

Mining, Minerals and Sustainable Development

ANALYSIS FOR CHANGE

**Understanding Current Conditions, the Drivers
and Impediments to Change**

**Prepared for the Assurance Group Meeting
21-23 May 2000**

TABLE OF CONTENTS

Foreword.....	3
1. Choosing Priorities	4
2. Scoping the Horizons.....	5
3. Taking Steps	7
4. Critical Issues for Global Analysis	8
Appendix 1 Themes for Further Analysis: Suggestions from the Scoping Report.....	10

Foreword

Analysis will form a central part of the Mining, Minerals and Sustainable Development (MMSD) project. There is a clear need for greater knowledge not only of the actual impacts of current minerals production and consumption on social, economic and environmental conditions around the globe, but also more profound understanding of the drivers and impediments that will be need to be tackled if real progress towards sustainable development is to be made.

This short note presents the current thinking of the MMSD team on its analytical priorities. It describes a ‘work in progress’ that builds on the initial Scoping Document prepared in October 1999, the many discussions with key actors since then and most importantly, the critical themes that emerged from the Strategy Planning Workshop held on 4-6 May. One of the central lessons of the Workshop was a recognition that the nature of the MMSD project – notably its focus on implementation and relatively short timeframe – means that the term ‘research’ could give a false impression of the kinds of analytical work that will be done. The MMSD is not an academic exercise. Certainly, there will be a number of areas where the project will need to carry out new lines of enquiry and commission fresh research. However, these are likely to be limited. The bulk of the work will be more synthetic, drawing together existing material, assessing it and presenting it in objective and accessible formats that enable better decision-making. For this reason, the project is now committed to ‘analysis for change’.

The rest of this document outlines some of the central analytical challenges facing the project – notably in the area of defining the scope and choosing priorities, and closes with a list of critical themes for work at the global level.

1. Choosing Priorities

The MMSD project has set ambitious analytical objectives:

- To assess global mining and minerals use in terms of the transition to sustainable development. This will cover the current contribution - both positive and negative - to economic prosperity, human well-being, ecosystem health and accountable decision-making, and the track record of past practice;
- To identify how the services provided by the minerals system can be delivered in accordance with sustainable development in the future;

Although the draft Project Strategy has outlined a method for dealing with these goals, it has not tackled the question of which issues should be prioritised for focussed study. Doing this is challenging for a number of reasons. Taken in its broadest sense, the project could have an almost limitless scope, dealing as it does with the whole of the world's non-biomass economy and involving a realm of activity typified by extensive diversity and complexity across the globe. Among the risks this project faces are:

- *Superficiality* -- Undertaking broad-based work of insufficient depth to advance understanding.
- *Duplication* -- Another danger is that the project could carry out research that has already been done by others or is underway.
- *Lack of Coordination*. -- Finally, the project could initiate research activities that are unable to deliver results in time for the projected deadline for the draft report of December 2001.

As a result of these factors, the project's analytical agenda needs to be targeted, timely and add real value. To achieve this, the project needs a planning process that generates a clear and accepted set of priorities, deciding what should and should not be undertaken. Everyone will have their own set of priority issues for analysis. IIED in its *Scoping Report* of October 1999, listed over 20 potential issues for analysis. This list is provided in Appendix 1. One of the main outcomes of the Strategic Planning Workshop was to help identify common priorities, and ways of tackling them.

2. Scoping the Horizons

Defining and narrowing the project's scope is one of the most pressing issues. Six key dimensions can be identified which mark out the main outlines of the project's scope:

- *Minerals*: Over 100 different minerals are currently mined, falling into three broad groups: 1/ those produced for local markets (e.g., sand, quarry stone, aggregates); 2/ those produced for regional markets (e.g., coal, limestone); and 3/ those which compete in a truly global market (e.g., metals, diamonds). These minerals are extracted through a variety of means by an array of actors ranging from artisans to global corporations. While many of the sustainable development issues may be generic, choices need to be made on which minerals to focus on and which to exclude.

- *The Value Chain*: The project aspires to an integrated analysis of the sustainable development issues along the value chain, encompassing both the mining and the minerals' cycles, production and consumption. Markets for minerals range from the local to the global, with widely differing driving forces and priorities at each stage of the chain. The project will need to focus in on specific aspects of the chain – and dynamics – which are currently poorly understood, for example, the optimal balance between virgin and recycled minerals.

- *Geography*: Minerals are produced and consumed in every part of the world, in very different ecosystems, regulatory frameworks, political and economic conditions and cultural contexts. The Project Strategy stresses the importance placed on a decentralised approach drawing on regional concerns. Decisions are required on the geographical coverage of the project, since not every region can be covered in the same degree of detail.

