



Mining, Minerals and
Sustainable Development

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Part I: A Framework for Change

Chapter I The Minerals Sector and Sustainable Development



International
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Sustainable development is about integrating economic activity with environmental integrity and social concerns. The goal of that integration can be seen as ‘sustainable development’.

This chapter lays out a proposed sustainable development framework for the minerals sector and considers nine areas of concern faced by all actors in the sector – government, industry, labour, and civil society.¹ These are the main focus of Part III of [report title]. The process for moving forward is discussed in detail in the Action Plan in Part IV.

Sustainable Development: Why Now?

The sustainable development concept has grown out of concern about several trends. One is the growing imbalance in development among different countries, often simplified into the categories North and South. Poverty reduction is an enormous global challenge. Almost half of the world's population subsists on less than US\$2 per day (2.8 billion out of 6 billion people). A fifth of them (1.2 billion) live on less than US\$1 a day. Aggregate development trends have been positive. Since 1965 average annual GNP growth has been almost twice as fast in low income countries as in high income countries – 5.9% a year compared to 3.0%. Average gains in human development in low and middle income countries have been higher than gains in incomes – life expectancy increased by 59% between 1950 and 1998; illiteracy was reduced from 39% in 1970 to 25% in 1998; access to clean water rose from about one quarter of the population of developing countries in the late 1960s to about two thirds in the early 1990s. Yet performance across regions has varied widely. There has been remarkable progress in Asia but no discernible poverty reduction in Latin America and Africa. In the last decade, poverty rates increased dramatically in the transition economies following the dissolution of the Soviet Union. In parallel, inequality between and within countries has also risen – the ratio of the average income of the richest to the poorest country in the world increased from 9 to 1 at the end of the 19th century to about 30 to 1 in 1960 to more than 60 to 1 today.²

Another concern is the high and increasing consumption of scarce resources and resulting pollution, particularly in the most industrialized countries. These concerns are compounded by population growth. It has also become clear that economic development that disregards environmental and social impacts can bring unintended and undesirable consequences, as evidenced by the threat of climate change and loss of ecosystem integrity and biological diversity. Cultures, too, have changed irreversibly – in some cases, nearly disappearing. Indeed, there are countless examples from different sectors, circumstances, and sites of the immediate or long-term environmental and social costs of development that have to be weighed alongside the gains. Increased understanding of these concerns has been accompanied by a growing realization that existing institutions are not able to manage these problems effectively unless they, too, are more fully integrated with the tasks.

In the last decade, these concerns have been brought to a head by a range of trends loosely grouped under the term ‘globalization’. The processes of economic globalization – trade and investment liberalization and the spread of market-oriented development approaches – have created a deeper and broader connection among the world’s nations than ever before. Many have benefited from the process, but to many it is shareholders of large multinational

companies of the world who are the principal winners. Poverty is all too apparent in many parts of the world.

Operating in many countries and sometimes hard for individual governments to manage, the ability of large companies to influence people's lives is also feared by many. Economic activity is increasingly subject to international rather than local forces, so people feel disenfranchised. The world trading system is seen to be failing to deal with all aspects of market access: industrial countries have in many cases failed to remove perverse subsidies that protect their own interests, and many environmental standards are seen as protectionist. Meanwhile, the capacity of public institutions has, it seems, failed to keep up with the pace of change. The resulting mismatch has contributed to a deep and widespread mistrust of the institutions of governance, both public and private. These are the perceptions – right or wrong – and they do matter.

At the same time, international competition, another aspect of globalization, is changing the face of enterprise. Improvements in technology and the efficiency of production challenge those who do not keep pace. This has reduced the requirement for labour per unit of output in many activities, in a world where millions are without decent livelihoods. At a global level, reductions in employment in some sectors, such as manufacturing and other industrial activities, have been offset by increases in the demand for labour in others, such as the service and information sectors. But in some industries and at the local level, reductions in employment cause significant hardship, particularly in poor countries, where there is a lack of social safety nets.

Despite these real concerns, globalization is also an unprecedented opportunity for change for the better. It has brought access to new technologies that give people the potential to learn, communicate, and participate in decision-making as never before. The pace of technological and scientific innovation has brought with it new uncertainties and half-understood risks, but also hope for a better world. To achieve that goal, the wealth and power of companies needs to be harnessed and steered in a direction that respects social needs and environmental limits and thus contributes to sustainable development.

