The Minerals Industry and Sustainable Development.
International Initiatives and Corporate Sustainability Reporting.
(Abstract code 004-0241)

Kai Nielsen, Professor, Dr.ing.
Department of Geology and Minerals Resources Engineering
Norwegian University of Science and Technology
N-7491 Trondheim
Norway
ABSTRACT

In late 1998 nine of the world’s largest mining companies decided to launch a new project called the Global Mining Initiative to undertake a two year study of the global challenges of sustainable development facing the mining sector. At that time this was the second international study of an industrial sector, the first one being the paper industry world wide.

The main project objectives were to assess the global mining and minerals sector in terms of the transition to sustainable development, and to identify how the services provided by the mineral system can be delivered in accordance with sustainable development in the future.

The paper discusses how the minerals industry is gradually embracing the concept of sustainable development, a process that is clearly demonstrated by the increasing number of mineral operations using sustainability indicators and sustainability reporting to inform stakeholders about their activities.

1. INTRODUCTION

Minerals are essential to value creation, human welfare and social development, and mining together with agriculture laid the foundations of modern civilization going back 500,000 years and more.

Our societies, both in the industrialized and the less developed economies, are more dependent than ever on the many functions and services supplied by mineral resources and their down-stream products.

Mineral consumption has historically been closely coupled with economic growth for a period of more than a hundred years since the start of the industrial revolution. This connection has, however, been broken during the last 20-30 years.

One typical example is the consumption of copper in the US economy which increased from about 2 million metric tons in 1984 to 2.4 million metric tons in 2004, an increase of 14.6 per cent (US Geological Survey, 2006). During the same period the GDP (in current money) per capita increased from 15,900 $ in 1984 to 37,800 $ in 2004, or an increase of 238 per cent (US Bureau of Economic Analysis, 2006).

Another example is the European Union where the annual direct material input (DMI) per capita has been more or less constant at 16 metric tons during the last 25 years while the economy has grown steadily during the same period (European Commission, 2003). It is also important to notice that about 50 per cent (by weight) of the European materials consumption is mineral based, while the rest is fossil fuels and biomass, each with about 25 per cent of the total (European Topic Centre on Resource and Waste Management (ETC-WMF), 2003).

In spite of the obvious dependence on minerals in our economy is the minerals industry not considered as important, neither by the public in general, nor by politicians and the authorities. This is partially caused by the seemingly unimportant role of the sector in the economy because the primary production of mineral raw materials accounts for less than a fraction of one percent of the GDP and number of jobs in most industrialized economies.
However, a socio-economic study commissioned by the Association of Finish Extractive Resources Industry, found that the total employment in the downstream industries using mineral raw materials is 35-40 times higher than in the primary mineral operations. This amounts to almost 40 per cent of the number of jobs in the Finnish industrial sector (Raw Materials Group, 2002).

2. GLOBAL MINING INITIATIVE

The mineral industry is engaged in locating, extracting, processing, marketing and converting the world’s mineral wealth for its consumption in a useful form. *We have an ethical responsibility as professionals to carry out our roles in such a way that we seek to optimise the recovery of that wealth for the benefit of the community, not only now, but also in the future* (Goddard, 2002).

This statement is directly connected to the question of sustainable development and how the mineral industry can contribute to it.

*Fifteen years ago, few in the mining industry had heard the words sustainable development, let alone knew what it meant. Today is a different story. Industry leaders have embraced the concept. They have taken action to incorporate the inherent values and principles of sustainable development into the policies and modus operandi of their companies* (Yearley, 2003).

Sustainable development is a continuous process that can better be seen as a journey and not a defined destination. The reason is that the concept of sustainable development evolves in response to changing societal values and priorities, often as a consequence of new knowledge and better understanding of the interdependence between human activities and welfare, and nature’s ecosystem services.

In the past decade has the minerals industry come under increasing pressure to improve its socio-economic and environmental performance. Like other sectors of industry, is mining expected to perform to ever higher standards of behavior and to become more transparent and subject to third party audit.

