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COMMUNICATION FROM THE COMMISSION

Promoting sustainable development in the EU non-energy extractive industry

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1. INTRODUCTION

1.1. The objective of this Communication

The objective of this Communication is to set the broad policy lines for promoting sustainable development in the EU non-energy extractive industry (hereafter the industry) by reconciling the need for more secure and less polluting extractive activities while maintaining the competitiveness of the industry. The Commission stresses the need for an improvement in the environmental performance of the industry in general and to prevent accidents such as the recent breaking of tailing dams in Romania and Spain. The Communication places existing and future legislative and other initiatives in the context of sustainable development and sets out a way forward to continue to address these issues respecting the principle of subsidiarity. It invites Member States, industry and other stakeholders to actively participate in setting in place a framework designed to achieve improved dialogue that should lead to identifiable targets, a timetable for the achievement of these targets, and concrete actions.

1.2. The sustainable development context

Article 6 of the Treaty establishing the European Community (EC Treaty) requires the integration of environment protection requirements into Community policies, with a view to promoting sustainable development. Giving follow-up to this Treaty requirement, the European Council has requested from the Council, in its different formations, comprehensive strategies for integration by June 2001. The **Industry Council** has already made its first contribution with regard to industrial policy, in its conclusions of 29 April 1999 and with its report to the European Council entitled "Integrating Sustainable Development and Industrial Policy" of 9 November 1999. In that context, the Council has stressed the need to adopt an integrated approach to sustainable development, aiming at a high level of economic and social development and environmental protection (the three pillars). The integration of sustainable development will be a priority also in Enterprise Policy and in the proposed new Multiannual Programme for Enterprise and Entrepreneurship (2001-2005).

2. CHARACTERISTICS OF THE INDUSTRY IN THE EU

2.1. The industry

With a few exceptions such as fresh water and renewable resources from agriculture and forestry, all **raw materials** used by society for production and consumption are extracted from the earth, the seabed or the sea. Metals and minerals are basic requirements for everyday life, for buildings, roads and transport vehicles to name but a few. The industry covers the extraction of all solid minerals except coal and uranium, which are dealt with in other Treaties and thus not treated in this Communication. Also excluded from the scope of the Communication are lignite, peat, brown coal and oil shale.

The industry is usually divided in three sub-sectors:

— **metallic minerals** (e.g. iron, copper, zinc),

- **construction minerals** (e.g. natural stone¹, aggregates, sand and gravel, limestone, chalk, gypsum), and
- **industrial minerals**. The latter group may be divided into
 - physical industrial minerals (e.g. kaolin, feldspar, talc), and
 - chemical industrial minerals (e.g. salt, potash, sulphur).

When reference is made in the Communication to all materials collectively, the term "minerals" is used.

Extractive operations display **features** that require a thorough, and sometimes delicate, balance between economic, environmental and social concerns. On the one hand, the location of the industry is bound to the presence of geological deposits which can be viably exploited; on the other hand extractive operations inevitably impact on the environment and the landscape, the health and safety of workers, and citizens concerned by the emissions from mining operations. Extractive operations also raise the question of the depletion of non-renewable resources. It is, therefore, a question of whether sufficient environmental protection measures have been required from or provided by the industry in the past, and whether the full environmental costs have been internalised in the price of the minerals. While the industry is an important source of wealth creation and employment, its operations require important control measures to ensure a high level of environmental protection and a high level of protection of the health and safety of workers.

As a result of the variety of impacts on the environment and above-average risk to workers, the industry needs to respond to the challenges of sustainable development. This need is addressed by organisations such as the International Labour Office (ILO), the United Nations Environment Programme (UNEP) and the World Bank, by global business organisations such as the World Business Council for Sustainable Development, by sector federations and individual companies, and by NGOs. Many countries, in the EU and elsewhere, have taken initiatives to bring their national policies for the industry in line with **sustainable development concerns**. In resource-rich countries such as Canada and Australia, the need for a sustainable development approach has resulted in intensive dialogue and consultation between the stakeholders, which in turn has shaped the policy development framework for the industry.

Direct **employment** in the industry in the EU is estimated at 190 000 persons². The industry structure is fragmented, consisting both of large numbers of **SMEs** supplying regional markets but also several multinational companies headquartered in the EU with subsidiaries or associated companies across the world. The sub-sector of construction minerals is by far the biggest employer, with direct employment estimated at 140 000 persons³. It is also the sector most dominated by SMEs, with more than 90% of the companies having less than 50 employees⁴.

¹ The terms ornamental stone or dimension stone are also frequently used.

² Estimated employment for 1997 for Nace rev. 1 13.1-2 and 14.1-5. Source: Eurostat and national geological surveys, statistical offices and ministries.

³ Source: Panorama of EU industry 1997.

⁴ Nace rev. 1 14.1-14.2, estimated on the basis of data from Eurostat for 1995 and 1996.

The industry is actively **present across the Community**. Extraction of industrial and construction minerals is relatively evenly spread within the EU with, for example, extraction of aggregates (crushed stone) and sand and gravel for construction purposes being carried out in all Member States. On the other hand the sector where production is more concentrated concerns mainly metallic minerals, where Finland, Greece, Ireland, Portugal, Spain and Sweden together account for some 75% of total EU production⁵. In the case of quarrying of natural stone, the most prominent Member States, namely, France, Greece, Italy, Portugal and Spain account for some 90% of total EU production⁶.

