



Mining, Minerals and
Sustainable Development

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Mining for the Future

Appendix D: Workshop Summary and Recommendations

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International
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I Introduction

This report presents the major issues and recommendations identified by the MMSD project on Large Volume Waste, which includes Mine Closure and Abandoned Mines. MMSD is an independent process of participatory analysis aimed at 'identifying how mining and minerals can best contribute to the global transition to sustainable development'. The Large Volume Waste project was set up to identify the issues related to large volume waste disposal, mine closure and abandoned mines and develop recommendations on how the mining industry and the regulatory agencies, can contribute to sustainable development through its handling of these issues. The discussions included technical, political, social and environmental aspects.

The following summary is based on:

- Draft Working Papers on Large Volume Waste (Appendix A), Mine Closure (Appendix B) and Abandoned Mines (Appendix C)
- Comments from the Large Volume Waste project Review Committee
- The Large Volume Waste Workshop (Vancouver, 15–17 July, 2001)

The outputs of this project will contribute to MMSD's final report and many of the recommendations will also be addressed by other MMSD projects.

The issues that were raised during this project have been broadly divided into nine headings in the hope of clarifying the thinking behind some of the comments. However, there is obviously considerable overlap between most of these headings and a number of issues are relevant to the majority of them. For this reason, although the headings are numbered, they are not presented in any particular order. In addition, there was not a consensus of opinion between those involved in this project on a number of issues and this summary attempts to reflect the differing opinions.

1. Sustainable Development

Issue: There is a general lack of agreement as to the meaning of the phrase 'sustainable development' and what it entails in respect to the mining industry.

Considerations: Since the Brundtland report (Our Common Future, 1987) it seems as if everyone remotely involved in natural resources and environmental and social issues has attempted to define sustainable development. However, no one has managed to come up with a definition that is universally accepted. As a result, the majority of people and organisations have developed their own definition, often with widely differing meanings, while a minority admit to be totally confused. This situation is particularly apparent in the mining sector, where the industry is attempting to rationalise the often conflicting requirements and demands of the various stakeholder groups, with confusing results.

Specific considerations, in respect of the mining industry, were identified as follows:

- That it will take a significant change in corporate culture to understand and embrace sustainable development;
- That the current industry financial model is in conflict with sustainable development;
- That there needs to be a mechanism to make sustainable development part of the project development cycle; and
- That the three ‘legs’ of sustainable development, social, economic and environment, could be used to assess performance.

Recommendations: The ‘next steps’ should be:

- Identifying the audience for a mining and minerals orientated definition of sustainable development.
- Establishing a working definition for sustainable development in the mining sector.
- Identify measurable indicators or goals that can be used to evaluate sustainable development.
- Develop international guidelines for the processes involved in the tenets of sustainable development.
- Identify positive examples of sustainable development in the mining sector and publicise them.
- The development of definitions, indicators and guidelines must be undertaken with a full multi-stakeholder process.

2. **Public Engagement**

Issue: To ensure that mining companies identify the key stakeholders and engage them in decision-making throughout the mine life cycle.

Considerations: Genuine and open all-party participation in all aspects of project planning throughout the life cycle of the mine should result in a healthy relationship between the company and relevant stakeholders, to the benefit of both. However, correctly identifying those that should be involved and adequately assessing their concerns and perceptions can be a tortuous path. In addition, local communities and regulatory agencies often do not have the capacity to participate in decision-making on an equal footing and some form of capacity building may be required.

In order to fulfil the objectives for public engagement it is necessary to:

- Identify who the stakeholders are for a specific project; this may include the consideration of interested parties vs. affected parties, the role of local communities vs. government, specific issues related to indigenous communities and vocal national and international groups *versus* local communities;
- Initiate public participation during the exploration phase of the project;
- Build capacity amongst stakeholders to give them negotiating power, such as through understanding technical and financial proposals and all options;
- Be transparent, share knowledge and build partnerships with the local community; and
- Engage specialists in conflict resolution, where necessary.

Recommendations: It is recommended that an international guideline for public participation in project planning and decision-making should be developed involving consultation with all relevant stakeholder groups.

3. **Decision-Making**

Issue: The decision-making process needs to be transparent and coherent with the integration of qualitative values and the involvement of all stakeholders.

