Towards a Roadmap for European Mining Regions

A Cornerstone for European Competitiveness, Balancing:

- Socio-Economics
- Environment
- Industry
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November, 2006
EUROPEAN NETWORK OF MINING REGIONS PARTNERS

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You can find the websites and contact details for each of our partner organisations at:

http://www.enmr.nu/files/partners.html

You can find in-depth information about the regions represented by the partners in the ENMR at:

http://www.enmr.nu/files/regional_studies.html

Cover Photos

1. Open-cut coal mine near Leipzig, Germany
2. Industrial remnants at Krzemionki Podgorskie, a large regeneration project area in Krakow, Poland which includes five discontinued quarries and the Plaszow concentration camp memorial.
3. Looking across a tailings pond toward Kristineberg Mine in North Sweden.
4. Winter exploration in Sweden, courtesy of Lappland Goldminers AB.
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Towards a Roadmap for European Mining Regions

A Cornerstone for European Competitiveness

Summary

Overview of the Roadmap

This summary provides an overview of the final project output ‘Towards a Roadmap for European Mining Regions’ (the Roadmap) presented by the European Network of Mining Regions (ENMR). The Roadmap outlines recommendations to various European Union stakeholders and policy makers with respect to European mining regions, past, present and future.

This summary begins with a description of the ENMR, its regional and European significance and the work plan leading up to the roadmap.

About European Mining Regions

Regional significance. In European mining regions, small and large, mining has played and continues to play an important part in shaping regional development, industrial production, the landscape, development of culture and raw materials supply.

In active mining regions in Europe, the impacts of a resurgent mining industry can be seen in the form of increased industrial output and development, newly-created and well-paid jobs that lead to increased tax revenues and further diversification of regional economies. European mining regions also have a significant impact on the global mining industries through the development and production of modern mining technologies, machinery, equipment and services. On a regional level, the impacts and opportunities associated with modern mining can provide long-lasting benefits in support of localized industrial diversification, growth and prosperity when a mining lifecycle planning approach¹ and sustainable development principles² are applied to mine development. However, because there are social and environmental impacts associated with mining, it is imperative to promote “responsible” mining practices at the local, regional, national and European Union levels.

In mining regions throughout Europe, societies are working to remediate post-mining legacies from by-gone eras, and are also working toward preservation of important mining heritage elements for generations to come. Environmental remediation of old mines and wastes are critical to ensure such things as clean water and air for European communities. The socio-economic and environmental management best practices and best available technologies found in some European mining regions can be used by other mining regions in Europe and around the world that are faced with similar challenges.

European significance. On a European scale, even though European mining has declined over the last 150 years, one can argue that perhaps mining is more important now than ever before

when considering EU objectives and goals such as those laid out in the Lisbon Strategy and the
Gothenburg Agenda.

On the environmental management front, mining legacies from by-gone eras have created an
increased need and focus on post-mining clean-up, and a need for improved mine closure practices.
Mining environmental management techniques and expertise developed in countries such as Finland,
Sweden, Portugal, the UK, Germany, France and Greece can be made available to other countries,
including the new EU and accession countries that face environmental clean-up and containment
challenges. Improvements in the structure and mechanisms that allow for ease in knowledge and
technology transfer must be made.

With regard to European competitiveness, attention must be paid to the increasingly strained global
supply of certain mineral and metal raw materials brought on by emerging economies, perhaps most
notably, those of China, India, Russia and countries in East Europe. Recent commentary has also
suggested that Africa is growing at a faster pace than anticipated by analysts. These increases in
development will continue to strain the balance of supply and demand for certain raw materials, with
the potential for sharply higher prices for certain metallic and industrial minerals.

As the European Union is the major consumer of many metals, consumption considerably exceeds
the European Union mining industry’s internal supply capability. The annual deficit in metallic
minerals supply is around 10 billion euros3. Because Europe is only able to supply itself with a
fraction of the metal ore it needs to satisfy the demands of its metal industries and down-stream
manufacturing industries, there are some risks associated with higher priced imported raw materials,
as well as supply constraints that threaten European manufacturing industries. Metals and
industrial minerals raw materials feed or support, directly or indirectly, virtually every production and
processing sector in Europe, in which European Union companies employ tens of millions of workers.
The European Union must carefully consider these raw material supply issues strategically, with an
eye towards continued acceleration of global development which could lead to even greater strain
on global raw materials supplies in the future.

The raw materials manufacturing sectors are also important direct contributors to Europe’s socio-
economic engine. As one example, metallic minerals and recycled materials feed factories in which
more than one million Europeans were employed in 2003 (3.2% of total EU manufacturing
employment). There are more than 14,800 enterprises operating in the European Union metals
sector. This includes mining, processing, smelting, recycling and other operations producing metallic
raw materials for European manufacturers, turning over more than €225 billion4. Other mining-
related raw materials sectors include industrial minerals, stone and aggregates, all of which are
significant contributors to European employment and the economy.

About the European Network of Mining Regions. The ENMR was started in 2003 and was
supported by the European Commission through the Interreg IIIC funding platform for the years
2005 and 2006. During the Interreg IIIC phase of the ENMR there were 18 partner organizations
from ten EU countries, as well as ten associate members. The partner and associate member
profiles include regional, county and municipal authorities, local action or development groups,
geological surveys, an association of geological surveys, universities and research institutes and an
industry association. The regional interests represented within the ENMR have been dominated by
metal mining, but also include industrial minerals and coal mining, dimension stone, natural stone
and aggregates producers. It is important to emphasise that active mining, mine closure and post-
mining regeneration interests are represented within the ENMR.

3 Draft Analysis of the Competitiveness of the EU Non-Energy Extractive Industry, DG
Enterprise and Industry, Discussion Paper, 26 October 2006
indicators of the EU metals industry: the impact of raw materials and energy supply on
competitiveness, 2 August 2006.
The principle aim of the ENMR has been to create a European partnership of authorities and stakeholder organizations from European mining regions in the form of a permanent network. The objectives of the ENMR can be briefly summarized as:

- Forming/strengthening regional stakeholder partnerships within European mining regions
- Sharing of best practices and collaboration between ENMR partners and members in the area of sustainable regional development, restructuring, environmental management and other areas associated with mining
- Elevation of common interests and needs of the mining regions towards European institutions as well as securing recognition of the mining regions as genuine stakeholders in the debate on EU policies

**Development of the ENMR Roadmap**

The ENMR Roadmap was developed during 2005 and 2006. The ENMR determined the need to focus on three principle themes:

- Socio-economics
- Environment
- Industry

The Roadmap development plan involved the collection and summarization of regional information through regional stakeholder workshops. The regional information was then synthesized into EU-level summaries during a number of ENMR working group meetings and workshops.