Extractive operations in Europe provide the basis for a competitive and innovative manufacturing industry for equipment and machinery, an industry which relies on close connections with the extractive industry for developing, testing and demonstrating its products. European equipment and machinery producers supply the extractive industry world-wide. Other industrial activities, such as construction, commonly provide a market in terms of spin-off uses for these products.

At **global level**, the industry has an active presence in most countries; major producing countries include USA, Canada, Australia, Russia and China. In the case of industrial and construction minerals, the EU's share of world production volume is more than 20%⁷, with the EU being among the world's largest producers of some minerals such as natural stone, feldspar, kaolin and potash. Most industrial and construction minerals are produced and traded within the EU and indeed within the individual Member States in some cases. With regard to metallic minerals, the EU accounts for between 2 and 3%⁸ of world production. The overall minerals **trade balance** is negative (ca 8 billion), showing the strong dependence of the EU on imports for its raw materials supply. Of total EU imports of 21.5 billion in 1998, more than three-quarters have its origin in non-OECD countries; Brazil, South Africa and China are among the most important suppliers for the EU⁹.

Poor management of the minerals sector in developing countries may jeopardise access to needed resources, and increase the threats posed to the local and global environment by poorly run operations, or by public authorities unable to effectively set in place and administer proper environmental rules.

Therefore, attention should be given to help countries with which the EU is engaged in co-operation programmes to address issues such as the creation/reinforcement of adequate business climates and proper mining environment management. Such assistance should contribute to foster sustainable development, to the objective of eradicating poverty in developing countries and to their integration into the world economy.

⁵ Calculated on the basis of production quantities, metric tonnes. Source: World Mining Data 1997.

⁶ Calculated on the basis of production quantities. Source: European Minerals Yearbook 1996/97.

⁷ Metric tonnes. Includes all minerals in Nace rev. 1 14.1-14.5 except natural stone. Source: World Mining Data 1997.

⁸ Metric tonnes. Source: World Mining Data 1997.

⁹ Source: COMEXT 1998.

2.2. Competitiveness characteristics

The EU is the world's largest consumer of minerals, reflecting the dependence of many manufacturing industries on minerals as raw materials. The economic prospects of the industry are closely linked to the overall level of economic activity, at national, European and at global levels. As a consequence, mineral markets are characterised by heavy price volatility and fluctuations in demand with temporary but sometimes severe effects on the industry, for example, as evidenced by the 1998 economic crisis in Asia. The most important factors for the competitiveness of all sub-sectors of the industry includes human resources, land access, a stable and predictable legal framework generating legislation proportionate to the objectives sought, research and technological development, availability of infrastructure, including transport, low freight costs and energy supply.

2.2.1. *Geology, land access and exploration*

Geological deposits determine the location of extractive operations. The economic viability of deposits is determined by several factors, including the type and grade of the ore, the depth of the deposit, and the technical process/design that can be used for the extraction. Equally important is the influence of market prices and production costs, where changes can turn a deposit considered unviable into a commercially feasible target for exploitation, and vice versa. Technological development gives rise regularly to the discovery of new deposits, as well as to the exploitation of minerals previously regarded as unviable or impossible to extract technically. Consequently, land access and efficiency of exploration are key factors for the future development and competitiveness of the industry. However, land access should be carefully evaluated against the potential negative environmental impacts.

With regard to **land use**, initial exploration activity requires access to a large area of land, sometimes tens of square kilometres, especially in the case of metallic minerals and high quality industrial minerals, which tend to be difficult to locate. Exploitation itself requires only a very limited area, usually measuring a few hectares.

The EU accounts for a very small share of world expenditure on **exploration**, estimated at some 68 million in 1998¹⁰. Expenditure is mainly on exploration for base metals, gold and diamonds, where the EU has limited mineral resources compared to other parts of the world. In practice, exploration tends to be concentrated in Member States in which metallic minerals are currently extracted, especially in the northern regions of Finland and Sweden. Rationalisation of the mining legislation in these countries in the early 1990s resulted in a substantial increase in exploration activities, measured by level of expenditure as well by number of permits awarded.

As regards problems in financing due to the high risk involved in exploration, junior exploration companies are usually not able to obtain debt financing, leaving them dependent on **risk capital** for financing exploration activities. In that context, extractive operations can involve a **long and complex planning stage** and large investments of capital, usually with long payback periods. For example, it is not unusual to have a period of 7-10 years between initial discovery of deposits and

¹⁰ Mining Journal, 30.10.1998, Volume 331.

production coming on stream. Large amounts of capital may have to be committed at an early phase of a project, when the risk is highest due to uncertainty in relation to the value and cost of extraction of deposits. With regard to the expenditures for environmental protection, a large part is incurred at an early stage in connection with the preparation of comprehensive environmental assessments and planning of the operations, including closure, restoration measures and after-care. The other side of the medal is the environmental benefits of protection requirements, which however are normally not brought into the equation. Particular administrative difficulties are experienced from delays in **permit approvals**, which can be very costly for operators and lead to decisions not to proceed with investments.

Consequently, the main factors influencing investment decisions for the development of new operations are market demand forecasts, geological conditions, access to risk capital, and a legal and administrative framework which permits predictable decisions.

2.2.2. *The sub-sectors*

The competitive position and profitability of operations differs according to sub-sectors. With regard to **metallic minerals**, European industry faces strong global competition especially from large-scale, high-grade, overseas operations capable of offering minerals produced under low cost conditions on international markets. The dominance of underground mining adds further to the higher costs of the industry in the EU, as compared to its global competitors. The industry has made large efforts to reduce overall cost levels through rationalisations and increasing capital intensity, which has led to significant downsizing of the labour force. **Globalisation** offers many opportunities for investments outside the EU, opportunities which have been taken up extensively by European industry. Given the global trade in metals and with prices set on the world market, the industry fully supports fair trade, free competition and removal of trade barriers.