The mining, metals and minerals sector is parting the middle of this web of issues. Perceptions – right or wrong – apply here too. Many countries and communities, particularly in the South, depend on minerals production as a source of income and a means of development. Mining is important in 51 developing countries – constituting between 15-50% of exports in 30 countries, between 5-15% of exports in a further 18 countries, and is important domestically in three countries. About 3.5 billion people live in these countries, with about 1.5 billion living on less than US\$2 per day.³

Yet there is concern, mainly in the North, about disparities in use between rich and poor and about ever-increasing demand. These concerns are heightened by the non-renewable nature of mineral resources and fears of eventual depletion. The process of extraction may incur social and environmental costs that are considered by some to be unacceptable. When set against the development objectives of the less well off, the economic benefits have sometimes been viewed as not worth the costs. The energy used to mine and process minerals is a growing concern in a world preoccupied by climate change. The industry has generated wealth in direct and indirect ways. But, it is alleged, there is a mismatch of

opportunities and problems – the wealth is often enjoyed far from the communities and environments that feel the adverse impacts. The challenge of ensuring that local communities benefit from minerals production becomes more difficult with increasing mechanization and declining employment levels.

With growing trade liberalization and privatization, much of the investment in minerals exploration and production has turned to developing and transition countries. This can create many new opportunities, including jobs, a transfer of skills and technology, and the development of local infrastructure and services. But there is sometimes a lack of capacity, knowledge, and incentives to turn investment into development. The mining industry at least at the level of multinationals, is becoming increasingly concentrated in fewer hands, exacerbating the perceived or real imbalance of decision-making power between them and other stakeholders.

Perhaps the greatest challenge of all is the fact that past practices, combined with continuing examples of poor performance and inadequate accountability, have undermined the most minimal trust among companies, governments, and some in civil society. The public's perception of what industry is doing is often very different from what company managers think they are doing. As far as some observers outside the industry are concerned, companies have been resisting or at best offering only token improvements: they are seen as failing to meet rising standards of accountability, transparency, and participation.

People in the industry often feel differently. They dispute many of the assertions made about them. They wonder how society can want the products of their industry so much and yet hold companies in such low esteem. They ask how – in a world of internationally traded mined commodities and one where prices do not reflect all costs – they are going to meet the implicit costs of sustainable development. They also wonder how to achieve a framework of enforced law to control 'free riders' and internalize such costs over time.

In short, despite these differing perspectives, there is a high degree of consensus on some of the fundamental issues, including:

- recognition of the magnitude of both problems and opportunities that exist
- recognition of the unacceptable or less-than-desirable distribution of both problems and opportunities
- a strong desire to improve the quality of life, particularly for the poor

This consensus points to a possible way forward. Sustainable development provides a useful framework for advancing this change.

What Is Sustainable Development?

Sustainable development is one of a range of ideas about how humans should best interact with each other and the biosphere. (See Box 1–1 for a description of the evolution of this concept.) It involves integrating and meeting economic, social, and environmental goals. The more that unsustainable activities pose unacceptable risks to communities, nations, and

Box 1–1. Sustainable Development: Roots and Prospects

Particularly over the last century, national governments have been taken to be the prime movers in ensuring domestic prosperity. After World War II, the idea of governments' responsibility for 'development' started to take root internationally, including the notion that richer countries had followed a path to development that poorer countries could also tread, with the help of foreign aid. The motives behind post-war foreign aid were complex. Thinking about development assistance was dominated by both the reconstruction experience in Europe and cold war politics. Aid donors had often conflicting objectives of promoting long-term growth in developing countries and furthering their own short-term interests by helping political allies.

Since the end of World War II, many governments of developing countries saw their lack of physical and human capital as the main obstacle to progress, though even then they worried that the international trading and financial systems were biased against them. The solution was assumed to be government action financed by development assistance. A great deal of aid money went to infrastructure projects and technology, with a corresponding focus on higher education and training. There were some positive results in some countries, but there were also unmitigated failures.