- *Time*: Mining moves more material than any other human activity. As a result, its impacts on the landscape and the human environment can be near permanent impacts. The scope of the project could therefore address:

- a) issues of the past – the legacy of historic mining and minerals activities;
- b) impacts of current operations; and/or
- c) project into the future the possible consequences for sustainable development of different trajectories in minerals production and consumption.

- *Actors*: Mining and minerals use affects numerous social groups and thus creates a wide spectrum of people with a stake in its performance: communities, governments, companies, civil society organisations, workers, universities etc. The distribution of rights, risks, rewards and responsibilities also varies within and among these groups. The project will need to ensure that the differential opportunities and threats generated by minerals' development are adequately reflected.

- *Sustainable Development*: Finally, sustainable development itself involves a package of goals – social, economic, environmental and political – which need to be integrated, within each of which is a bundle of issues for attention. Just taking the environmental agenda, this could encompass the ways in which minerals production and consumption generates hazards to human health, impacts on potentially renewable resources (air, biomass, soil, water), depletes non-renewable resources and keeps within the Earth's absorptive capacities for wastes and pollution. Furthermore, attempts to operationalise sustainable development for analysis as well as decision-making are bedevilled by an abundance of definitions and

interpretations. Classically, some take a ‘weak’ view of sustainability, arguing that social, economic, environmental and political goals can be traded off; others take a ‘strong’ view, arguing that certain values are absolute and take precedence over others.

The Strategy Planning Workshop highlighted the contested nature of sustainable development – and its status as a ‘soft option’ in the eyes of many that does not yet adequately address issues of rights, justice and security. Clear differences of emphasis emerged on the weight to be given to different elements of the sustainable development package – the livelihoods focus of the South and the stress on environmental damage in the North – and the priority given to different types of risk (eg precautionary principle). There was also discussion on the analytical focus for sustainability: industries, communities, resources? Indeed, sustainable development may only be one paradigm among many. As a result, perhaps one of the first tasks of the MMSD’s analytical programme is to articulate how different sustainable development can be in different contexts -- and then develop a conceptual framework that reflects this diversity in an approach that can be used as a basis for assessment later.

It is also clear that full life cycle sustainable development reviews of every mineral in every part of the world is impossible. Cases and regions will need to be chosen to illustrate critical issues. A first step would be to start to winnow out specific minerals, regions or other dimensions that will not be addressed. For example, some have suggested that the project should exclude energy minerals, at least beyond the point of mining, so as not to duplicate the efforts of other terms of researchers who are focussing on climate issues.

Another option would be to examine the life cycle of mineral production, consumption, and disposal in a limited number of cases to illustrate the dynamics of the different local, regional and global markets. Thus, six case studies, two corresponding from the to each of the three groups set out above could be studied. Of each of these three pairs of case studies, one would be drawn from a developed country and one from a developing country.

3. Taking Steps

A stepwise approach may help to further highlight priorities for analysis. When looking at the areas around which improved understanding is required the following clusters emerge:

- *Baseline Assessment:* A fundamental need for the project is to synthesise existing knowledge and where necessary commission new research to establish baseline sustainable development profiles of mining and minerals. In many cases, insufficient knowledge exists of the current status of mining and minerals. A key question is thus: What are the key baseline assessments that need to be carried out on the various dimensions of MMSD?
- *Drivers and Impediments to Change:* Movement towards or away from sustainable development is motivated by a number of drivers – financial, technological, institutional, political, socio-cultural etc. Some of these are poorly understood. Again, what are the key drivers that need to be analysed?
- *Benchmarks and Targets:* An important feature of progress towards sustainable development is the setting of process and performance targets at different levels and for different institutions to ensure good practice. These targets need to be based on analysis – and could be arrived at through the use of scenario planning tools. Overall, the critical question for research is: what are the key areas where sustainable development benchmarks are required?
- *Tools for Improvement:* A wide variety of tools can be applied by different actors to deal with specific issues in the minerals system: regulatory, market-based, financial, civil etc. In many cases, there is inadequate knowledge of the effectiveness of these instruments and a lack of objective ‘good practice’ case studies. Here, the task is to identify the key tools that need further analysis and enquiry.

4. Critical Issues for Global Analysis

As with the rest of the project, the analytical agenda is taking a twin-track approach, working both at the global and regional levels. At this stage, the MMSD team is seeking to identify a limited number of major issues that can only be addressed at the global level, so that work can be commissioned on these in the near future. The following have emerged as likely candidates.

Baseline Assessments

Wealth Generation: What is the ‘total value added’ of minerals developments; how is financial, human and social capital affected by the transformation of natural capital stocks of minerals into economic value ? Who wins, who loses and who captures the rents ?

Mineral Cycles: How can understanding of mineral cycles be improved to minimise rapid and unexpected shocks to local communities, regional and national governments, and other actors? What techniques are required for managing the cycle in tune with sustainable development?