Construction minerals are mainly extracted through quarrying. Main uses include construction of roads, buildings and railways, and manufacturing of cement, lime and plaster and a variety of other products such as glass and ceramics. The EU is a major world producer and is largely self-sufficient in virtually all the minerals in this group. Markets for construction minerals are mainly supplied from within a limited radius, distance between operations and place of use being a key cost factor. Consequently, transportation costs limit external competition in bulk construction raw materials. Nevertheless, due to its high value, natural stone is an important export product, with North America in particular providing a significant market outlet for European producers; competition is increasingly being experienced from low-cost producers in countries such as India, Brazil and China.

Industrial minerals are, with few exceptions, extracted through quarrying. They are major raw materials for the chemicals and fertiliser manufacturing industries, as well as for ceramics, glass, paper, paints and plastics. Global competition has increased markedly in recent years as a result of lower costs in many third countries; this trend is expected to continue. Indications of oversupply for several chemical industrial minerals, such as potash and salt, also signals further increasing competition. Nevertheless, the quality of the deposits, as well as processing expertise, are important factors in meeting quality requirements and customers needs for specific

end-uses; consumers are generally well placed to choose from a range of potential suppliers from Europe and elsewhere.

2.3. Environmental impact

From the point of view of the environment, extractive operations raise two types of concern. Firstly, the use of non-renewable resources as such may mean that these resources will not be available for future generations. Secondly, the impact of mining may harm the quality of the environment. The environmental **impact** of extractive operations may include air pollution (mainly dust), noise, soil and water pollution and effects on ground water levels, destruction or disturbance of natural habitats, and the visual impact on the surrounding landscape. The actual level of environmental impact of a particular operation **depends on the nature of the ore and specific characteristics of the site**, such as the depth of the deposit, the chemical composition of the ore and the surrounding rocks, naturally occurring substances and other geographic and climatic conditions. Other factors determining the environmental impact include the technologies used to extract and process the ore, and to dispose of the waste generated. In general the environmental impact is likely to be greater in metal mining, where in some cases toxic chemicals need to be used in the mineral separation process. The large quantities of toxic waste that can remain from such processes must be carefully managed in order to avoid, for example, water pollution through acid drainage and to prevent failure of structures and dams built to contain the waste.

Mining waste is among the largest waste streams in the Community. Some waste streams, in particular generated by the non-ferrous metal mining industry, contain large quantities of dangerous substances, such as heavy metals, and represent significant risks.

The cyanide spill into the river Tisza from the damburst at the Baia Mare goldmine in Romania created a poison plume of pollution that flowed as far as the Danube. The visible effects on the surrounding ecosystems once again highlighted the environmental problems of the management of mining activities. Other accidents of this type occurred during the last few years, in particular the Aznalcollar accident in Spain where a similar damburst poisoned the environment of the Coto Do ana National Park. On 25 April 1998 the breach in the tailings dam at the Aznalcollar mine created a flow of over 5 million cubic metres, of toxic waste which polluted a large area — approximately 4500 hectares — on the border of the Do ana national park. The lessons of these accidents should be learnt in order to minimise the risks of such incidents in the future.

Apart from issues peculiar to minerals several other issues in the environmental field are directly relevant to this industry. The Commission has already raised the question of how the Community can promote more **eco-efficient production and consumption patterns**, reducing material use, energy consumption and emissions whilst maintaining levels of products and services¹¹. These issues will continue to be of significance for this industry and will influence policies related to it. They are

¹¹ Communication from the Commission "Europe's Environment: What directions for the future? The global assessment of the European Community Programme of Policy and Action in relation to the environment and sustainable development, Towards Sustainability", COM(1999) 543, 24.11.1999.

addressed by the Commission in various contexts; one such example is the promotion of recycling, where the contribution of specific downstream sectors such as construction to environmental objectives is an important issue.

A legacy of **abandoned mine sites and unrestored quarries** bears witness to the unsatisfactory environmental performance of the industry in the past. These abandoned sites spoil the landscape and can pose severe environmental threats due especially to acid mine drainage. The legal responsibility for environmental restoration of these sites is often unclear, due to deficiencies in the legal framework or difficulty in identifying the parties responsible. The Commission considers that an inventory should be made of these sites and of the environmental problems they cause, which should make it possible to identify corrective measures in close co-ordination with the Member States. European industry has declared its willingness to assist in carrying out such an inventory and in developing a tool for prioritising the measures needed. Several Member States have also started to take action on the restoration of these sites. The Commission also supports, through the LIFE-programme, initiatives to prevent or reduce impact of extractive activities on the environment, including in relation to abandoned sites.

Technological development has allowed for safer handling and disposal of dangerous wastes and the replacement of hazardous processing methods, often achieving gains in productivity at the same time. Modern information technology has enabled efficient monitoring of environmental impact of operations in real-time, as well as monitoring of sites after closure. Methods for site restoration towards attractive alternative uses have improved. In many cases quarries can offer good opportunities for ecological restoration for natural habitat types and species of Community interest. Despite progress in environmental performance made over recent years, further improvements are both necessary and achievable, although the scope for such improvements will vary depending on the sub-sectors involved, and also within each sub-sector. The introduction and dissemination of improved technology throughout the Community will be a key factor in improving performance.