In most countries the record was mixed: projects with poor economic returns as a result of poor planning or management or because funds leaked away through corruption or tied aid, and apparently successful projects that triggered problems such as social displacement, marginalization, and environmental damage. Developing-country debts racked up. The distorted pattern of development heightened inequality in many countries. An economic elite reaped the rewards while the burden of the social and environmental damage was borne largely by the poor and underprivileged. Even in the best cases, uneven development created tensions and sharpened existing cultural, ethnic, or racial divides.

The reaction to these disappointments took many forms. Some activists concentrated on supporting local communities undermined or by-passed by the formal development processes. Other groups argued that development was inherently destructive, and either opposed it completely or fought against mega-projects that threatened

humanity as a whole, the stronger the argument for change. Sustainable development has become the logical framework for change and identifying best practice. As British environmentalist Jonathon Porritt puts it:

Sustainable development is the only intellectually coherent, sufficiently inclusive potentially mind-changing concept that gets even half-way close to capturing the true nature and urgency of the challenge that now confronts the world. There really is no alternative.⁴

The concept has gained widespread currency since becoming the cornerstone of the Rio Earth Summit in 1992. It is integral to *Agenda 21* (the blueprint for change adopted in Rio), and to many other international declarations of intent. It will be central to the World Summit on Sustainable Development in Johannesburg in August 2002.

Institutions at different levels have taken on elements of the sustainable development challenge. The overall framework of what sustainable development means and how to put it into practice still has some murky areas but is now considerably more coherent. Governments have increasingly integrated the concept into national planning, and companies are beginning to integrate it into corporate strategies and practice.

UN Secretary-General Kofi Annan speaks often of the need to end poverty and environmental degradation for sustainable development. The preamble to the Marrakesh Agreement establishing the World Trade Organization refers to the importance of working toward sustainable development.⁵ In Europe, the Treaty of Rome, which established the European Community, was effectively amended in 1992 by the Maastricht Treaty, which included specific references to sustainable development. In the minerals sector, the International Council on Mining & Metals has recently adopted a Sustainable Development Charter.⁶

The most widely accepted definition of sustainable development is the one used in 1987 by the World Commission on Environment and Development (known as the Brundtland Commission):

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.⁷

This definition has received broad support, not least because it is a deceptively simple formulation. But it has multiple layers of meaning and some profound implications. It allows flexibility within defined boundaries, and can be applied to the development of many activities. There is no single goal or path for getting there; sustainable development presents more a framework for change than a list of prescriptions to achieve it. In this sense, it is as hard to define as other ideas that guide society – such as democracy, or justice, or freedom of speech.

The original Brundtland definition can be broken down into five more concrete ideas.⁸ In effect, it sets out five conditions for sustainable development:

- material and other needs for a better quality of life have to be fulfilled
- for people of this generation,
- as equitably as possible,
- while respecting ecosystem limits, and
- building the basis on which future generations can meet their own needs.

The core principle of sustainable development to improve human well-being. It requires sustaining those improvements over time. The goal is for our children to have as good a life as their parents did, or better. It requires passing the means of survival on to future generations unimpaired and building, or at least not diminishing the total stock of capital.

The idea of ‘capital’ lies at the heart of sustainable development. But the kind of capital relevant to sustainable development goes well beyond the common idea of financial capital. It has five main forms:

- *natural capital*, which provides a continuing income of ecosystem benefits, such as biological diversity, mineral resources, and clean air and water;
- *manufactured capital*, such as machinery, buildings, and infrastructure;
- *human capital*, in the form of knowledge, skills, health, and cultural endowment;

Box 1–I. Sustainable Development: Roots and Prospects (continued)

pristine areas. And others worked to improve the theory and practice of development.

The 1972 Stockholm Conference and Its Aftermath

Alongside this development debate was the environmental story. It had begun in the West with a concern over pollution. By the early 1970s the environmental costs of development were recognized. Among the first widely read books on this was *Only One Earth*, by Barbara Ward and Rene Dubos, which explained for a popular audience the concerns that had led to the 1972 UN Conference on the Human Environment in Stockholm.^a The book considered, for example, what would be needed ‘to maintain the earth as a place suitable for human life not only now but for future generations.’ Also in 1972 the Club of Rome, a group of scientists that had been established in 1968, published its first major report – *Limits to Growth*. Although this overstated the speed with which the world was exhausting many natural resources, particularly minerals, it was an important precursor of modern debates.