The structure for the information collection process was through two commonly used methods for such work:

- Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis
- Trends and Scenarios Analysis

As a result of the information collection and resulting analysis, a number of recommendations, objectives and strategies have been defined and make up the basis for this document – Towards a Roadmap for European Mining Regions.

**Roadmap Recommendations**

The ENMR Roadmap recommendations and objectives are summarized below. It is important to consider that the ENMR recommendations are intended to be used together to insure a balanced approach to mining challenges and opportunities.

For each recommendation there are a number of potential strategies that have also been defined. These strategies can be found in the full text of the Roadmap following the summary.

**Recommendation 1: Continue and strengthen the European Network of Mining Regions as a platform with a strong presence in Brussels.**

**Objective:** Enhance the European mining regions’ contribution to the European Union’s socio-political dialogue

**Objective:** Enhance European Union influence on global raw materials supply policies on behalf of minerals-dependent European industries
**Objective:** Develop and maintain a balanced approach to mining and related industries in Europe

It is through coordinated networking and communication, and the sharing of knowledge and interests, that the mining regions of Europe can increase their role and contribution as regional stakeholders and content experts in the Brussels arena. It is through strength in numbers and increased participation in the dialogue associated with increased networking that regional and European interests in mining and raw materials can be properly elevated and evolve to create a stronger, more competitive European Union.

**Recommendation 2:** Provide a platform within the ENMR for the sharing of knowledge with regards to the implementation of environmental legislation and the remediation of mining legacies.

**Objective:** Increase environmental management competence through increased use of European and global environmental management knowledge assets and expertise

The basic rationale for this recommendation is to put those in need of environmental knowledge and solutions (such as accession countries, mining operators, national and regional authorities, etc.) in touch with those that have or can provide environmental knowledge and solutions (such as researchers, environmental engineering consultants and companies, national and regional authorities, etc.). The EU maintains a strong base of knowledgeable researchers and university staff, national and regional authorities and private companies and consultants that remain in Europe. These experts have developed best available technologies and best practices for environmental management, as well as retained expert knowledge associated with environmental legislation, that can be transferred to regions in need, both within Europe and around the world.

**Recommendation 3:** Provide a platform within the ENMR for the sharing of knowledge with regards to social and economic planning and development throughout the mining lifecycle.

**Objective:** Increase social and economic development and planning competence through the increased use of European and global knowledge assets.

The basic rationale for this recommendation is to put those in need of socio-economic planning knowledge and expertise in touch with those that have or can provide socio-economic planning knowledge and expertise. This objective would be met through a focused network of experts and organizations that can aide mining regions and communities in managing the issues and capitalizing on opportunities brought on by mine development and mining. This will be accomplished using a mine lifecycle approach, in which the mine-related community and regional planning efforts begin long before a mine is opened, with a strategic eye on mine closure.

**Recommendation 4:** The European Commission should undertake the development and promotion of an EU-level mineral policy and raw materials supply strategy.

**Objective:** Increased exploration and mine development within European mining regions to improve the security of the raw materials supply for European manufacturing industries.

**Objective:** Increase European Union support for the formation and development of mining clusters in European mining regions.

This objective would be achieved through the following steps: 1) completion of an assessment of European raw materials that are of strategic importance 2) determining which of those materials are at risk, and 3) determining policies that will serve to increase security for high priority or at risk raw materials. Focus and support for these high priority raw materials found within existing European mining regions should be prioritized and supported through programmes and mechanisms that facilitate increased exploration and mine development in Europe.
The increase in European exploration and development activity will help secure the future of the European mining regions as critically important suppliers to European manufacturing and other value-added industries, as well as enhancing R&D and innovation activities in European mining clusters.

It will also be important to give increased attention to future land-use decisions in Europe to help secure access to strategically important minerals and other mined materials, with due regard given to environmental protection and social equity.

Other Important Considerations

Although the ENMR is not directly involved in the efforts described below, we believe there are two important areas of interest that will have a significant impact on mining regions and European competitiveness in the mining industry, including environmental management:

- a shortage of qualified graduates to support the mining industry
- the research necessary to strengthen companies participating in the European mining industries as they meet the challenges of developing globally competitive technologies

As a result of the shortage of graduates supporting the extractive industries, the ENMR encourages continued European Commission support for the Federation of European Mineral Programs⁵, a unique and highly successful collaboration between a number of European universities that provides for international graduate-level studies and degree programmes in mining and related fields.

Secondly, the ENMR would like to give recognition and support for the establishment of the European Technology Platform on Sustainable Mineral Resources⁶ (ETP SMR). The ETP SMR aims to modernize and reshape the European Minerals Industries through focused and adequately funded research.

Conclusions

The European Union is facing increased challenges and opportunities with regard to the mining industry, both as a result of mining legacies and a resurgent mining industry that is bringing increased vitality to active and new developing mining regions. The European Union would benefit from enhanced organization and focus that would increase regional collaboration and increase stakeholder participation around mining challenges and opportunities, providing for more efficient application of advanced environmental management and planning for sustainable development and regeneration.

The European Union must also respond to the issues of increased global competition for raw materials through the development of a European-level strategic approach to raw materials management. Increased attention and support can be given to European mining regions, which will help to enhance the security of raw materials supply for European manufacturing and other value-add industries.

As mentioned before, it is not just the mining regions that would benefit from increased attention and support given to the mining regions and the mining industry. Raw materials supply is a cornerstone to which the competitiveness of the European Union relies on to feed and sustain its manufacturing and other value-added industries.

Increased attention to the mining industry and mining issues in the European Union can provide many benefits through economic development and diversification in mining regions, advanced development of technology and equipment, world-class environmental management and socio-

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⁵ Federation of European Mineral Programs: http://www.femp.org/
⁶ European Technology Platform on Sustainable Mineral Resources: http://www.etpsmr.org/
economic planning, improved land-use planning and economic benefits such as improved balance of trade through development of internal suppliers, increased employment and increased tax revenues.

In general, the European Union can be a showcase to the world, demonstrating a balanced and effective approach to sustainable industrial development and the mining industry.
Towards a Roadmap for European Mining Regions

A Cornerstone for European Competitiveness

The Case for European Mining Regions

Mining in Europe has a long history. Some European mining regions have literally changed the world, for example, by starting and leading the Industry Revolution. Entire regional economies have evolved and grown from the mining industry, and in some cases, are still prospering today because of mining. In fact, our very ways of living today would be quite different without mining, as virtually every aspect of modern life is somehow connected to metals, industrial minerals, stone, aggregates and other mined products.

In recent times, the European Union's mining industry practices have improved, reducing negative environmental and social impacts, though there is still much work to do in these areas. Modern mining practices have done much to reduce the woes of the past through the implementation of sustainable development concepts and the resulting improved practices associated with environment and society. Post-mining regeneration know-how and skills also require significant improvement to avoid repeating the mistakes of the past.