Material Flows: What are the overall environmental impacts of the material flows associated with mining and minerals use? How could potential improvements in eco-efficiency and resource productivity – driven by policy, markets and technology -- affect mining and minerals use in the future? How will projected patterns of consumption affect sustainability?

Drivers

Financial Drivers: How are mineral exploration and development projects financed, and what opportunities or constraints do these financial realities place on a transition to a more sustainable industry? To what extent do current practices in financing represent either barriers to adoption of best practice, or potential incentives to implement it?

Global Markets: Where are the critical gaps in the governance of international trade and investment which hamper progress towards sustainable development? What market-based instruments offer opportunities for promoting more efficient and sustainable trade and investment? To what extent are the current global mechanisms for marketing minerals barriers to greater sustainability or opportunities to achieve it?

Technology: Which are the key technological trends will influence the prospects for sustainability in minerals production and consumption ? How does the current trend to scale impact on the pursuit of sustainable development? Which areas of potential innovation are critically constrained at present?

Benchmarks and Targets

Communities: Are there examples of good practice that enable traditional, aboriginal, indigenous and other communities to assert their culture and interests in the face of minerals development and the globalisation that it brings? What are the legal, economic and political preconditions at the local, national and international levels?

Information Needs: What are the critical data needed to make informed decisions on mining, minerals and sustainable development; what information is available; whose responsibility it is to bear the costs of its generation, and where is progress hindered by a lack of reliable data or poor access?

Appendix 1 Themes for Further Analysis:

Suggestions from the Scoping Report

Economy

- 1) *Market Dynamics*: How does the global market for minerals constrain or enable the transition to sustainable development, notably in terms of the commodity price cycle, economies of scale and the globalisation of trade and investment?
- 2) *Corporate Responsibility*: How can sustainable development become embedded in the culture of mining companies, and how far should corporate policies for sustainable development extend to joint venture operations, subcontractors and the supply chain?
- 3) *Financial Drivers*: How far will financial pressures, risk management and transnational liability become drivers of sustainable development?
- 4) *Scale and Ownership*: How far does scale and ownership affect the performance of different mining actors, in particular the artisanal sector and the various ‘junior’ players?
- 5) *Access to Markets*: How can the terms under which minerals have access to markets – both in terms of consumer choice and regulatory action – better reflect the goals of sustainable development?
- 6) *Technological Innovation*: How can research and technological innovation be accelerated to deliver solutions to today’s problems without generating new risks -- and how can these cleaner technologies best be diffused globally?

Society

- 7) *Human Rights*: What is the contribution that minerals’ development can make to the promotion of human rights in the workplace and in the local community, in particular the specific rights and traditions of indigenous peoples?
- 8) *Community Empowerment*: What are the critical factors that enable communities to play an effective role in mining developments that affect them (e.g. decision-making, benefit sharing) so that livelihoods become sustainable, particularly after closure?
- 9) *Health and Safety*: How can a more transparent and honest process of risk assessment and reduction for workers, communities and consumers be achieved, alongside the positive promotion of well-being?

Environment

- 10) *Material Flows*: What is the global impact in terms of material flows generated by mining and minerals and where does best practice exist in terms of closing the minerals' cycle to encourage recycling and reduce dissipative use and waste and reducing energy intensity?
- 11) *Benchmarks*: How can global benchmarks for environmental management be set (e.g. for riverine and marine disposal of tailings, effluent control, acid mine drainage, biodiversity, mine-site rehabilitation) to ensure consistency?
- 12) *End-Use*: What processes are available for resolving controversial end-uses of minerals (e.g. coal, lead, uranium) and for improving efficiency in consumption?
- 13) *Finite Nature of Minerals*: How serious is the finite supply of minerals as an environmental issue, both at the level of the individual mine and globally?
- 14) *Competing Land-Uses*: Under what circumstances should cultural or environmental factors override access to minerals ('no go' areas)?

Governance

- 15) *Historical Legacy*: What approaches have been successful in dealing with the inherited liabilities of mining (including abandoned sites) and avoiding these in the future?
- 16) *Rent Capture and Distribution*: Are there working models of best practice for efficient and equitable capture and distribution of mineral rents between host countries, local communities and investors?
- 17) *Regulation*: How can regulation be better designed and enforced to ensure sustainable development, particularly to control 'free riders' and remove 'perverse subsidies'?
- 18) *Secondary Impacts*: How can integrated regional planning best be carried out to assess and manage the secondary social, economic and environmental impacts of new mining operations?
- 19) *Transparency*: How can all actors be made more accountable for their decisions, for example, in order to reduce opportunities for corruption?
- 20) *Stakeholder Participation*: How can relevant stakeholder participation in decision-making be improved locally, nationally and globally and lead to effective partnerships?
- 21) *Time Horizons*: How can the longer-term perspective of sustainable development best be integrated into decision-making on mining and minerals?

Source: IIED Scoping Report, October 1999