Following Stockholm, environmental concerns moved up the political agenda in industrial countries. Many argued that focusing solely on rapid economic growth would cause so much environmental damage that it would restrict future growth. Others pointed out the link between environmental damage and poverty – poor people displaced to the most marginal land could be driven to overexploit it, cutting trees for firewood, for example, and exacerbating soil erosion. The natural environment could suffer from both overdevelopment and underdevelopment.

These debates on environmental degradation continued through the 1970s. One significant reflection was a joint effort by the UN Environment Programme, the World Wildlife Fund, and the International Union for Conservation of Nature and Natural Resources. In 1980 they jointly presented the *World Conservation Strategy*, arguing that local groups needed rights over their own environment and benefits from development: ‘For development to be sustainable, it must take account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long-term as well as the short-term advantages and disadvantages of alternative actions.’^b

Box 1–1. Sustainable Development: Roots and Prospects (continued)

The notion that environment and development were not so much in conflict as interdependent signaled a radical shift for the early environment movement and established the importance of ‘sustainable development’. Development advocates, including those in the South, began to focus more on the spectacular failures of some development projects, sometimes due to unforeseen alterations of the environment.

Still, demand for economic growth remained stronger than calls for environmental protection. Economic imperatives grew even stronger during the early 1980s. Internationally, a new tone was set by the Reagan and Thatcher administrations, with the World Bank and the International Monetary Fund (IMF) prescribing similar ideas to developing countries that needed finances: deregulation, economic liberalization, and export-led economic growth.

An important counter to these ideas appeared in 1987, when the World Commission on Environment and Development presented its report. *Our Common Future* (known as the Brundtland Report) returned sustainable development to the international agenda. The Commission’s members were not only conservationists but also important figures in international development who insisted that ‘progress’ should be judged by more than naked economic growth as conventionally defined.

The 1992 Rio Conference

The Brundtland Report also fed into an emerging political and economic commitment to environmental concerns, culminating in the 1992 UN Conference on Environment and Development held in Rio de Janeiro. The Rio conference accelerated agreements on climate and biodiversity as well as setting out a new style of development as laid out in Agenda 21. But it did little to convert the principles of sustainable development into action and paid too little attention to social development. Suggestions that developing countries that adopted more environmentally friendly agendas would get more aid came to nothing.

In retrospect, Rio was the last time the international community believed that collective government decisions could save the world. After 1992, the role of states became to establish enabling frameworks for markets and civil society. Their task was to juggle the goals of economic

- *social capital*, the institutions and structures that allow individuals and groups to develop collaboratively; and
- *financial capital*, the value of which is simply representative of the other forms of capital.

Some theorists of sustainable development see all these forms of capital as completely substitutable – it does not matter what form the stock of capital takes so long as the total, in some imaginary unit of account, does not decline. This is the ‘soft’ view of sustainable development. While this view is consistent with all views of sustainable development in demanding that equivalent or increased amounts of capital are passed to future generations, it allows the form of this capital to change. This opens the door to passing on to the next generation less of one kind of capital so long as there is more of another to balance it.

To a proponent of ‘soft’ sustainable development, natural resources do not occupy a privileged position, and the environment is merely one form of capital among others.

Others, however, argue that the different types of capital are not substitutable, since the loss of some forms of ‘critical’ natural capital – such as the ozone layer or biological diversity – could threaten the very survival of the human race. Moreover, while most manufactured and human capital can be replaced (with a few exceptions like cultural diversity), the destruction of natural capital is often irreversible within generational time frames. This approach narrows the range of options by forbidding trade-offs. It is the ‘hard’ view of sustainable development.

There is an emerging consensus that there are in fact some ‘non-negotiable’ or non-tradable types of capital. While many agree they exist, the difficulty comes in agreeing what they are – such as identifying what the boundaries are around critical natural capital.

This discussion of ‘soft’ versus ‘hard’ sustainable development is not just a theoretical concern. It goes right to the heart, for example, of why some people think there should be no mining in protected areas. Some people believe that certain areas of the planet

should be beyond reach for any human activity that will disturb them, including mining. They say this because what they see in those protected areas is irreplaceable critical natural or human capital.