Whatever the past, mining is now more important than ever before to the European Union, even if mining has declined in Europe for the last 150 years. Manufacturing industries in the European Union rely on a vast array of raw materials that eventually evolve into the millions of products produced in the hundreds-of-thousands of manufacturing and other valued-added enterprises in the European Union. Directly employed in various non-energy mining operations are hundreds of thousands of employees. It is difficult to quantify, but one must also consider the downstream employment associated with the raw materials that feed European manufacturing and other value-added industries that account for tens of millions of jobs.

![GLOBAL MINING](image)

The security of European Union raw materials supply is fast becoming a priority topic for discussion and debate. European Union manufacturing and other value-add industries are relying on suppliers from outside of the European Union for significant supplies of raw materials. For example, Europe is the major consumer of metals in the world. However, Europe is only able to provide a fraction of the metallic ore it needs to feed its down-stream manufacturing and other value-added industries. Using copper as one example, European Union mines produce the equivalent of 500,000 tonnes of copper (in ore form) per year, but the European Union consumes over 4,000,000 tonnes of copper per year (2004). This is an internal supply gap of 87%. This example is repeated in varying degrees for a variety of metallic and industrial minerals.

As economies in large developing countries, such as China and India, continue to grow, the world’s supply of raw materials have come under increasing pressure as evidenced by increased prices for a number of raw materials. Some examples: uranium oxide, used to power nuclear power plants, has increased from about $9/lb to more than $60/lb, or more than 500% in less than four years; nickel and copper prices have increased more than 300% over the last two years; zinc prices have increased 400% over the last two years. Base metals continue to hit record prices on supply and inventory concerns, with stronger demand in the future likely to worsen the supply situation for aluminium, zinc, nickel and lead. Many other metallic and industrial mineral prices are following this trend.

As with most metals, industrial minerals and other mined products, a continuous and competitively priced stream of raw materials are absolutely vital to European Union manufacturing industries. These are the same European Union manufacturers that are already strained by increasing international competition on many other fronts, such a lower labour costs, lower property costs and lower taxes that are found in countries in other parts of the world.

While it would be difficult for the mining industry in the European Union to recover this entire captive supply deficit, it is important that the European Union to prevent this deficit from widening. All sensible and reasonable efforts should be made to reduce the captive supply deficit, where possible. Recycling efforts should be increased as much as reasonably possible, but it is impossible for recycling to make up the European Union supply deficit. In short, the European Union should look harder at increased exploration and mine development in Europe to help increase raw materials supply security where it makes sense to do so. Without undertaking efforts to further secure European Union raw materials supplies, European Union manufacturers will come under increasing risk. Critically important to this need for more mining within Europe is the need for it to understand and maintain Europe’s environmental integrity and protection systems, and to continue to develop programmes to decrease the negative environmental and social impacts of its actions. Otherwise it will come under increasing pressure from NGOs, the media and the general public as it seeks to expand.

Equally important to the European Union is the continued development and exportation of advanced technology and equipment that evolve directly and indirectly from the mining industry. Mineral processing technologies that have been developed at Outokumpu in Finland or LK AB in Sweden, for example, have huge potential for increased sales toward the rapidly expanding metals markets that are evolving to satisfy the increased raw materials requirements of developing nations. Examples of highly successful equipment companies such as Atlas Copco, Metso Minerals and Sandvik, already world-class industry leaders in their respective markets, are also enjoying huge growth, with more potential in the future, due to the expanding world mining boom.

There are many such small, medium and large companies in the European Union which share the prospects associated with global expansion of the mining industry and there is room for new companies as well. It should be noted that the best breeding ground for new European Union-based
mining and mining technology companies is a vibrant, healthy mining industry in the European Union.

There are many challenges in further developing the mining industry in the European Union, but these challenges do not make the task impossible. It is through dialogue, knowledge and understanding that arriving at a balanced approach to a future mining industry is possible. Further development of the mining industry can provide benefits in socio-economic security, environmental protection and industrial development in support of the European Union and its entire population.
A Balanced Approach

Socio-economics - Environment - Industry

The European Union recognises that more must be done to clean up and protect our environment. Governments and responsible industry alike, recognise the needs to protect our water, air, soil, etc..., now and for generations to come. Huge strides have been made over the last couple of decades to help protect our environment and more work is yet to be done. It is a fact that industry is inherently detrimental to the environment, regardless of which industry sector is being discussed. It is also true that the environmental operating standards of by-gone eras are no longer acceptable.

As with the environment, improvements have been made by governments and industry regarding the positive and negative effects of industrial growth on society. Planning for increased schools, public transportation and other basic services happens as part of the normal industrial development process for the most part. Programmes assisting displaced workers, such as retraining or relocation assistance, education benefits, etc., are common in most developed nations.

Mining is unique among industries in some regards: it is often the first significant development in isolated or pristine areas so it has a special responsibility for managing its social, environmental and economic impacts. Great strides have been made by industry to operate in a social responsible way but more can be done. Increased stakeholder involvement in and around mining activity can not only help avoid the mistakes of the past, but help to build on the future by capitalising fully on the opportunities that come with increased industrial development and growth.

However it is easy to see the challenges of balancing environmental protection and the economic and development needs of society. This is evident when examining a few of the European Union goals that follow, which have been paraphrased:

Socio-Economics:

- More and higher paying jobs
- Increased technical training
- Municipal and regional development and regeneration
- Workforce redeployment and retraining

Environment:

- Clean water, air, soil and other essential elements including dust abatement, noise abatement, and occupational health and safety
- Application and continued development of advanced technologies
- Improved national, regional, and local environmental competence and expertise
- Cleanup of mining and other industrial legacies

Industry:

- Protection of European raw materials supply (and manufacturing sector)
- Application and continued development of advanced technologies and equipment for export
- Improved and sustainable competitiveness

Given the stated objectives within various bodies of the EU, there must be a balance to the questions of growth.
• Job and income growth can not happen easily without industrial growth

• Environmental management must accompany industrial growth to insure we maintain and improve our environment

• Industrial growth can only happen when there is a reasonable and acceptable balance between needs and impacts

As with any industrial development opportunity or question, there must be dialogue and consensus regarding the balancing of these goals that both overlap and are in conflict with each other. In some parts of Europe, regions are working to more effectively manage this balance. In other regions, this balance may be in question. In any case, achieving balance is a difficult and never-ending task. Local, regional, national and global challenges and politics cause this balance-point to shift constantly. It is through the application of facts and knowledge and open dialogue that we continue to best identify this balance-point.

The European Network of Mining Regions brings together experts from municipal and regional governments and authorities, non-profit organizations, universities, and geological surveys. The areas of expertise and scope vary within the ENMR and include regional, national and international levels and span matters of environmental management, socio-economics, land-use planning, post-industrial regeneration, geophysics and geology, as well as mineral exploration and mining. Through the diversity of the European Network of Mining Regions some of these questions of balance have been analysed and examined.