In late 1998 international industry leaders recognized that the mineral industry had to accept the challenge and create a new way of doing business. Nine of the world’s largest mining companies decided to launch and sponsor a new project called the Global Mining Initiative (GMI). Through the World Business Council for Sustainable Development they commissioned the International Institute for Environment and Development (IIED) in London to undertake a two year study of the global challenges of sustainable development facing the mining sector. The project study was named Mining Minerals and Sustainable Development (MMSD).

At that time this was the second international study of an industrial sector, the first one being the paper industry world wide.

The GMI had no formal institutional structure and was dissolved after the MMSD project was concluded with a final report that was presented at a global policy conference, Resourcing the Future, which took place in Toronto in May 2002. The conference provided industry leaders
with an opportunity to discuss key issues and recommendations of the MMSD report with government authorities, international organizations, NGOs and others.

In order to keep the process moving, a new global organization named the International Council on Mining and Metals (ICMM) was also founded to represent and lead the industry in meeting the challenges of sustainable development. ICMM comprises 16 of the world’s largest mining and metals companies as well as 23 regional, national and commodity associations (ICMM, 2004).

The objectives of the MMSD project were to (IIED, 2002):

1. Assess the global mining and minerals sector in terms of transition to sustainable development. This would cover the current contribution – both positive and negative – to economic prosperity, human well-being, ecosystem health, and accountable decision making, as well as the track record of past practice.
2. Identify how the services provided by the minerals system can be delivered in accordance with sustainable development in the future.
3. Propose key elements for improving the minerals system.
4. Build platforms of analysis and engagement for ongoing co-operation and networking among all stakeholders.

It is important to note that the MMSD project was designed to be independent, open and collaborative, and that it should not be speaking on behalf of any particular stakeholders, including the sponsors. The sponsors group participated in the MMSD process as stakeholders, but their sponsor status did not give them any special access to the process. Their participation was not considered any differently from that of other stakeholders, and the sponsors had no authority over the contents or production of any final material coming from the MMSD project.

The sponsors did, however, make the following reservations (IIED, 2002):

1. They would not necessarily endorse the findings and conclusion of the project.
2. They would not accept any responsibility for the accuracy, lawfulness, or completeness of any material produced by the project.
3. They would not be bound by the conclusions of the project.

The MMSD project report defined four dimensions of sustainable development: economic, social, environmental and governance. If the mineral industry is to contribute in a positive way to sustainable development, it needs to demonstrate continuous improvement in its social, economic and environmental contribution to society, based on new and evolving governance systems (IIED, 2002).

The International Labour Office (ILO) has described the “new regime” as follows: Mining companies need to go beyond their traditional responsibilities to employees, shareholders and regulators. A move towards sustainable development involves meaningful partnerships with local communities and government, effective and productive ways of working with NGOs, enhanced stakeholder participation, integrated life-cycle planning, transparency, forward-looking preventive action, remedial action, regulatory compliance, a respect for declared “no-go areas”, and investment in the future to provide for well-being in a more sustainable world (ILO, 2002).
3. GLOBAL REPORTING INITIATIVE

Sustainability indicators for the mineral industries have been developing during the last 5-6 years, following the launch of the Global Reporting Initiative (GRI) in 1997. This initiative was a joint effort by the US non-governmental organization Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment Programme (UNEP). The goal was to enhance the quality, rigor and utility of sustainable reporting and permit comparability between reports. The first set of GRI Sustainability Reporting Guidelines was published in 1999, and the present version was released in 2002 (GRI, 2002). A draft version of the third generation of guidelines known as G3 was released in the beginning of 2006 (www.grig3.org).

The Guidelines define a set of reporting principles that are essential in order to produce a balanced and reasonable report on an organization’s economic, environmental, and social performance. These principles form the framework of the report as illustrated in Figure 1.

![Framework of the sustainability report](image)

**Figure 1:** Framework of the sustainability report (GRI, 2002).

The Guidelines also define a number of performance indicators for the three spheres of economic, environmental and social impacts.