A more fundamental problem is that denying the possibility of substitution may imply that certain forms of capital have an ‘absolute’ value, greater than any other objective or consideration. Are human rights any more negotiable than biological diversity? Where should the line be drawn? It is often difficult to reconcile this ‘hard’ concept of sustainable development with a people-centred approach.⁹

The on-going theoretical debates about sustainable development should not obscure its usefulness as a decision-making tool. Perhaps one way of understanding how to use these ideas is to realize that they can effectively divide decisions into three groups.

Some decisions advance all values identified by sustainable development at the same time: they improve material well-being for this generation, spread that well-being more equitably, enhance the environment, strengthen our ability to manage problems, and pass on enhanced stocks of capital to future generations. These are obvious ‘wins’.

A second group of decisions may transgress some widely accepted limit, such as destroying natural capital that is broadly agreed to be irreplaceable, or transgress fundamental human rights, or lower some people of this generation below the survival threshold. If these conditions hold, the decision should be not to proceed.

The third group of decisions are those where there are going to be both gains and losses, if the gains are great enough and the losers can be compensated. This is the zone of trade-offs. Someone must decide how to make these trade-offs. Where there is disagreement over how to make the trade-off, there must be a agreed mechanism for reaching a decision.

What is promising is that there is a set of shared ideas to start with, and that an increasing number in industry, government, the labour movement, non-

Box 1–1. Sustainable Development: Roots and Prospects (continued)

efficiency, social equity, and environmental quality. The balance of resource flows to developing countries also shifted. In the early 1990s, around half the investment funds going to developing countries arrived as official aid; by 2000, it was just 13% with most of the rest from private sources.

But Rio did establish the ‘three pillars’ of sustainable development: economic, environmental, and social. The first pillar uses the market to signal the relative scarcity of goods and services and create a robust economy that can serve as the foundation for social and environmental progress. Rio also validated the environmental pillar, probably its greatest achievement: the development process, if it was to yield lasting results, had to safeguard life-support systems, use renewable resources within their regenerative limits, and respect the capacity of ecosystems to absorb and break down wastes. It also recognized the value of the diversity of nature. While these disciplines place some limits on economic activity, they also allow more opportunities for human creativity, and will ultimately give a better result. But the ‘social’ pillar of sustainable development was not developed much further in Rio, perhaps because its advocates were not as well organized as their economic and environmental counterparts. Exploring social issues went little beyond rhetorical statements about tackling poverty and lessening the impact of western consumption.

Rio coincided with the beginning of a recession in western industrial countries, reining back the prospects for reducing poverty through economic growth. It also marked the beginning of a massive expansion of participatory democracy.^c After the collapse of the Soviet Union, many developing and transition economies were radically changing their political and economic frameworks. The spread of democracy was opening up greater space for all kinds of activism, including environmental campaigns. Though uneven and far from universal, the process provided openings for stronger voices from communities, nongovernmental groups, and individuals in Asia, Africa, and Latin America.

The Washington Consensus

Despite Rio’s best efforts, in other respects the options for environmental protection were narrowing. Economic liberalization continued to sweep across the world. The IMF and the World Bank urged developing countries to reform their

Box 1–1. Sustainable Development: Roots and Prospects (continued)

economies along the lines of the 'Washington Consensus' – a view of what a poor country should do to become more prosperous.^d The core argument was that liberalizing markets and dismantling barriers to trade and investment would cause rapid economic growth. This radical medicine might worsen social dislocation, harm cultural identity, or strain environmental resources, but it was assumed that economic growth would create enough wealth to repair the damage.

The five years after Rio seemed to confirm the validity of this approach. After the early 1990s recession there was unprecedented growth, especially in richer countries. The more advanced developing countries that had opened their economies – such as Argentina, Brazil, China, Hungary, India, Malaysia, Mexico, the Philippines, and Thailand – became major recipients of foreign direct investment. As a result, their economies were growing by 5% per year. For the first time in history, world-wide poverty numbers actually dropped, even if the sheer number of people living on less than US\$1 per day was still a daunting 1.2 billion. Meanwhile the 'non-globalizers' lagged further and further behind, with average annual growth rates of only 1.4%.