In the pages that follow, the European Network of Mining Regions and its 18 member organizations have provided recommendations regarding the challenges of balancing EU goals with respect to mining – past, present and future. In general, the questions of balance have been answered by suggesting improvements in all three areas: Environment, Socio-economics and Industry.
It has been pointed out by organizations in the European Commission and in industry alike, that the mining regions in the European Union need to organize and increase their participation in the socio-political dialog on a European level. The European mining regions, in general, rely heavily on the mining industries for socio-economic security and growth. Likewise, the European Union relies heavily on the raw materials supply from the European mining regions. This situation provides the European mining regions with the opportunity to increase their influence on a European Union-scale, with regards to the industry they have come to rely on, but the regions must be more organized.

It is through coordinated networking and communication, sharing of knowledge and interests, that the mining regions of Europe can increase their role and contribution as regional stakeholders and content experts in the Brussels arena. It is through strength in numbers and the active dialogue associated with networking that regional and European interests in mining and raw materials can evolve and develop in the interests of a stronger, more competitive European Union.

In the pages that follow, the European Network of Mining Regions will provide recommendations to its mining regions, as well as to the whole of the European Union. It is through these recommendations, including the continuation of the European Network of Mining Regions, that the mining region’s contribution to the European Union’s political dialogue can be further enhanced.

In additional to the recommendations, objectives and strategies found in this document, there are many other ideas, suggestions, studies and reference materials that have been generated throughout the course of the ENMR’s work plan and these can be found in the ENMR’s web-based document archive. A list of some of these documents can be found in appendix included in this document in the section titled: Reference Documents
Enhance the European Mining Region’s Contribution to the European Union’s Socio-Political Dialogue (Recommendation 1)

Background and Rationale. The latest global developments have shown how important it is to secure a European raw materials supply strategy to increase the security of European Union competitiveness. The European Economic and Social Committee has presented its views on the raw materials supply issues in calling for a more forward-looking approach to the issues of raw materials supply. As well, many other public and private organizations, including the European Commission, have voiced similar concerns and given similar recommendations, with much related work now in-progress. The European mining regions intend to continue the European Network of Mining Regions and increase their contribution to this important debate and dialogue, as well as voice its needs to the Brussels arena.

It was frequently and explicitly mentioned in the “Evaluation of the ‘Communication on Promoting Sustainable Development in the EU Non-Energy Extractive Industry’ Final Report” produced for the Directorate-General for Enterprise and Industry, that various aspects of policy discussion and debate would benefit from involvement of the European Network of Mining Regions. Through the increased breadth of scope, expertise and perspectives found in the various European mining regions, a more comprehensive and diverse dialogue can be undertaken, ultimately leading to the increased quality of European Union policy development and legislation associated with the mining industry.

Previously the common interests of European mining regions have not been consolidated at the European Union level. The interests of mining regions are often solicited and/or provided piece-meal to the European Union authorities and other stakeholders and have lacked certain cohesiveness. The European Network of Mining Regions intends to greatly increase its role in the European Union by expanding its membership in order to create a more comprehensive regional presence. The ENMR will provide a one-stop shop for regulators, politicians, ministries, research institutions, etc., to gain easy access to all of the European Mining Regions and their opinions, needs, issues, and ideas through a networking function.

Recommendation 1: Continue and strengthen the European Network of Mining Regions as a platform with a strong presence in Brussels.

Objective: Enhance the European mining regions’ contribution to the European Union’s socio-political dialogue.

Objective: Enhance European Union influence on global raw materials supply policies on behalf of minerals-dependent European industries

Objective: Develop and maintain a balanced approach to mining and related industries in Europe.

Proposed Network Strategies (not prioritised):

- provide a platform in the Brussels community that allows for effective networking of regional and national offices, as well as industry and associations
- disseminate regional and national innovations in planning, socio-economic and structural development practices and environmental management in the support of extractive industry

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9 Opinion of the European Economic and Social Committee on risks and problems associated with the supply of raw materials to European industry – CCMI/028, 5 July 2006
• maintain a list of regional experts and other contacts with respect to the extractive industry
• provide a conduit for regional information and input into the future dialogue on EU extractive industry-related policies
• help share the knowledge and best practices required to secure the ongoing viability and future development of extractive and related industries in Europe, as well as technology, equipment and expertise for export
• help maintain and enhance EU industrial and economic competitiveness by fostering European regional and national cooperation
Mining and Environment (Recommendation 2)

Background and Rationale. With the increasing pressures on our environment and the complexity of the regulations and the technologies required to comply with these regulations, it is becoming more difficult for small and medium-sized enterprises and small and medium-sized public authorities to maintain the level of knowledge and expertise. As well, the size of the tasks associated with environmental management can be daunting as it has been estimated that approximately 29% of the total waste generated each year is from some type of mining activity\textsuperscript{11}. It is also necessary to consider that there are many classifications of waste materials, all of which may be considered separately regarding storage, processing and other waste management activities. (In the chart that follows this recommendation, one can see the volume and the variety of the waste types found in different European Union countries.)

It is necessary to implement effective legislation that will ensure environmental protection without jeopardising the competitiveness of the industrial operations, as well as the development of future businesses. For example, it is extremely important for operators to insure waste classifications are made correctly at the European level. This will insure that law makers at the national and regional level do not inappropriately treat inert overburden and waste rock in the same way as reactive wastes types. If these classifications are not properly considered, national and regional authorities may implement regulations that may be unnecessarily bureaucratic and inefficient for authorities and operators alike, serving only to increase operating costs with no actual benefit for anyone.

With the increasing complexity of regulation, the increased rate of regulatory change and with the rate at which new technologies are developed, it is difficult to maintain world-class expertise in the relevant national ministries and governmental agencies working to maintain and improve the resource supply without jeopardising environmental and social goals.

Additional environmental focus can also be placed on remediation of abandoned mine sites and wastes from mining’s legacies. In some cases, these mines have left lasting reminders in the forms of pits, waste heaps, rusting industrial complexes, etc. In other cases, remnants of old mining operations have created environmental risks that leave the affected areas unsafe and unusable.

The EU maintains a strong base of knowledge and skilled researchers and university staff, national and regional authorities and private companies and consultants that remain in Europe. These experts have developed best available technologies and best practices for environmental management, as well as retained expert knowledge associated with environmental legislation, that can be transferred to regions in need, both in Europe and around the world. Through the development of a focused European network of environmental practitioners, strides can be taken to further aide in building competence or assist directly in meeting environmental challenges in regions of need.

It is important for those with the environmental management expertise and experience to develop and share these critical knowledge assets with others in the European Union. A great example of knowledge sharing in this regard is the recently published Finnish Mine Closure Handbook (Finnish version 2005; English version, 2006).