2.4. Social characteristics

Accident statistics show that the industry belongs to the high-risk sectors, harbouring potential hazards as a result of the close interaction between nature, technology and people. Occupational **health and safety** impacts include the control of potential hazards to workers related to a hostile working environment to which work has to be adapted. The extent of potential impacts differs depending on the type of operation, with, for example, potential negative health and safety impacts in underground extractive operations (no daylight, limited ventilation in confined places, risk of falls of rocks, etc).

The impact of extractive operations may also impair the health and safety as well as the sources of income of the surrounding population if the appropriate measures to reduce emissions and prevent accidents are not taken. In the case of liquid effluents, the population living downstream of a site needs to be protected.

With regard to **EU legislation** in the health and safety field, the Directive¹² on the introduction of measures to encourage improvements in the safety and health of workers at work and the Directive¹³ on the minimum requirements for improving the safety and health protection of workers in surface and underground mineral-extracting industries lays down specific requirements for the industry. Both Directives are based on former article 118A of the EC Treaty requiring that "such directives shall avoid imposing administrative, financial and legal constraints in a way which would hold back the creation and development of small- and medium-sized undertakings".

The regional importance of the industry as a source of **employment** can be substantial, especially in remote and sparsely populated areas where it is often the main employer, for example, in certain municipalities in northern Sweden, the industry accounts for 14-17% of total employment¹⁴. The industry has a large reliance on subcontracting for various parts of its operations, such as sinking of mineshafts and transport. Consequently, the indirect employment created by a particular industry operation in a local area may be as much if not greater than the direct employment provided.

3. PRIORITY ISSUES FOR SUSTAINABLE DEVELOPMENT OF THE INDUSTRY

3.1. Improving the sustainability of the industry - a high level of environmental protection

Priority issues for the integration of environment into the industry include prevention of mining accidents, improvement of the overall environmental performance of the industry, and sound management of mining waste, including recycling.

3.1.1. The existing legislative framework

With regard to **EU environmental legislation**, the activities of the industry are governed by EU Directives on waste, water, and air quality and the nature conservation Directives on Birds and Habitats. Land access, a key issue for the industry's competitiveness, must be carefully assessed with respect to the environmental impact. The Directive on environmental impact assessment (EIA)¹⁵ covers open-pit mining and quarries, where the surface of the site exceeds 25 hectares. For other extractive operations, Member States decide on a case-by-case examination, or by setting thresholds or criteria, which determine whether operations will be subject to an assessment in accordance with the Directive.

Directive 75/442/EEC on waste as amended by Directive 91/156/EEC¹⁶ applies to waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries, since the latter are so far not covered by other

¹² Council Directive 89/391/EEC of 12.6.1989.

¹³ Council Directive 92/104/EEC of 3.12.1992.

¹⁴ Municipalities of Kiruna, Gällivare and Arjeplog. Source: Swedish Geological Survey.

¹⁵ Council Directive 85/337/EEC of 27.6.1985 on the assessment of certain public and private projects on the environment, as amended by Council Directive 97/11/EC of 3.3.1997.

¹⁶ Council Directive 75/442/EEC of 15.6.1975 on waste and Council Directive 91/156/EEC of 18.3.1991 amending Directive 75/442/EEC on waste.

Community legislation. Article 4 of Directive 75/442/EEC establishes that Member States shall take the necessary measures to ensure that waste is recovered or disposed of without endangering human health and without using processes or methods which could harm the environment.

The deposit of waste from the processing of minerals (tailings) in a pond is a waste disposal operation covered by existing EU legislation - Directive 99/31/EC on the landfill of waste¹⁷. This Directive came into force 16 July 1999 and will be effective by 16 July 2001. The Directive lays down requirements concerning the authorisation of landfills, the technical construction of landfills, the types of waste acceptable at landfills and the monitoring procedures for landfills.

The Directive concerning integrated pollution prevention and control (IPPC)¹⁸ covers minerals processing, as installations for the production of non-ferrous crude metals from ore are covered by annex I (category 2.5.a) of the Directive. Activities covered by the Directive must prevent and reduce pollution through the use of Best Available Techniques (BAT). The Directive is applicable since 1999 for new or substantially changed installations, and in 2007 at the latest for existing ones.

The Community Eco-Management and Audit Scheme (EMAS)¹⁹ provides an instrument to integrate and manage environmental concerns in companies. The industry in the EU, as well as globally, can be described as a late follower with regard to the take-up of EMAS or other **environmental management systems** such as ISO 14001. Nevertheless take-up is increasing rapidly. The Commission welcomes the efforts made by industry in this respect and encourages it to further adopt such systems, which can be a vital tool not only for improving environmental management and performance but also with regard to external communication. The Commission has proposed a revision of the regulation. This revision in particular provides for means to address stakeholders concerns in a credible manner with strengthened requirements for periodic and independently verified environmental statements and use of indicators for ensuring quality and relevance of external communication. The revision will also integrate ISO 14001 as the environmental management system required by EMAS.

It is important that SMEs, which make up the great majority of enterprises in the industry, adopt such systems. In that context, it should be recalled that the EMAS regulation recommends Member States to promote in particular the participation of SMEs, by establishing technical support measures. In the case of less developed regions the structural funds can also be used to provide support for eco-auditing and environmental management in SMEs. The information networks envisaged under the proposed new Multiannual Programme in favour of enterprise will emphasise such requirements.