There had certainly been formal progress on the environmental front too. Many countries developed environmental policies, laws, and institutions. Most major multilateral development banks and bilateral development agencies incorporated environmental requirements into their policies. The social dimension of development continued to lag, however, even though *Human Development Reports* from the UN Development Programme had established the importance of looking beyond a narrow fixation on economic growth as a measure of human achievement – and that all too many trends were still in the wrong direction. Unfortunately, the opportunities for promoting human development through governments were limited by rising populations, shrinking domestic budgets, and declines in international aid. Development assistance peaked in 1992 and then went into decline – by 1998 reaching levels lower in real terms than since the 1960s.^e

With this 'retreat' of the state from direct economic or production activity, it is feared that much of the economic power has been transferred to the 60,000 or more transnational corporations.

governmental organizations, and international bodies have adopted sustainable development as part of their agenda or framework of reference. Their views of the world still differ, and they maintain a clear preference for particular issues or concerns. But they have a common vocabulary for discussion and an agreement on some first principles. In applying these principles, there is a maximum chance of minimizing trade-offs among environmental, social, economic, and governance objectives, and maximizing win-win-wins – i.e. the integration of otherwise potentially conflicting goals.

Similarly, different disciplines have used different language or concepts to describe the challenges, just as they do to describe the physical world or human behaviour. An economist has a quite different perspective than an anthropologist or a natural scientist. Recent thinking includes work using terms such as rights-based approaches to development, sustainable livelihoods, impact analysis and life cycle thinking, and various resource efficiency concepts. None of these alone can provide all the answers, just as no one of the sciences can do so. Each is designed for particular purposes.

Sustainable development has also brought to the fore the notion of equity (in access to opportunities and the distribution of costs and benefits). This has focused attention on the enormous imbalances in political and economic power – between rich and poor people; among corporations, states, and communities; between rich and poor countries – that have hindered closing the gap between the haves and have nots.

From Concept to Action

If the concept of sustainable development is to be implemented in practical decisions, the Brundtland definition needs to be interpreted in concrete terms, which provide clear incentives for change. A sustainable development framework should be defined only in part in terms of social, environmental, and economic objectives. It should also be defined by the decision-making processes it promotes: the mechanisms for making the trade-offs it identifies in ways that are widely regarded as fair. New principles for governance are required. Where existing institutions are not capable of

applying those principles, and making the trade-offs in acceptable ways, there may be need for some new institutions.

Inclusion is one such principle. Actors should strive to have consensus on a long-term vision, with a clear time frame agreed by all key stakeholders. This time frame should also distinguish between long-term and short-term priorities. Effective participation by all constituents in shaping the vision is crucial to ensure acceptability and legitimacy.

Sustainable development will require some structural changes in the ways different actors work, alone or together, in all areas of economic, political, and social life. It will also require the adoption of strategic approaches – setting goals and objectives and identifying means of achieving them. This will mean adopting approaches that are based on good evidence, have an underlying vision, set priorities, and lay out the main tactics for achieving them. It will also require defining and redefining the roles and responsibilities of different actors and the overlapping boundaries of responsibilities, which will have important political, institutional, capacity, and budget implications.¹⁰

Over time, many stakeholders will need to make big changes, and will naturally need to see some benefit from doing so. If there is to be rapid progress towards sustainable development, a mix of strong, overlapping, and mutually reinforcing incentives is required. A meaningful system of independent evaluation, backed up by the ability to encourage good behaviour and discourage inadequate performance, is needed. Many, although not all, of these incentives will be market-based. Appropriate education, regulation, and policy will also be key.

Different challenges have to be addressed at different levels. Fundamental questions need to be asked about the appropriate level (local to international) and value systems for decisions. Some challenges to sustainable development need to be addressed at the global level (climate change), and others need to be addressed at the national (regulatory changes) or local level (resource use). In each case, the approach should be people-centred – so as to ensure long-

Box 1–1. Sustainable Development: Roots and Prospects (continued)

While these companies had greater opportunities to grow, they did not appear to assume more responsibility. In reaction, a rainbow alliance of interest groups sprang up concerned with social justice, the environment, human rights, and poverty eradication.