The basic premise of the recommendation that follows, is to put those in need of knowledge and solutions (such as accession countries, mining operators, national and regional authorities, etc.) in touch with those that have or can provide knowledge and solutions (such as researchers, environmental engineering consultants and companies, national and regional authorities, etc.).

\textsuperscript{11} Mining, Mining Waste and Related Environmental Issues: Problems and Solutions in Central and Eastern European Candidate Countries, A report of JRC Enlargement Project PECOMINES, DG Joint Research Centre, (EUR 20868) 2004
http://viso.jrc.it/pecomines_ext/main.html
Recommendation 2: Provide a platform within the ENMR for the sharing of knowledge with regards to implementation of environmental legislation and remediation of mining legacies.

Objective: Increase environmental management competence through increased use of European and global environmental management knowledge assets and expertise.

Proposed Mining and Environment Strategies (prioritised):

- knowledge sharing among all interested parties (mining operators, authorities, scientists, regulatory and judicial bodies and others) in the environmental regulation and its implementation, including the sharing of emerging advanced environmental technologies and their applications
- development and promotion of existing best practices concerning mine closure and post-mining regeneration. This documentation must be made available in all European Union languages
- identify areas of improvement in existing legislation and its implementation and provide consolidated feed-back to the legislators (on national and European Union level) driving for more standardized regulations and practices at local, regional, national and European Union levels
- use capacity-building activities to further reduce and/or prevent environmental and occupational accidents through pragmatic application of expert, state-of-the-art knowledge and technology
- identify potential gaps in environmental knowledge that can be addressed through focused workshops, seminars and the development of additional documentation
Calculation from the established questionnaires of mining waste and tailings quantities within the EU (tonnes)*

<table>
<thead>
<tr>
<th></th>
<th>Denmark</th>
<th>Finland</th>
<th>France</th>
<th>Germany</th>
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*source: ‘Management of Mining, Quarrying and Ore-Processing Waste in The European Union’: Study made for DG Environment, European Commission Co-ordination by P. Charbonnier December 2001
Socio-Economics (Recommendation 3)

Background and Rationale. In some mining regions in the European Union, the mining industry has gone through a long period of contraction, such as some coal mining regions. The reasons for this period of contraction are varied and range from global competitiveness pressures to environmental pressures. In other European mining regions, exploration and mine development activities have actually increased offering the active mining regions the opportunity to develop and diversify through increased industrial growth and careful planning.

Some mining regions are in more remote, less populated regions within their respective countries. The ENMR mining regions, such as Germany and Poland however, are in highly populated more urban and suburban settings. In most, but not all cases, these regions tend to have somewhat higher unemployment rates, when compared to the national rate. In all, it is hard to create a common profile for a typical European mining region, so it should be noted that each region has unique elements of culture and socio-economics, as well as other factors, must be considered when addressing the challenges and opportunities afforded through mining activity.

<table>
<thead>
<tr>
<th>ENMR Mining Regions</th>
<th>Regional Population as % of National Population</th>
<th>Regional Population density (people/sq km)</th>
<th>Mining Region Unemployment (%)</th>
<th>National Unemployment (%)</th>
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</thead>
<tbody>
<tr>
<td>Finland</td>
<td>16</td>
<td>4.5</td>
<td>11.9</td>
<td>7.9</td>
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<tr>
<td>Germany – Western Saxony</td>
<td>&lt;1</td>
<td>401</td>
<td>10.0</td>
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<td>Italy – Aosta Valley</td>
<td>2</td>
<td>37</td>
<td>5.5</td>
<td>6.8</td>
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<td>Italy – Slate District</td>
<td>&lt;1</td>
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<td>10.0</td>
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<td>Poland – Malopolska</td>
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<td>215</td>
<td>8.7</td>
<td>7.4</td>
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<td>1.3</td>
<td>15</td>
<td>6.0</td>
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<td>Spain – Andalusia</td>
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<td>90</td>
<td>11.0</td>
<td>7.8</td>
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<tr>
<td>Sweden – Norland</td>
<td>5.5</td>
<td>4</td>
<td>8.5</td>
<td>5.8</td>
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<tr>
<td>Greece – Western Greece</td>
<td>6.5</td>
<td>69.2</td>
<td>9.5</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Population and unemployment statistics for some ENMR partner regions.

When a lifecycle approach to exploration and mine development is taken, many of the issues associated with mining, such as unemployment after mine closure, can be minimized and even avoided, and in some cases, converted into opportunities. It is through local and regional stakeholder interactions and careful planning that development opportunities associated with mine development can be fully exploited to the social and economic benefit of the regional public interests. Mine development can be seen and used as a means to diversify and grow local and regional economies where appropriate, thus helping to provide a sound future for the local and regional interests after the eventual closure of the mine.

However, planning and development activity must start even before a mine opens and requires cooperation and interaction between the community and the mining companies. This cooperation and interaction must be undertaken in a carefully structured collaboration between the public interests in the mining region and the industrial interests of the mine operators. It is important that the collaboration activities and development planning efforts are led or assisted by objective and competent facilitators who can draw on the expert knowledge and best practices from similar planning and restructuring efforts from around the globe.
Recommendation 3: Provide a platform within the ENMR for the sharing of knowledge with regards to social and economic planning and development throughout the mining lifecycle.

Objective: Increase social and economic development and planning competence through increased use of European and global knowledge assets.

Proposed Socio-economic Strategies (not prioritised):

- insure meaningful community engagement during all stages of the mining lifecycle
- promote economic diversification at a regional level
- promote of regional SME development, such as mining company policies to maximize local sourcing and employment
- promote inter-regional information sharing of socio-economic issues relating to mining
- communicate improved mining industry practices to the public
- integrate mining concerns and considerations into regional development and land-use planning, including 'plan for closure' elements at the earliest possible opportunity
- sharing of best practices and knowledge regarding the retraining and redeployment of workers displaced by mine closure
- share best practice solutions regarding the treatment of abandoned mines
Industry (Recommendation 4)

Background and Rationale. The European Union continues to be a significant player in the global exploration and mining industries. The European Union, through London, is the recognized financial centre of the world for mining. Three of the major mining companies operate headquarters in London, giving the European Union great strength in the global mining industry from a capital investment perspective, as well as from a mining operations management and technology leadership perspective. This provides the European mining regions and the European Union with great opportunities to increase internal supply of metallic and industrial mineral ores.

Countries of note with active and significant metal mining and already enjoying the economic benefits of the global metal mining boom: Finland, Greece, Poland, Ireland, Portugal, Spain and Sweden. It is not by coincidence that many of these countries are also participating in the development and global sales of advanced technology, equipment and intellectual property to mining industries operating outside of the European Union.