Economic impacts are divided into direct and indirect impacts, and the direct impacts include monetary flows with regard to customers, suppliers, employees, financing institutions, shareholders, and the public sector (taxes). Indirect economic impacts are those costs or benefits which arise from transactions that are not fully reflected in the monetary amount of
the transaction (externalities). The GRI framework has listed 10 economic core indicators and 3 additional indicators in order to assess a company’s economic performance.

Core indicators are considered to be relevant to most reporting organizations and of interest to most stakeholders. Additional indicators may for instance be of interest to stakeholders that are of particular importance to the reporting entity.

Environmental indicators concern the company’s impacts on living and non-living natural systems, including ecosystems, land, air, and water. The environmental indicators encompass the use of materials, energy and water, as well as biodiversity, emissions and waste, suppliers, products and services, compliance, and transport. There are 16 core indicators developed for the environmental section and 19 additional indicators.

The social dimension can be assessed by analyzing how company activities impacts on stakeholders. There are four main groups of social indicators:

1. Labor practices and decent work
2. Human rights
3. Society
4. Product responsibility

The set of social performance indicators includes 24 core indicators and 20 additional indicators.

GRI has also started to publish sector supplements in co-operation with various actors in connection with the release of the 2002 Guidelines. One of these documents is for the mining and metals sector. The document was first prepared within the framework of the MMSD project, and has later been revised in co-operation with ICMM. It contains a number of questions that cover an extensive number of environmental, social and economic aspects. Each question may or may not be relevant for a specific operation. Together with these possible questions, the document also lists a number of possible indicators. There are a total of 74 questions and 69 indicators in the environmental section, 37 questions and 35 indicators on social issues, and 21 questions with 29 indicators on economic impacts (GRI, 2005).

With the number of core and additional indicators in the Guidelines, and the possibly relevant indicators and questions in the sector supplement, a comprehensive sustainability report will not be a feasible task for the many small and medium sized mineral operations. GRI, however, encourages flexibility in using the Guidelines, and invites small and medium sized operations to choose an informal approach covering some indicators consistent with their current competence and capacity, and gradually expand the scope of reporting. The GRI report gives advice on incremental application of the Guidelines.

4. EUROPEAN COMMISSION INITIATIVE

In May 2000 the European Commission published a so called Communication about promoting sustainable development in the EU non-energy extractive industry (European Commission, 2000).

This initiative was followed up by the Raw Materials Supply Group (RMSG) which is a stakeholder group comprising industry, environmental NGOs, trade unions, EU member states, and the EU Commission. RMSG established a working group on Sustainable
Development Indicators. The working group was chaired by the EU Directorate-General for Enterprise, and it prepared its first set of indicators in early 2002. After consultations with various mineral industry sectors, a report was published in February 2004.

The EU indicator system has the following thirteen indicators at company level (European Commission, 2006):

1. Employment (total direct and indirect employment).
2. Development of skills (number of hours of training/total number of hours worked).
3. Health & Safety of employees (number of fatalities per year – number of working hours lost per year as a result of accidents/total number of hours worked – number of hours of training in Health & Safety/total number of hours worked).
4. R&D investment as percentage of total turnover.
5. Exploration costs as percentage of total turnover.
6. Communication to the Community (system for registration and follow-up of complaints (Yes/No) – number of public meetings, school visits etc.).
7. Energy efficiency (energy used per metric ton of product).
8. Water demand (net raw water consumption per metric ton of product).
9. Land demand (total land area used for mineral extraction).
10. Land management (total land area restored and returned to other beneficial use).
11. Use of dangerous substances (amount of classified dangerous substances used per metric ton of product).
12. Transport constraints (average transport distance from source to customers and percentage of transport by road, rail and water).
13. Environmental incidents (number and type of mandatory reportable environmental incidents).

There are also seven indicators to be applied on member state level mainly in connection with mineral policies and land use planning.