From Rio onwards there has been a distinct change in atmosphere and a shift from confrontation to cooperation in the intergovernmental world. UN agencies started to encourage partnerships with business. Some corporations have become more proactive and now work more closely with their critics. Initiatives include codes of conduct for self-regulation and 'green' business networks (the largest of which is the World Business Council for Sustainable Development).^f

But a groundswell of popular opinion now asserts that neither governments nor corporations can be trusted to promote sustainable development. Such distrust is also directed at international organizations, which surfaced most visibly as the protests against globalization at the 1999 World Trade Organization conference in Seattle.

Returning to Sustainable Development

Despite this gloomy prognosis there is better news. Parallel to the protests has come a significant wave of policy experimentation. This can be seen as a 'second coming' of sustainable development – more subtle and potentially more powerful. It relies on practical ways to harness the power of capital and markets. Examples are the Fair Trade movement, the rise of eco-labeling and green certification, and the growth in 'ethical' investment funds. Many corporations have also tried to become more responsible, forming partnerships with civil society organizations.

Among the most serious obstacles to these changes is the lack of good government. Many economists argue that trade liberalization will only lead to solid economic growth if the right institutions of governance are in place, including an independent judiciary, well-functioning banks, and a non-corrupt bureaucracy.^g

The search is on for a new direction.^h Some see this to be human development administered by the state, while others put their faith more in 'rights-based' development that empowers individuals and groups to demand not just political but also economic and social rights and to assume responsibilities to match them.

Box 1–1. Sustainable Development: Roots and Prospects (continued)

What confronts the World Summit on Sustainable Development, to be held in Johannesburg in September 2002, is the very question of whether ‘sustainable development’ can solve the problems posed by globalization. Who should be involved in global discussions and decision-making? What is the future role of the UN and how can it operate most effectively? What are the barriers to sustainable development at local and national levels, and how can global attention help to deal with them? The summit is also a chance to move beyond vague commitments to sustainable development and demonstrate that its principles can be at the heart of international collaboration.

^aWard and Dubos (1972)

^bUNEP/WWF/IUCNNR (1980)

^cFisher (1993)

^dThe Washington Consensus was the name that economist John Williamson gave in 1989 to a list of ten policy recommendations for countries willing to reform their economies. Williamson’s ten prescriptions were: 1) Fiscal discipline, 2) Redirect public expenditure, 3) Tax reform, 4) Financial liberalization, 5) Adopt a single, competitive exchange rate, 6) Trade liberalization, 7) Eliminate barriers to foreign direct investment, 8) Privatize state-owned enterprises, 9) Deregulate market entry and competition, 10) Ensure secure property rights. See Williamson (1990)

^eGerman and Rande (1998)

^fUNRISD (2000) p.76

^gAmartya Sen sets out the fundamental conditions for development investments to yield the desired results. See Sen (1999). David Dollar and Lant Pritchett have come to similar conclusions for development aid. See Dollar and Pritchett (1998).

^hSee UNDP (1997).

term beneficial effects for all groups, but particularly those that are marginalized and disadvantaged.

The aim of sustainable development is to maximize gains across social, economic, and environmental goals for the benefit of the human family in the long term. Most of the deep and complicated questions that need to be faced on the path towards sustainable development will involve compromises or trade-offs: between different objectives and dimensions, between different groups of stakeholders, between different generations. There may be conflicts between global and local priorities. Long-term needs will need to be balanced against short-term imperatives. No one can have infrastructure, cars, computers, and mobile phones without imposing some costs on ecosystems and communities. The various constituencies, acting in concert, will need to evaluate the acceptability of, for example, sustaining minor environmental damage in exchange for major social and economic gain, or of sacrificing economic and social goals for a significant environmental benefit. Although there is a wide spectrum of views on the nature of the ‘triple bottom-line’ of economic, environmental, and social gains and the substitutability of different types of capital, the extensive work undertaken by MMSD points to there being a consensus on the need to minimize trade-offs and maximize win-win situations.

There are also financial costs associated with moving towards sustainable development. In some cases, these costs may outweigh the benefits of improvements. Though this report talks of minimizing impacts, in economic terms the aim is to reduce the impacts to the point where the additional costs of reducing these

impacts would outweigh the additional benefits. The costs of reaching the goals of sustainable development have to be apportioned in a way that ensures that economies remain sufficiently viable to meet the needs of humankind for development and for various products and services – which in turn implies that the prices paid for products must reflect the true costs of providing them. Some change will be achieved by win-win efficiency gains (such as the reduction in energy use), but much more will involve internalizing costs that have been outside the market system thus far.