Environmental reporting, as required by EMAS, is also a vital tool for the industry to provide detailed information on its environmental performance, both to the public as well to the regulatory authorities. The Commission encourages the industry to

¹⁷ Council Directive 1999/31/EC of 26.4.1999 on the landfill of waste.

¹⁸ Council Directive 96/61/EC of 24.9.1996 concerning integrated pollution prevention and control

¹⁹ Council Regulation (EEC) No 1836/93 of 29.6.1993 allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme.

further develop environmental reporting, which should include site-specific reports, including the results of independent third party auditing.

3.1.2. *Need for new instruments*

As regards initiatives relating to environmental legislation, current **legislative proposals** from the Commission of relevance to the industry include the Water Framework Directive²⁰ and the Directive on strategic environmental assessment (SEA)²¹.

In view of the recent accidents, Community legislation on the safe operations of mining installations should be reviewed. To that effect the Commission will shortly present a Communication on these issues, including an Action Plan, as a follow-up to the Baia Mare and Aznalcollar accidents. In terms of industrial risk management, the **Seveso II Directive**²² seems to be the most appropriate legislative tool to prevent accidents such as the ones which recently occurred in Romania and Spain. This Directive obliges industrial operators to put into effect Safety Management Systems, including a detailed risk assessment on the basis of possible accident scenarios. However, the current scope of the Directive does not clearly include mining activities and/or tailing ponds or dams, and it could be reviewed in order to assess how extractive activities could be covered.

Tailing ponds are covered by Directive 99/31/EC on the landfill of waste. However, all the issues related to tailing pond management have not been specifically considered in this Directive.

An EU 15 study on the management of mining waste and the assessment of related environmental risk will be completed during summer 2000 and at the end of 2000 for the candidate countries. On the basis of the results of this study, the need for a proposal for a **new Directive** specifically focussing on the **management of mining waste** will be assessed.

It would be possible to produce a special Best Available Technology (BAT) reference document (BREF), as a result of the exchange of information according to article 16(2) of the IPPC Directive, dealing with relevant ore processing activities. The BREF could deal with techniques to reduce "everyday" pollution and with techniques to prevent or mitigate accidents.

In addition, the White Paper proposing a **directive on environmental liability**²³ seeks to improve the implementation of key principles such as polluter-pays, prevention and precaution, and of existing EU environmental laws, and also to ensure adequate restoration of the environment. Timely cost-effective investments in prevention measures to avoid damage that would be more costly to repair are likely to pay dividends in the case of operations which have not taken adequate measures.

²⁰ COM(1997) 49, 17.6.1997, COM(1999) 271, 17.6.1999.

²¹ COM(1996) 511, 4.12.1996, COM(1999) 73, 18.2.1999.

²² Council Directive 96/82/EC of 9.12.1996 on the control of major-accident hazards involving dangerous substances.

²³ White Paper on environmental liability, COM(2000) 66, 9.2.2000.

So far, measures affecting the industry have rarely been evaluated according to their **costs and benefits**. It is therefore difficult to evaluate whether particular measures actually lead to a net increase in the welfare of society or whether the additional costs, including the loss of competitiveness, are a burden to society leading to a net welfare loss. It would be worthwhile exploring these issues again in the light of the difficulties encountered in the course of an earlier study on this issue²⁴. More conclusive findings would assist in assessing what environmental objectives should be adopted from a societal point of view. The Commission is prepared to look at this issue in consultation with the Member States, industry and other stakeholders.

3.1.3. *Environmental agreements*

A focus of the recent debate in the 1990s on the regulatory framework for European industry in general, particularly with regard to environmental protection, has been how to increase the use of instruments other than regulatory ones. The Commission has previously described the potential advantages of the further use of environmental agreements, such as providing cost-effective, tailor-made solutions, and laid down **guidelines** on the criteria such agreements must adhere to²⁵. The extent to which binding agreements can be used depends on the legal and institutional scope for concluding such agreements in the different Member States, and also the extent to which they are taken up by business in a substantial and ambitious way. Currently the actual take-up and effect of environmental agreements is limited.

Prima facie, environmental agreements would seem to have significant **potential** at a local level due to the **site-specificity** of the industry in relation, for example, to issues such as water quality and site restoration. It is also at that level that such agreements have been developed so far. On the other hand, local by-laws can also allow for the necessary flexibility in setting specific conditions and targets for particular operations on the basis of an environmental assessment and local conditions.

The Commission has launched a study on existing voluntary initiatives in the EU, as well as in other countries, which will include an inventory of **environmental agreements** in the EU. On the basis of the findings of the study, the Commission will further assess the potential use of such instruments in the industry and recommendations to be made. With regard to Community Environmental Agreements, the Commission is currently preparing a proposal for a framework regulation to address the current legal and institutional obstacles for such agreements at Community level and the need to ensure public participation.

3.1.4. *Other initiatives*

One essential requirement for achieving sustainable development is the integration of environmental concerns into every stage of an operation, from the planning stage to site restoration and after-care. This approach is all the more essential as the layout and method used for an extractive operation is sometimes difficult to change once extraction has begun.

²⁴ Carried out for the Commission 1996.

²⁵ Communication from the Commission on Environmental agreements, COM(96) 561, 27.11.1996.