Innovation and Development. Because mining is already a healthy ongoing industry in many European Union countries, increased exploration and mine development can be readily enabled. Through increased exploration and mine development, increased economic diversification can be undertaken in European mining regions. Through increased economic activity and diversification, increased opportunities for research as well as innovations leading to the development of advance technology and other intellectual property can occur. It is the development of advance technology and intellectual property supporting the mining industry that is critical component in regional development, as technology and intellectual property exports will outlive a mine, providing socio-economic prosperity for the post-mining future.

As previously mentioned companies such as Metso Minerals, Atlas Copco, Outokumpu and Sandvik found in the Bothnian mining cluster\(^{12}\) hold significant market share in some mining, processing and smelting equipment and technology market segments as you can see in the chart below. As the global mining boom continues in order to satisfy increased raw materials demand, companies such as these are positioned for increased growth.

To enhance the development of industrial activity in European mining regions, the European Union may choose to provide incentives to exploration and mining clusters in the interests of increasing

\(^{12}\) The Bothnian mining cluster is a reference to mining, processing and smelting companies and equipment, service and technology suppliers in the greater Bothnia Sea area.
innovation and R&D in this globally expanding marketplace. European policy statements such as those found in the document "Policies to Foster R&D and Innovation" should be considered in which it is stated:

"Under [certain] circumstances government intervention is needed to remedy the [constraints that may limit the natural development of R&D and innovation]. Interventions can be twofold: (i) through financial means (direct subsidies or tax incentives), and (ii) by acting as a facilitator. As innovation occurs through interactions, it is important to facilitate collaboration between the relevant actors (in networks, e.g.), to support the formation of clusters and to provide platforms for exchange of information and good practices."

As well, when working in cooperation, active European mining regions may be able to create the critical mass and focus required to promote further mining development in their regions. Through regional and national investment strategies, the European mining regions should work to further develop small and medium sized mining operators, as well as attract increased attention from the major mining companies, to increase exploration and mine development in Europe’s mining regions.

**European Union Raw Materials Supply Security.** In addition to the opportunities to increase R&D and Innovation in the European mining industry, increased exploration and mine development may be instrumental in helping to fill the internal raw materials supply discrepancy in the European Union. Comparing the European Union consumption of metals and industrial minerals with European mine production of metallic and industrial minerals exposes disconcerting vulnerabilities. These vulnerabilities include the downstream mineral processing industries which have significant gross turnover and employment, but also exposes risks to virtually all European manufacturing and value-add industries.

For these reasons the European Union needs a mineral policy that responds to the threats of supply security, helping to preserve and increase European Union competitiveness. The European Union mineral policy should also pay close attention to issues associated with access to land, and the associated access to the minerals that lie underneath, as well as future land-use decisions in areas of strategic significance with respect to priority mineral types. However, there must be recognition of the need to maintain the environmental integrity of mining areas, and that unique biodiversity and landscapes should remain protected against development.

**Recommendation 4:** The European Commission should undertake the development and promotion of an EU-level mineral policy and raw materials supply strategy.

**Objective:** Increased exploration and mine development within European mining regions to improve the security of the raw materials supply for European manufacturing industries.

**Objective:** Increase European Union support for the formation and development of mining clusters in European mining regions.

These objectives would be achieved through the following steps: 1) completion of an assessment of European raw materials that are of strategic importance 2) determining which of those strategic materials are at risk, and 3) determining policies that will serve to increase security for at-risk strategic raw materials. More specifically with regard to internal supply, the European Union will state what the acceptable levels of European self-sufficiency are for various metallic and industrial minerals. In addition, the European Union will define the measures necessary to ensure that the self-sufficiency goals within European mining regions are achieved.

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13 Policies to Foster R&D and Innovation, Note for the Economic Policy Committee, European Commission, date not indicated
Proposed Industry Strategies (not prioritised):

- improve the economic strength and longevity of regions dominated by the mining industry through industrial diversification
- further capitalise on engineering expertise and technology evolving from European mining regions
- further develop support industries for mining, such as field service operations, logistics operators, machine works, equipment suppliers, etc, to strengthen European mining clusters
- promote development opportunities in the active European mining regions towards the exploration and mining investment community
- enhance mining-related economic development competence within the active European mining regions by increasing knowledge of the mining lifecycle, the exploration and mining investment community as well as the funding mechanisms, and investor relationship development and management
- highlight and publicize the benefits of modern mining as an engine for socio-economic development and prosperity
- develop and execute a promotional campaign to improve the understanding of the mining industry by the general public
- insure adequate personnel are available within the European mining industry workforce by:
  - promote mining-related university degree programmes, thus increasing the number of graduates available to the European mining industries
  - promote of mining industry vocational training programmes that feed skilled labour into the mining industry
- develop a European Union-level mineral policy that helps to facilitate less complicated exploration and mine development across national borders
Other Important Considerations and Opportunities

Although the ENMR is not directly in the following efforts, we believe there are a couple of important elements that may have a significant impact on the mining regions and their future, namely:

- the supply of qualified graduates supporting the extractive industries, and,
- the research necessary to strengthen the companies participating in the European extractive industry as they meet the challenges in the development of globally competitive technologies.

Advanced Education

Bologna Process aims to establish a European Area of Higher Education by 2010

The implementation of Bologna Declaration in European Union countries is going to produce a system of academic grades which are easy to read and compare and which will markedly improve international transparency. The process has already been completed in most of the European universities. Linked with that process, major changes have taken place in the higher education system, which are essentially based on two cycles: a first cycle is the bachelor’s degree, geared to the employment market, lasting at least three years and a second cycle lasts two years and training to a Master’s.

Europe converges towards a more transparent, increase mobility of students, teachers and researchers. For today’s students around Europe it is possible to obtain not only a M.Sc. degree at their home university, but also at another European university.

The reconsideration of the higher education system in Europe rises to the challenge of improving international cooperation on higher education and research in areas of hard rock engineering, exploration and mineral resource management cluster development work. The collaboration work done in European Network of Mining Regions (ENMR) has revealed a call to tighten the educational and research activities among member countries of ENMR.

A first meeting with representatives from LTU, AGH and university of Oulu was scheduled in conjugation to the ENMR’s European Workshop in Clustering and Industry in Rovaniemi Finland, 30 November – 2 December 2006 to discuss the possibilities of cooperation between these three universities. It was decided that a draft of possible areas for cooperation in education would be developed.

The first draft was prepared which includes three programmes of European Master Courses in the fields of Hard Rock Engineering, Mineral Exploration Engineering and Mineral Resource Management. These programmes have been proposed for eventual inclusion in the Federation of European Mineral Programs14.

The joint education concept of the courses gives the universities the opportunity to concentrate on its expertise in one specific area of Hard Rock Engineering; Exploration Engineering; Mineral Resource Management and to develop into a centre of excellence. This boosts the competitive position of Europe Union with regards to education and research in the field of exploration and mining engineering.

