sectors and subsectors considered to be at significant risk of CL (i.e. on the CL list). Also, subsectors for which NACE-4 is not a relevant level of disaggregation have not been excluded from the actual assessment of risk of carbon leakage. The disaggregated, up to PRODCOM level carbon leakage assessment has been maintained during the EU ETS Phase IV.

At the same time, Member States will still be able to provide compensation for indirect carbon costs being passed on in the price of electricity, in accordance with the rules on State aid, although the approximately 25% percentage agreed by the member states is far from being enough. Full indirect costs compensation is an essential element for achieving the climate goals while safeguarding the competitiveness of the industry. For several mining sectors (iron ore and nonferrous metals ores), the indirect emissions intensities are higher than the direct emissions ones and therefore, carbon leakage will remain an issue in phase 4 of the EU ETS. At the same time, compensation for indirect carbon costs should have been provided to eligible sectors and sub-sectors based on a single carbon leakage list for both direct and indirect costs.

Another shortcoming of the ETS phase IV negotiations is the process emissions topic which hasn't been dealt with so far. The current proposal asking for further decreases of the process emissions free allocations through the application of a Cross Sectoral Correction Factor (CSCF) and an additional decrease of the Benchmark value will lead to significant competitiveness distortions for several mining sectors (eg magnesite) and threaten their viability as process emissions of geogenic origin cannot be abated without a proportional decrease in the production level.

Euromines is confident though that this issue will be approached by the ETS – related subsequent act are expected to be discussed beginning 2018. Even if the ETS trilogue discussions are nearly finalised, several other aspects are extremely important for us as an energy intensive industry such as the carbon leakage list, and the benchmarks and available funds still remain to be detailed through subsequent acts in the negotiations of which Euromines is fully prepared to take part.

ENERGY EFFICIENCY DIRECTIVE

Euromines welcomes the Commission's proposal aiming to promote energy efficiency within the European Union. However, the rules aiming at removing barriers and overcoming market failures should not lead to an overall increase in pressure and economic, social and environmental costs that might subsequently undermine the fundamental principle of sustainable development by making it impossible to serve the essential needs of mankind at present while protecting and ensuring the needs of future generations.

Euromines strongly believes that one of the main purposes of the energy efficiency directive should be to ensure an integrated approach to consistency, stability and predictability along the whole value chain by taking into consideration the following aspects:

- An accurate definition and an appropriate methodology for evaluating “energy efficiency”.
- The overall energy efficiency rate along the value chain, providing for the increase in the energy performance along the whole life cycle of a product.
- The physical and chemical characteristics of each product, as for several products a decrease in energy consumption is only possible up to a certain point after which their chemical and physical characteristics would be negatively affected leading to a decrease in the product quality or even safety.
- Local and regional characteristics.
- The EU energy policy mix as it is our belief that the different EU energy related pieces of legislation should avoid overlapping, in particular when it comes to the relation among BATs, energy efficiency and/or the emissions trading system (ETS).
- Investments in technology aiming at increasing energy efficiency.

ELECTRICITY MARKET DESIGN

Euromines supports a stable and predictable energy and climate change policy that ensures sustainable growth and global competitiveness for the EU industry as a whole as well as for the energy-intensive industries in particular. We share the belief that the main objective of energy policies should be securing energy at affordable prices as well as ensuring industrial competitiveness while achieving appropriate climate reduction targets.

Euromines welcomes the European Union commitment to ensure a well-functioning, integrated electricity market allowing non-discriminatory market access for resource providers and electricity customers, empowering consumers, enabling demand response and energy efficiency, facilitating aggregation of distributed demand and supply, and contributing to the decarbonisation of the economy. Nevertheless, the overall design of the electricity market should not undermine the essential economic, social and environment-related input needed by the society's sustainable development.



**MINED
MADE**

**IN EUROPE
IN EUROPE**



European Association of Mining Industries,
Metal Ores & Industrial Minerals
Avenue de Tervuren 168, 1150 Brussels, Belgium
www.euromines.org