Voluntary initiatives have been taken by industry to foster improvements in environmental performance and to communicate past and on-going achievements. Several companies, especially multinationals in the metallic minerals sector, have adopted environmental and sustainable development policies. Business federations have developed codes of conduct and mission statements for their members, setting out the principles for the sectors' environmental policy. Best practice guides have been developed to illustrate how the industry strives to ensure environmental protection. An important application of such codes of conduct relates to operations in developing countries, where the legal framework may be insufficient. An independently verified code of conduct can, in such circumstances, be a way for industry to demonstrate its commitment to environmental and social requirements. It has to be assessed whether these commitments have sufficient effect compared to other instruments in reducing the environmental impacts.

On the whole, however, initiatives of this kind appear to be fewer in number and less far-reaching compared to those in leading minerals producing countries outside the EU. Existing initiatives can not be considered as having made a substantial contribution to the overall policy framework. One possible reason for this is that it may not be cost-effective for SMEs, which dominate the industry in the EU, to undertake such initiatives. This highlights the need for active involvement of business support organisations through, for example, disseminating relevant information. As mentioned in subchapter 3.1.3, the Commission has launched a **study on voluntary initiatives** in the EU, as well in other countries, to identify what the impact and scope of such initiatives can be and possible models for further development.

Important progress could be realised through the development of environmental performance **indicators**, in order to establish a detailed assessment of the industry's environmental performance, to monitor improvements and to differentiate between the different sub-sectors and locations, as influenced by geological conditions and the local ecosystem. Examples of suitable indicators could be resource use, discharges to air and water, and land use. Most importantly, they must satisfy requirements of transparency, relevance, measurability, and analytical soundness.

More comprehensive environmental reporting by the industry could play an important role in the development of indicators. Some companies have already started to develop and use such indicators in their reports. Indicators can only achieve results if they provide for common measuring **standards**, allowing for comparison and evaluation of performance. This approach will provide the degree of objectivity needed to bring about improved dialogue between the stakeholders, a **dialogue** based on objective analysis which can result in agreed targets for future improvements. Such dialogue can also help to bring about a greater understanding of the constraints faced by the industry in terms of competitiveness and social development.

The Commission invites Member States, industry, and other stakeholders to further exchange information on work already carried out in this field and to discuss how it could be progressed.

3.2. Economic aspects

3.2.1. Competitiveness

In order to attain economic efficiency from a societal point of view, it would be optimal to internalise all negative impacts on the environment (externalities) into the price of extractive operations and ultimately the product as sold. This would then also lead to an optimised level of resource use through the control of demand due to the price mechanism, the incentive to install an optimal level of pollution control and prevention measures to avoid accidents and, finally, an optimal trade-off in the choice of locations. This trade-off has to weigh inter alia the use of high-grade ore (with less creation of waste and/or emissions to the environment) with the impact on landscape and bio-diversity. However, due to the lack of available studies, an exact quantification of the overall welfare loss to society as a consequence of the environmental impact of extractive activities is impossible at the moment. Further research is needed to see how far this type of analysis can be taken with a view to designing optimised economic instruments which may, as a long term goal, reduce the need for legislation.

Land use and spatial planning policies directly affect sustainable development strategies for the industry. Land access is an essential pre-requisite for the further development of the industry. Land access for the industry, however, may have considerable environmental impacts, which need to be assessed. Over recent years conditions for land access for the industry have been increasingly influenced by other competing land uses, such as urban development, infrastructure construction, intensified agricultural development, and preservation of nature areas.

Although land use planning is mainly the responsibility of public authorities in the Member States, a number of **key initiatives** of a strategic nature **at EU level** provide scope for developing a more integrated approach. In that regard, the European Spatial Development Perspective (ESDP)²⁶, intended to promote co-operation between Member States in pursuit of sustainable development through a more balanced spatial use of EU territory, is relevant to the industry. In accordance with the Habitats and Birds Directives²⁷, Member States should also, when designing land use measures, ensure that the nature conservation requirements of the sites of the Natura 2000 network are complied with. This network aims at maintaining biological diversity in the EU by the conservation of natural habitats and wild fauna and flora. When a plan or project, including those related to extractive operations, is likely to have a significant effect on a Natura 2000 site, the Member States have to apply the necessary safeguards defined in Article 6 of the Habitats Directive, in order to ensure that such activities are sustainable from a nature conservation point of view.

The activities and impact of the extractive industries in the EU can not be viewed separately from the global market. Increased imports of raw materials to the EU may have negative effects on the global environment through greater use of transport. In addition, as compared to the situation in the EU, the environmental conditions under

²⁶ "Towards Balanced and Sustainable Development of the Territory of the European Union", Agreed at the Informal Council of Ministers responsible for Spatial Planning in Potsdam, May 1999. Published by the European Commission.

²⁷ Council Directive 92/43/EC of 21.5.1992 on the conservation of natural habitats and of wild fauna and flora and Council Directive 79/409/EEC of 2.4.1979 on the conservation of wild birds.

which minerals are extracted in developing countries are often difficult to assess. The need to integrate sustainable development into development policy is especially relevant in that context. The experience of the industry from operating under strict environmental requirements in the EU also allows for development of **best environmental practices**, which can be spread to developing countries and thereby help achieve environmental objectives.

From a social perspective there are also a number of important considerations to be taken into account. In scarcely populated regions, already under pressure from structural change, there may be limited possibilities for alternative economic activity. The direct and indirect employment created by an extractive operation may offer opportunities to arrest depopulation. However, an extractive operation has a finite life, and it is necessary to plan at the outset of an operation how lasting and beneficial economic effects can be continued after site closure. Furthermore, some extractive operations can have a negative impact on traditional ways of life in rural areas, for example, in the case of adverse impact on local populations. This highlights the important responsibility of industry to involve the local community in all phases of the planning and development of an operation.