Considerations: In the past it was common practice for a mining company to make the majority of decisions internally and then present them to the regulatory agency and local community for approval. Recently, a more balanced, democratic decision-making process has been advocated to promote the tenets of sustainable development. In addition, many decisions that were originally based on short-term financial considerations are now based on a more holistic view. This process of decision-making should involve:

- All aspects of mine development (social, economic and environmental).
- Full participation of the community and regulatory agency at all stages of decision-making throughout the mine life cycle;
- Transparency and equal access in the collection, development and use of data, including the option of an independent party reviewing the data;
- The inclusion of qualitative values and risk assessment in the decision-making process; and,
- All options including the possibility of ‘no mine’.

Recommendations: It is recommended that a multi-stakeholder process should be initiated to review decision-making processes, in particular with respect to large volume waste and mine closure. This process should involve the compilation of examples of successes and failures and should establish guiding principles and criteria for decision-making. It may be necessary to change the project evaluation process in order to achieve broader-based decision-making.

4. **Industry Performance**

Issue: The majority perceived view of the social and environmental performance of the mining industry is bad to awful and this needs performance to improve.

Considerations: A combination of a poor historic record, with abandoned mines, widespread pollution and displaced communities, and more recent well-publicised tailings dam disasters has left the mining industry with a tarnished reputation. In spite of recent efforts to address these concerns, the industry still lacks credibility and transparency and many of its detractors feel that it is not capable of becoming respectable. This has meant that attempts by the industry to introduce voluntary controls has met with very vocal scepticism. The mining industry will always be characterised by its worst players and these are often the smaller companies, which do not have the resources to change their behaviour.

Recommendations: The following recommendations have been identified:

- The mining industry needs to realise that in order to improve its image, it will require a change in corporate culture and a willingness to take responsibility for past mistakes;
- Existing cases of good performance should be better publicized;
- Sustainable development considerations need to be embedded in the project development cycle and measurable indicators developed and used to evaluate progress;
- The industry should submit to third party verification of this progress [check];
- The multi-national corporations should establish a method of helping and supporting smaller, national and junior companies, to ensure that they have the ability to adhere to the same standards – for example, this could be through an international mentoring scheme whereby large companies could ‘adopt’ smaller companies for a specified period of time; and
- Industry needs to work to improve its relationship with NGOs concerned with mining.

5. **Government**

Issue: How to establish a balance between the dual role of governments; to promote mining and act as an effective regulator.

Considerations: Many governments, especially in developing countries, have a mandate to promote the mining industry for economic reasons, yet the same governments are also expected to act as the regulator of the industry, often with very limited resources. Regulations are usually highly prescriptive, relying on the command and control principle, often without the manpower or training for proper enforcement. Governments also tend to lack an awareness or understanding of the philosophy of sustainable development which, if implemented correctly, inevitably involves them losing some of their control and having to rely more on trust. There is a difference of opinion as to whether prescriptive or non-prescriptive regulations are the most successful and this is reflected in the recommendations.

Recommendations: The following recommendations have been identified:

- Develop international codes to set minimal standards for large volume waste disposal, mine closure and the treatment of abandoned mines;
- Establish a method whereby governments can have access to an international selection of experts for independent reviews through a fund financed by the industry;
- Establish whether adhering to voluntary codes and certifications will be effective in satisfying local or national requirements for sustainable development; and

- World Bank and other multi-lateral agencies should continue to assist and exert pressure on developing country governments to implement good laws and practices relating to mining.

6. Large Volume Waste Management

Issue: Disposal of the large volumes of mine waste, in particular tailings, is one of the most controversial aspects of mining today.

Considerations: The majority of criticism of the mining industry is directed at methods of disposal of tailings and pollution of the natural water courses. Specific concerns centre on the failure of tailings retention facilities and the riverine and marine disposal of tailings. Other concerns include the disposal of waste rock or overburden, acid drainage and the use, disposal of and pollution of water.

Although there was not a consensus of opinion on all these issues, the following specific considerations were identified:

- Riverine disposal of mine waste should not be an option for new projects;
- Marine disposal of mine waste should be used with extreme caution, more research is required and existing research results made more readily available;
- The mining industry should take a new look at land disposal practices which include waste minimisation, alternative uses for waste, the long term future of the site and the requirements of sustainable development;
- An integrated approach should be taken to water management which includes water supply, dewatering activities, tailings and heap leach water management, etc.
- The decision-making process on waste disposal options and water management should begin during pre-feasibility, involve the participation of all relevant stakeholders and include a 'no project' option;
- Waste disposal options should include short and long term risk assessment and financial considerations;
- The technology is available to design, construct and operate tailings and other mine waste retention facilities without failures though this technology is not always adequately employed on site; and
- The environmental costs associated with the disposal of mine waste should be internalised.