Federation of European Mineral Programs

In general, because of a shortage of graduates supporting the extractive industries, the ENMR encourages continued European Commission support for the Federation of European Mining Programmes, a unique and highly successful collaboration between a number of European countries.

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14 Federation of European Mineral Programs: http://www.femp.org/
universities that provides for international graduate-level studies and degree programmes in mining and related fields.

Research and Development

As previously mentioned, it is of great importance to the mining industry, mining regions and the competitiveness of the European Union to do as much as reasonably possible to foster an environment that is conducive to increased research and development. This must be undertaken not just in the interests of industry, but in the interests of environmental management and protection, socio-economics and ultimately in the interests of the European public.

European Technology Platform on Sustainable Minerals Resources

The European Union is now in a position to benefit from such an effort to focus and adequately fund research that can directly support the mining industries (extractive industries). Thanks to much pragmatism on the part of European-based mining-related industries and the other participating stakeholders, that the European Technology Platform on Sustainable Mineral Resources15 (ETP SMR) has been established.

The ETP SMR aims at modernising and reshaping a fundamental pillar of the European economy: the European minerals industries. Included in the scope of this large-scale research initiative are oil, gas, coal, metal ores, industrial minerals, ornamental stones, aggregates, smelters as well as technology suppliers and engineering companies.

European mining regions should become more aware of the ETP SMR and its research focus areas, as well as understanding the industry-led initiatives that are evolving from, or may achieve benefits for their regions.

15 European Technology Platform on Sustainable Mineral Resources: http://www.etpsmr.org/
Conclusions

The European Union is facing increased challenges and opportunities with regard to the mining industry, both as a result of mining legacies and a resurgent mining industry that is bringing increased vitality to active mining regions. The European Union would benefit from enhanced organization and focus that would increase regional collaboration and increase stakeholder participation around mining challenges and opportunities, providing for more efficient application of advanced environmental management and planning for sustainable development and restructuring.

The European Union must also respond to the issues of increased global competition for raw materials through the development of a European-level strategic approach to raw materials management. Increased attention and support can be given to European mining regions, leading the way to enhanced security of raw materials supply to European manufacturing and other value-add industries.

As mentioned before, it is not just the mining regions that would benefit from increased attention and support given to the mining regions and the mining industry. Raw materials supply is a cornerstone to which the competitiveness of the European Union relies on to feed and sustain its manufacturing and other value-added industries. Increased attention to the mining industry and mining issues in the European Union can provide many other benefits:

- an engine for economic development, diversification and prosperity in European mining regions and the associated down-stream industries throughout Europe
- increased development and production of modern mining technologies, machinery, equipment and services for export
- further development and demonstration of world-class environmental management techniques and technologies for use in the European Union as well as for transfer and/or export
- increased regional post-mining prosperity through effective socio-economic planning using a life-cycle approach to exploration, mine development and mine closure
- improved land-use planning techniques that help to insure access to minerals and other extracted raw materials for generations to come
- increased economic benefits such as improved use of internal markets and improved balance of trade, increased regional and local economic development, increased employment, increased tax revenues, etc, through the further development of an increased internal supply of raw materials
- a European showcase to the world that demonstrates a balanced and effective approach to sustainable development around the mining sector
About the European Network of Mining Regions

Background

It has been stated by the European Union that Europe and its regions will face many challenges over the coming years, including a dramatic increase in social and economic disparities following enlargement, a likely acceleration in economic restructuring as a result of globalisation, the effects of the technological revolution, the development of the knowledge-based economy and society, an ageing population and a growth in immigration.

Since all the major challenges tended to transcend national borders, the Heads of State or Government of the Union met in Lisbon, in March 2000, to set out a strategy designed to make Europe ‘the most competitive and dynamic knowledge-based economy in the world’ by 2010, the so-called ‘Lisbon strategy’. At the Gothenburg European Council in June 2001, the strategy was widened adding a new emphasis on protecting the environment and achieving a more sustainable pattern of development.

The obvious sign of the Lisbon agenda and the spirit of our time is the flow of new legislation that affects all our regions. It was the debate on the new legislation in Europe, the restructuring of mining sites, the image of the mining industry, the need for developing new models of regional development strategies and the use of structural fund programmes which triggered the idea of a closer co-operation of mining regions in Europe. The initiative to start a European Network of Mining Regions was taken, when the North Sweden European Office and European North Lapland-Oulu EU-office (Finland) as well as Euromines (the European Association of Mining Industries) started a process of closer co-operation. The first informal meeting with the European Network of Mining Regions (ENMR) was held in Brussels, May 2003. Since then several activities with participants from many parts of Europe, including representatives from local authorities and the industry, have taken place to shape the basic idea for the network.

In July 2004 the ENMR was approved as a network project within the framework of the Interreg IIIC programme. The ENMR is independently managed and partly EU-funded by the European Regional Development Fund (ERDF). The ENMR project will run for two years with its start in January 2005. The ENMR has created a suite of European and regional activities with partners operating in Sweden, Finland, Spain, Portugal, United Kingdom, Slovakia, Italy, Greece, Germany and Poland. The project involves 18 partners from 10 EU-member states.

In addition to its formal partners as defined by the Interreg IIIC programme, the ENMR maintains a number of associate memberships and is always looking to include more mining regions and interests in the network.
### Partners of the European Network of Mining Regions

<table>
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<th>Partner organisation</th>
<th>Country</th>
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<tr>
<td>Georange (LEAD PARTNER)</td>
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<tr>
<td>The University of Oulu</td>
<td>FINLAND</td>
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<td>The Regional Council of North Karelia</td>
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<td>The Region of Western Greece</td>
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<td>Faculty BERG, Technical University of Kosice</td>
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<td>Geological Survey of Cyprus</td>
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</table>
The challenges for the European mining regions

Europe has a great history of mining activity that dates back to prehistoric times. Many of the European mining regions have faced and are still facing significant challenges caused by increased competition and depletion of mineral deposits. However, several active mining regions in Europe are currently prospering during this time of rapidly increasing raw materials prices caused by increased demands on supply. These situations will intensify with EU enlargement, where mining regions are facing tremendous pressure to adapt to the new conditions regarding competitiveness and all dimensions of sustainability in complying with the acquis communautaire.16

It is in the mining regions that the local traditions and political ambitions meet European strategies and the legislative challenges. While the origins of change are global, the impacts are regional and local. This means that the mining regions have to come up with manageable and competitive solutions, which also are sustainable environmentally, socially and economically. This is a challenging task.

Many of the European mining regions are facing the same challenges; in applying a high number of EU regulations, the need of exchange of information on European and regional level, the need for a closer interaction between the companies and regional actors, and finding solutions for a sustainable growth in the regions.