The Commission **recommends** that public authorities in Member States adequately balance the need for land access for industry with the need for a high level of environmental protection. Member States are also invited to share experiences and information, for example, on balanced approaches to assigning areas of land for future extractive operations and on how comprehensive decision-aiding systems, integrating data on land use, bio-diversity, cultural heritage, geology and water resources, can be effectively developed and applied.

3.2.2. *Administrative procedures*

In many Member States, the right to exploration and exploitation with regard to metallic minerals and high-value industrial minerals belongs to the State. National legislation, usually in the form of a **mining law**, lays down the principles on how such rights can be acquired and exercised.

Mining, land use, environmental, and health and safety legislation, national as well as Community, reflects the situation in Member States. The different aspects may be integrated, environmental and land use provisions, for example, being included in mining law. Legislation and enforcement are in many cases under **regional or local responsibility**, including the setting of precise conditions for environmental protection, such as methods of working, waste management and site restoration. Similarly, permit procedures may be handled by different authorities and at different levels.

Proper implementation, and strict enforcement, of legislation are essential pre-conditions for ensuring effective environmental protection and even-handed treatment of the industry. To achieve these results, public authorities must equip themselves with adequate administrative structures, and have available a high level of knowledge and expertise, to deal effectively with the issues arising.

The efficient application of the large number of **administrative procedures** governing the industry is also of particular importance in maintaining a business climate conducive to investment in the industry. This applies with even greater

weight to SMEs, which are especially sensitive to administrative burdens. It would be beneficial to study the design and functioning of these procedures in the Member States, in order to encourage the exchange of information and to identify best practices.

The Commission invites the Member States and industry to identify aspects of national mining legislation most relevant for the business climate and the competitiveness of the industry, in order to form a basis for future **benchmarking** of such legislation.

3.3. Social performance and employment

In the field of **health and safety**, industry has improved its performance in recent years, leading to a marked decline in accidents. However, accident statistics show that the industry is a high-risk sector and improvements need to be achieved to become comparable to those in other industrial sectors. Compared to the issue of environmental protection, it appears that this aspect does not give rise to the same public concern.

A highly skilled workforce is essential for maintaining the competitiveness of the sector. Due to the long tradition of extractive operations, the EU possesses excellent human capital in this field. However, the limited size of the extractive industry in the EU has had repercussions on the resources devoted to **higher education** in mining engineering. Such education is a pre-condition for the competitiveness of the industry and for innovations and new technologies, and it also offers the possibility of increasing knowledge and awareness of environmental protection in all stages of extractive operations. With regard to the supply of labour in the future, the industry also needs to communicate effectively its performance in relation to health and safety in order to attract sufficient and qualified staff.

The Commission **recommends** that Member States study the industry's needs for higher education in order to support the future competitiveness of the industry. The industry, through sponsorship of learning centres for example, should be actively involved in the process. In that context, the Commission welcomes the initiative taken by a number of European technical universities and European industry to set up a network for co-operation and student exchange in the field of mining and mineral engineering, an initiative supported by the Community through the Socrates programme.

3.4. Research and Technological Development (RTD)

The rate of development of new technologies in the industry has been very rapid, particularly in the metallic minerals sector. Modern **information management technologies and ICT use** have increased the efficiency of exploration through real-time operations, reducing costs and capital risk at the same time. More effective exploration methods and monitoring of extractive operations, involving remotely sensed data acquisition and digital processing techniques, laboratory analysis, equipment use, and assessment of environmental impact has increased productivity and environmental performance. The impact of e-commerce has so far been relatively slow in the raw materials sector, but this is likely to change with, for example, development of internet-based commodities exchanges and trading opportunities, which will further increase competition in the industry.

Through its **programmes for RTD** in Europe, the Community is supporting a wide range of actions in this field. Under the Fourth Framework Programme (FP) 1994-1998, more than 50 projects have been supported, with over 40 million of EU financing, along themes such as mining and tunnelling technologies, ornamental stones, clean processing technologies for ores and industrial minerals and exploration technologies. Individual projects have addressed issues such as acid mine drainage and water pollution, computer-integrated systems and processes, and improvement of product quality. The programme has also financed the **European Thematic Network on Extractive Industries** (EUROTHEN), set up on the initiative of the European Commission. The network groups together the research projects financed by this programme and provides a European forum to share problems and experience, facilitating the incorporation and transfer of technology and mobility of researchers, and interacts between industry and regulatory authorities with respect to sustainable development.

The Fifth FP (1998-2002) and its thematic programme for Competitive and Sustainable Growth addresses industry needs through its key action on Innovative Products, Processes and Organisation and through generic activities on new and improved materials. The CRAFT programme is centred on the needs of **SMEs**, for which thematic priorities and objectives are in line with those of the Fifth FP.

In the thematic programme for Energy, Environment and Sustainable Development within the key action on Sustainable Management and Quality of Water, research is carried out on the rehabilitation of sites polluted by extractive activities and on the management of water leaching from mining sites, with the objective of producing advanced guidelines for better environmental protection.

To further strengthen efforts in the field of RTD, the Commission has proposed the creation of a **European research area**²⁸. The aim is to better integrate and co-ordinate research activities at both Union and national level. Key elements will be networking centres of excellence, a common approach to research infrastructure and enhancement of the mobility of researchers in Europe. This will provide further opportunities for the extractive industry to improve its competitiveness and environmental and social performance. The Commission encourages industry to develop a common **European platform** to take advantage of the potential which the European research area will offer. Considering the diverse structure of the industry and the high number of SMEs, such a platform would be important for co-ordinating and disseminating results, and in identifying areas for future research.