Both the GRI and the EU sustainability reporting schemes are voluntary, but there is a difference with regard to reporting. The GRI is made in order to help individual organizations to develop and publish their own sustainability reports. On the other hand the European scheme gathers aggregated data from industry sub-sectors, collected from companies by their respective industry associations such as the Industrial Minerals Association Europe or the European Aggregates Association, and report the data to the Commission. The Commission then publishes a summary report which includes the metal mining sub-sector, the industrial minerals sub-sector, and the construction minerals industry.

Any company is free of course to publish its own individual indicator data in whole or in part but this is not part of the European scheme.

The GRI system with its mining and metals supplement is much more comprehensive than the EU scheme, and has 44 aspects and about 110 data questions that must be answered in order to be fully in accordance with the Guidelines. The EU scheme has only 12 aspects and about 20 data questions.

The EU scheme is based on the question “What is the minimum necessary to adequately characterize the mineral sector?”, whereas the GRI is based on the premise “We need to make this comprehensive” (Turner et al, 2005).
5. OTHER SUSTAINABILITY INITIATIVES

The National Resources of Canada (NRCan), through its minerals and metals sector has coordinated the Metals and Minerals Indicator Initiative that started in 1999. This project involves many different stakeholders from State Ministries, environmental, social and indigenous NGOs, mining associations, companies, research facilities and universities. Homepage: www.nrcan.gc.ca/mms/mmi

In the United States has the US Department of Forest in collaboration with the US Geological Survey initiated the US Sustainable Minerals Roundtable. This is also a multi stakeholder initiative comprising government, energy and mineral industries, environmental groups and academia. Homepage: www.unr.edu/mines/smr

The Organization for Economic Co-operation and Development (OECD) has also developed several sets of indicators, but these seem to be focused on environmental issues and to a lesser extent on socio-economic development. A large number of reports and other publications dealing with environmental indicators and sustainable development can be found on the OECD homepage: www.oecd.org including reports dealing with mining issues especially in developing countries in connection with direct foreign investment (DFI) in mining (search for: Sustainable development and mining).

6. INTERACTION WITH STAKEHOLDERS

Both the MMSD report and the 2002 Guidelines place very strong emphasis on the importance of open communication and interaction with stakeholders. Even if the minerals industry obviously meets a public need, it must also be realized that it creates concern among stakeholders.

Sustainability reporting is one of several ways to develop and strengthen stakeholder relationships. However, it is important to realize that there will usually be quite some difference between the perceptions of socio-economic and environmental effects among the stakeholders (e.g. community, government, and employees) compared with that of a stake-owner e.g. the principal shareholder (Coelho, 2001). Different stakeholders may also have differing views on various issues. This means that the industry starts at a disadvantage vis-à-vis the public with regard to developing good communication and mutual understanding (Mortimer, 1999).

In addition, it is well known that different people interpret the things they hear or see in different ways. Communicating facts is not the same as telling the truth as it is perceived by different stakeholders. People tend to filter information in ways that support, and not contradict their cultural model. The message we try to bring across will be filtered by factors such as economic status, the opinion of friends, personal values, and distrust of industry, science, and other "authorities".

A company may try to inform about objective aspects that will benefit the community, including:

- Creation of jobs
- Contributions to the local economy
- Satisfying the demand for important minerals
- Strict compliance with regulations
The public, however, will often have other, more subjective concerns such as:

- It will be an eyesore
- What about noise and dust?
- Will it harm my health?
- What about property values?
- Does the company care about my welfare?
- Can I really trust the information?

In the past have mineral companies usually made plans for new projects or expansions in house and largely for the attention of the relevant planning authorities. Then when the project was announced to the public, the company often had to defend their plan against opposition from the public (Mortimer, 1999).

A modern approach to project planning begins when the company first identifies the stakeholders, and involve these in the development process and establish 2-way communication based on mutual respect and openness (ibid).

The stakeholders are not just the local community and its people but a substantial number of private and public actors as illustrated in Figure 2 (After Matthews et al, 2004).