Ore deposits are not distributed evenly around the world. Mining is much more locally concentrated than most other industries (for example, agricultural and food industries). Many communities have farms and grocery stores, but few communities have a mine. A mine can only exist in such places where the deposits are. In fact, most of the deposits are considered geologic anomalies and not common occurrences.

The mining regions have several characteristics, which differ from other regions in Europe:

- often the regions have Objective 1 status17
- unequal gender balance (men traditionally dominate the mining industry, which makes it difficult for women on the labour market in the mining regions. This in turn leads to an imbalance of women and men in the regions)
- the scale and the characteristics of mining and its spatial and environmental impacts

At the same time the mining regions are faced with other challenges:

- implementation of new EU legislation.
- restructuring (openings to new development paths and different markets, regeneration and revitalisation of areas affected by mining, etc.)
- competitiveness (attraction of new investment, opening of new mines, labour market attractiveness, public awareness)

Due to the nature of mining, these challenges have to be met by public authorities, the community and the industry.

16 The term acquis communautaire is used in European Union law to refer to the total body of EU law accumulated so far.
17 Objective 1 is the designation given by the EU to the most deprived regions, i.e. those regions whose per capita GDP is less than 75% of the EU average.
**Objectives of the ENMR**

The objective of the network is cross-sector and inter-regional co-operation in the mining regions to improve the effectiveness of policies and instruments for regional development and cohesion. The network will provide a platform for public authorities in the mining regions to enhance development through access to the experiences and views of other mining regions and major stakeholders in the regions.

The aims have been to identify European challenges and goals, and find common actions and measures (in cooperation with the industry and other major stakeholders) to meet these goals. This will lead to better development of policies and infrastructures to overcome problems and exploit potentials in the mining regions.

The general objectives of the network are:

- develop a public driven European partnership of regional partnerships in the mining regions (including representatives from local/regional authorities, industry, R&D institutions, union, non-governmental organisations etc.)
- uncover innovations required to secure future successful regional development and to highlight actions, strategies and policies that must be developed to meet these needs and objectives.
- recognise the network as a genuine stakeholder in the future debate on EU policies
- maintain competitiveness by fostering European co-operation of actors in the mining regions
- articulate common interests of the mining regions towards the European institutions
- dissemination of innovative ideas
- overcome cultural barriers and to build up an environment of mutual respect and trust
Appendix - Reference Documents and Information Sources

  European Economic and Social Committee on 'Risks and problems associated with the supply of raw materials to European industry' (own-initiative opinion) [http://eescopinions.eesc.europa.eu/viewdoc.aspx?doc=\esppub2\esp_public\ces\ccmi\ccmi028\en\ces964-2006_ac_en.doc](http://eescopinions.eesc.europa.eu/viewdoc.aspx?doc=\esppub2\esp_public\ces\ccmi\ccmi028\en\ces964-2006_ac_en.doc)
- Evaluation of the 'Communication on Promoting Sustainable Development in the EU Non-Energy Extractive Industry:

Environment

- BAT for the management of tailings and waste rock: [http://www.jrc.es/pub/english.cgi/0/733169](http://www.jrc.es/pub/english.cgi/0/733169)
Competitiveness


Social performance and employment

- European Mining Courses: [http://www.emc-edu.org/](http://www.emc-edu.org/)

RTD

- Georange: [http://www.georange.nu/](http://www.georange.nu/)
- EMIREC: [http://www.euromines.org/who_is_euro_research.html](http://www.euromines.org/who_is_euro_research.html)
- Projects under 5 FP and 6 FP: e.g. ERMITE (Environmental Regulation of Mine Waters in the European Union): [http://www.minewater.net/ermite/](http://www.minewater.net/ermite/)
- European Technology Platform – Sustainable Mineral Resources: [www.etpsmr.org](http://www.etpsmr.org)

Enlargement

- PECOMINES: [http://viso.ei.jrc.it/pecomines_ext/main.html](http://viso.ei.jrc.it/pecomines_ext/main.html)

Regions


Stakeholder dialogue

- Activities of RMSG: [http://forum.europa.eu.int/Public/irc/enterprise/rmsg/home](http://forum.europa.eu.int/Public/irc/enterprise/rmsg/home)
European Network of Mining Regions and Partners

- European Network of Mining Regions: [www.enmr.nu](http://www.enmr.nu)
- GeoRange, Municipality of Malå: [http://www.georange.nu](http://www.georange.nu)
- Zaw-Wachau (Waste-management-association in the western part of the state of Saxony): [http://www.zaw-wachau.de](http://www.zaw-wachau.de)
- University of Girona: [http://www.udg.edu](http://www.udg.edu)
- The university of Oulu: [http://www.oulu.fi](http://www.oulu.fi)
- The regional council of Lapland: [http://www.lapinliitto.fi](http://www.lapinliitto.fi)
- The regional council of Kainuu: [http://www.kainuu.fi/kainuunliitto](http://www.kainuu.fi/kainuunliitto)
- The Region of Western Greece: [http://www.westerngreece.gr](http://www.westerngreece.gr)
- Industrial Systems Institute: [http://www.isi.gr](http://www.isi.gr)
- CS Aosta (The Regional development agency of the Aosta Valley Region): [http://www.centrosviluppo.it](http://www.centrosviluppo.it)
- Local Action Group Appennino Genovese: [http://www.appenninogenovese.it](http://www.appenninogenovese.it)
- AGH University of Science and Technology: [http://www.agh.edu.pl](http://www.agh.edu.pl)
- INETI - the National Institute of Science and Technology: [http://www.ineti.pt](http://www.ineti.pt)
- Technical University of Kosice: [http://www.tuke.sk](http://www.tuke.sk)
- Eden Project Ltd.: [http://www.edenproject.com](http://www.edenproject.com)

European Network of Mining Regions Associate Members

- Euromines: [http://www.euromines.org](http://www.euromines.org)
- North University of Baia Mare: [http://www.ubm.ro](http://www.ubm.ro)
- EuroGeoSurveys: [http://www.eurogeosurveys.org](http://www.eurogeosurveys.org)
- Borsod-Abaúj-Zemplén County: [http://www.baz.hu](http://www.baz.hu)
- Bergskraft Projekt: [http://www.bergskraft.se](http://www.bergskraft.se)
- Norrbotten County Council: [http://www.nl.se](http://www.nl.se)
- Municipality of Furtei: [www.comune.furtei.ca.it](http://www.comune.furtei.ca.it)
- Associazione Storico Naturalistica della val d’Orba: [www.oromuseo.com](http://www.oromuseo.com)

Other Information

- Post Mining Alliance: [http://www.postmining.org/](http://www.postmining.org/)
- Raw Materials Group AB: [http://www.rmg.se/](http://www.rmg.se/)
The European Network of Mining Regions

www.enmr.nu

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