3.5. Enlargement

The industry structure in the candidate countries resembles to a degree that of the EU, insofar as it comprises a relatively small metallic mineral sector and larger industrial and construction minerals sectors designed to meet domestic demand. Mining of metallic minerals is mainly concentrated in Bulgaria, Romania, Turkey and, in particular, in Poland. The industrial minerals sector is also important in the above countries, as well as in the Czech Republic.

²⁸

Communication from the Commission "Towards a European research area", COM(2000) 6, 18.1.2000.

So far, restructuring and privatisation have been more successful in the industrial and construction minerals sectors, with considerable **foreign investments** being made in extractive operations as well as in related downstream industries. In the metallic minerals sector, progress has been much slower with insignificant foreign investment, due in part to the low quality of many of the ores currently being mined, an inadequate legal framework and the legacy of past **environmental damage**, although the liability regime in the region is not a strong driving force.

The industry, and the regions concerned, face very difficult challenges in relation to economic, social and environmental requirements. Total **employment** in the industry is difficult to estimate but can be assumed to be higher than in the EU, reflecting the much lower productivity in the CEECs. The necessary restructuring of many operations, in order to cope with European and global competitive pressures, will inevitably result in substantial downsizing and social adjustment which may have a severe impact at regional or local level. Most operations need to improve their environmental and social performance. Comprehensive information to facilitate this process is lacking in many cases. **In particular, a large number of sites are in urgent need of environmental rehabilitation, as shown by the recent accidents in Romania.**

The Commission urges the candidate countries to speed up privatisation and restructuring of the industry. **Full adoption, implementation and enforcement of the acquis** is an essential prerequisite for successful enlargement. The Commission considers that an inventory should be made of existing "hot-spots" in relation to extractive operations in the CEECs, to assess how further assistance can be provided for necessary corrective measures and help to identify necessary actions with the aim of avoiding further mining-related accidents in the future. Application of the polluter pays principle is appropriate for existing hot-spots. It also recalls the importance of a stable and predictable legal framework to encourage **investment** in the industry, investment that can play a key role in exploration, in restructuring existing operations, and in spreading best practices. Due to the requirement that economic as well as environmental issues be taken into account at the planning stage, developing new extractive operations may constitute the most effective way to develop the sector in these countries. In this regard, industrial co-operation can play an important role and the Commission will continue to encourage suitable initiatives by the EU industry for that purpose.

4. FOLLOW-UP ACTIONS

The Communication has identified a number of complex issues that need to be addressed through balanced consideration of economic, environmental and social aspects to ensure the sustainable development of the industry. A coherent Community policy is necessary to address these issues.

The main lines for this policy approach are already indicated in this Communication, which outlines a number of potential Community actions within which improved stakeholder dialogue has an essential part. These include also the safety management and prevention of industrial risks, cover best available techniques for the industry, and focus on the specific requirements for sound management of mining waste as well as environmental liability. The Commission will shortly present a

Communication, including an Action Plan, on these issues as a follow-up to the Baia Mare and Aznalcollar accidents.

In addition, a study on voluntary initiatives on the part of the industry is being undertaken in order to ascertain how such initiatives could contribute to the overall environmental performance of the industry.

Improved dialogue has a central place in achieving a more sustainable minerals industry. With regard to existing structures for dialogue, the **Safety and Health Commission** for the Mining and Other Extractive Industries, set up by a Council Decision²⁹, is funded and managed by the European Commission and composed of national representatives of governments, employers and workers. At present, it is seeking to intensify its contacts with the candidate countries. Its activities consist in the ensuring of an efficient exchange of information in the establishing of recommendations, guidelines and proposals to the Member States and in assisting the European Commission as regards the preparation of relevant measures aiming to improve the working environment in the industry.

Concerning informal arrangements, Commission officials have consulted regularly with experts of Member States and industry representatives through the **Raw Materials Supply Group** on the main issues arising, notably in relation to competitiveness. Recently the first steps have been taken to involve other stakeholders in the group, including NGOs and trade unions.

Other existing fora include **EUROTHEN**, mentioned in chapter 3.4, and **EuroGeoSurveys**, a consortium of national geological surveys of the Member States together with Norway and Iceland.

As already indicated several Community policies and programmes, notably in relation to environment, enterprise, employment and research directly or indirectly affect these industries. The particular actions identified, notably in relation to the gathering and dissemination of information and the identification of best practices, will help contribute to the objective of the sustainable development of the industry. Nevertheless, for substantial progress to be realised, it will be necessary to have the wholehearted commitment of the industry and of other stakeholders to co-operate together in an objective and transparent manner in the interest of the sustainable development of the industry.

The existing separate structures in different areas shows the need to create a more streamlined **framework for dialogue**, in which all the stakeholders can jointly examine the different aspects of sustainable development of the industry in an integrated way. In order to be successful, the dialogue must involve **Member States, both sides of industry, NGOs and other stakeholders, as well as the Commission**. The Commission is willing to facilitate a framework to strengthen and intensify the dialogue on all priority issues affecting the industry. It invites Member States, both sides of industry, NGOs and other stakeholders to make **proposals on the objectives, constitution, and format for such a framework**, including the identification of the conditions for achieving tangible results.

²⁹ Council Decision 74/326/EEC of 27.6.1974.