Recommendations: The following recommendations have been identified:

- Initiate international and national discussions between the mining industry, regulatory agencies and stakeholder groups on tailings disposal options.
- Establish a process for developing decision-making options for tailings disposal.
- Develop international guidelines for the management of large volume waste. The guideline should include a method for recording the history of construction and operation of the tailings dam, and its on-going safety evaluation programme.
- Develop international guidelines for the water management at mine sites.

- Identify drivers to improve implementation and enforcement of existing laws and guidelines – for example, project financiers could build compliance into loan terms.
- Encourage public dissemination of existing information from tailings monitoring programmes undertaken prior to and during and after mine operations and independent review of the information.

7. **Mine Closure**

Issue: To design a mining project with closure objectives and implementation processes in mind giving full considerations to the economic, environmental and social aspects of the site and region. Critical for successful implementation of the plan is the provision of adequate funding.

Considerations: Mine closure can have a negative impact on both the physical environment and the socio-economic structure of the region if not handled correctly. To prevent this from happening the following considerations should be taken into account:

- The physical and social rehabilitation programmes need to be an integral part of the life cycle of the mine;
- The concept of creating sustainable economies and communities beyond closure should be embraced as early in the project life cycle as possible;
- Conceptual closure plans should be developed at the time of environmental impact assessment and permitting and these plans must be revised and updated on a regular basis during mining operations;
- Closure plans should include risk assessment and mitigation procedures;
- Closure plans should be part of the public engagement/decision-making process;
- Closure plans should be considered in terms of the fiscal health of the economy
- Long-term monitoring, management and maintenance (especially water and acid drainage) should be included in the closure plans;
- Site responsibility after closure should be addressed; and
- Financial assurance must be based on a realistic closure plan and must be updated on a regular basis - inadequate financial assurance can place a burden on society.

Recommendations: It is recommended that an international guideline for closure planning and implementation should be produced. This guideline should include criteria for a ‘walk-away’ state (final closure) and transfer of responsibility. The Australian ANZMEC Mine Closure Guideline could be used as a starting point.

8. **Abandoned Mines**

Issue: Abandoned mines are the largest long-term cause of environmental degradation in the mining industry and they create a legacy of mistrust, which makes the permitting of new mines more difficult.

Considerations: The legacy of abandoned mines tarnishes public perception of the mining industry. Although no world-wide inventories exist it is estimated that their numbers run in to millions including every shaft, adit and alluvial working. A mining industry that supports sustainable development should include addressing the problem of abandoned mines. Some of the considerations include:

- Governments should show leadership in addressing abandoned mines and work in cooperation with industry in the development, funding and implementation of remediation plans;
- Inventories of abandoned mine sites are not consistent because the definitions used to identify an abandoned site are not the same;
- There are no clear mechanisms to fund the rehabilitation of abandoned mines; and,
- Governments and the industry need to work together to remove the barriers to action.

Recommendations: The following recommendations have been identified:

- A world-wide inventory of abandoned mines should be established that is broken into key regions; e.g. Europe, Asia, Africa, Americas.
- A guideline that includes methods of prioritising abandoned mines for clean-up, models and mechanisms for funding clean-ups and available treatment technology should be produced.
- A database of appropriate technologies for the rehabilitation of abandoned mines in various climatic zones should be established.

9. **Information Credibility and Availability**

Issue: There is a need for studies that are accepted by the ‘stakeholders’ as being independent, credible and balanced. There is also a need for information to be made more easily available to all stakeholders.

Considerations: The majority of research carried out, and information produced, relating to the impacts of mining is funded by the mining industry and therefore lacks the credibility of being independent. This situation is exacerbated by the perceived view that the mining industry lacks transparency and only releases selected information on a ‘need to know’ basis. The result is a lack of trust in the industry. In addition, the lack of easy access to this information and the lack of technical capacity of stakeholders to interpret the information compound the view that the industry is inherently biased and secretive. Much good material is poorly accessible because it is published internally, in conference proceedings or magazines that are not widely circulated. Many outside the industry believe that it is crucial to fund independent efforts to collect baseline data at proposed new and re-worked mine sites.

Recommendations: The following recommendations have been identified:

- A method for funding independent research and/or independent review of existing information needs to be established.

- A system for making information more readily available, both in terms of access and comprehension, especially in developing countries, should be set up.
- An internet library cataloguing grey literature should be established.
- Ways to establish funds for independent assessments of baseline data at new operations need to be identified.