---

Figure 2. Categories of relevant stakeholders in the planning process.
7. CORPORATE REPORTING

The GRI organization keeps a world wide list on their homepage of companies and organizations that publish annual sustainability reports in full accordance with the GRI Guidelines. The last update at the time of writing was on February 8 2006, and the list of Organizational Stakeholders contained 267 members from 36 countries, of which the following 6 are large national or international mining companies:

1. Anglo American plc, United Kingdom
2. AngloGold Ashanti Ltd, South Africa
3. BHP Billiton Ltd, Australia
4. Corporación Nacional del Cobre (Codelco), Chile
5. Newmont Mining Corporation, United States of America
6. Suncor Energy Inc, Canada

This list may not seem impressive, but a number of other large mining companies publish annual sustainability reports without being in full accordance with the GRI Guidelines. Among these are:

1. Barrick Gold Corporation, Canada
2. Goldfields Ltd, South Africa
3. Kumba Resources, South Africa
4. Lonmin plc, United Kingdom
5. Newcrest Mining Ltd, Australia
6. Placer Dome, United States of America
7. Rio Tinto plc, United Kingdom
8. Lafarge (aggregates/building materials), France (Lafarge is also on the 2006 list of the world’s 100 most sustainable corporations. Homepage: [www.global100.org](http://www.global100.org)).

There is definitely a business case for sustainability reporting and use of SD indicators with regard to customer relations, influence on employees, attracting applicants, and relations with communities.

Customers are the most important stakeholders also in the mineral sector, and more and more of them are starting to evaluate their suppliers on more criteria than just price, delivery time and product quality. Led by large companies customers have become increasingly interested in their suppliers’ SD attitude and performance, and this has to do with risk management. They don’t want to be placed in bad light because they use suppliers that get known for bad treatment of employees or communities, pollution etc.

SD reports can be a source of inspiration for employees. If they find that their own values are reflected by the words and actions of the company, employer-employee loyalty will be strengthened. Such people will become good ambassadors for the company.

A company that develops a visual SD profile may also attract some of the best job applicants who share the same values.
Dialogue and co-operation with local communities is crucial with regard to obtaining and maintaining the company’s social license to operate. Such dialogue is easier to establish if the company has a positive and responsible attitude towards sustainable development, and demonstrate this by good SD reporting.

The benefits of good SD reporting is not only for the big players like the international mining houses, but is equally important for small and medium sized enterprises (SME), of which there are a very large number in the mineral industry world wide.

The smaller organizations in Europe may find it best to apply the EU SDI scheme because it is perhaps more manageable than the GRI system. But as said above, GRI encourages flexibility in using the Guidelines, and invites SMEs to choose an informal approach covering some of the most relevant indicators, and gradually expand the scope or reporting. GRI has also published a guide called “High 5!” that assist small and not so small businesses to enter the world of SD reporting (GRI, 2004).

However, to take up sustainability reporting can represent both an opportunity and risk for an industrial operation (Nielsen, 2003).

It can become an effective tool for developing mutually fruitful collaboration and communication with the local community and other stakeholders, provided it is an honest and truthful effort. The public is far too sophisticated to bee fooled for very long by lip-service and whitewashing (ibid).

The risk lies in the fact that sustainability reporting can create expectations of continuous improvement among stakeholders. If the company fails to deliver, or if reporting is stopped after some time, it will cause resentment and extensive damage to the company’s reputation among the public. It would then have been better not to take up reporting at all (ibid).

8. CONCLUSION

A new course has been set for the industry, and there is no going back. There is a good business case for sustainable development which offers the opportunity to improve the industry’s economic, environmental and social performance, and this way it can build trust, mutual respect with all stakeholders and gain its social license to operate and grow.

A lot has already been achieved by the mineral industry with regard to making its contribution to sustainable development, but there is also a lot still to be done.

REFERENCES


Turner, E. 2005. The issue of collecting and reporting SD indicators in the minerals sector from the point of view of small and medium-sized companies and those not publicly traded. Proc. 2nd International Conference on Sustainable Development Indicators in the Minerals Industry, SDIMI 2005. RWTH Aachen University, Dept. of Mining Engineering 1. ISBN 3-7739-5994-X.