Last but not least, sustainable development also requires democratic processes to ensure that people can participate in the decisions that affect their lives, as well as legal and political structures to guarantee their civil and political rights. Transparent and democratic governance – referred to in this report as the fourth pillar of sustainable development –

confers legitimacy on development and holds organizations and corporations to account for their actions.

A Sustainable Development Framework for the Minerals Sector

Applying the concept of sustainable development to the minerals sector does not mean making one mine after another ‘sustainable’ – whatever that means. The challenge of the sustainable development framework is to see that the minerals sector as a whole contributes to human welfare and well-being today without reducing the potential for future generations to do the same. Thus the approach has to be both comprehensive and forward-looking. Moving from the concept of sustainable development to action requires:

- a robust framework based on an agreed set of broad principles;
- an understanding of the key challenges and constraints facing the sector and the actions needed to meet or overcome them, along with the respective roles and responsibilities of actors in the sector;
- a process for responding to these challenges that respects the rights and interests of all those involved, is able to set priorities, and ensures that action is taken at the appropriate level
- an integrated set of institutions and policy instruments to ensure minimum standards of compliance as well as responsible voluntary actions; and
- verifiable measures to evaluate progress and foster consistent improvement.

If the minerals sector is to contribute positively to sustainable development, it needs to demonstrate continuous improvement of its social, economic, and environmental contribution, with new and evolving governance systems. The sector needs a framework within which it should judge and pursue any development. Table 1.1 provides a set of guiding principles for each of the four dimensions of sustainable development. These principles should be seen as high-level aspirations that could equally be applied to other parts of the economy. They should be interpreted in a way that recognizes diversity, the limits of existing levels of knowledge and capacity, and society’s continuing need for minerals.

Table 1–1. Sustainable Development Principles

Economic Sphere

- Maximize human well-being.
- Ensure efficient use of all resources, natural and otherwise, by maximizing rents.
- Seek to identify and internalize environmental and social costs.
- Maintain and enhance the conditions for viable enterprise.

Social Sphere

- Ensure a fair distribution of the costs and benefits of development for all those alive today.
- Respect and reinforce the fundamental rights of human beings, including civil and political liberties, cultural autonomy, and social and economic freedoms.
- Seek to sustain improvements over time. Ensure that depletion of natural resources will not deprive future generations through replacement with other forms of capital.
- Protect minority rights.

Environmental Sphere

- Promote responsible stewardship of natural resources and the environment.
- Minimize waste and environmental damage along the whole of the supply chain.
- Exercise prudence where impacts are unknown or uncertain.
- Operate within ecological limits and protect critical natural capital.

Governance Sphere

- Support representative democracy, including participatory decision-making.
- Encourage free enterprise within a system of clear and fair rules.
- Avoid excessive concentration of power through appropriate checks and balances.
- Ensure transparency through providing all stakeholders with access to relevant and accurate information.
- Ensure accountability for decisions and actions, which are based on comprehensive and reliable analysis.
- Encourage cooperation in order to build trust and shared goals and values.
- Adhere to the principle of subsidiarity, which recognizes that decisions should be decentralized and taken as close as possible to and with the people and communities most directly affected.

Key Areas of Action and Challenges

Some progress has already been made by various actors in the minerals sector towards the goals of sustainable development, but a great deal remains to be done. Through a consultative process (see Introduction), the MMSD project has focused stakeholders' concerns into nine key challenges facing the sector:

- the viability of the industry;
- control, use, and management of land;
- national economic and social development;

- community development;
- environmental management;
- the use of minerals;
- information flow;
- artisanal and small-scale mining; and
- roles and responsibilities.

This section examines how the goals and principles of sustainable development apply in each challenge area. The points made here have emerged from the MMSD process but should not be taken as a consensus list. It is intended as a draft ‘wish list’ rather than as something that can be achieved immediately.

Viability of the Minerals Industry

The minerals industry has a key role to play in assisting the sector to make a substantial positive contribution to sustainable development. Important changes will take place, and the ultimate shape of the industry cannot be not known with any certainty. But two challenges are clear:

- The global market for minerals must develop in a way that enables rather than constrains the transition to sustainable development, notably in terms of internalizing costs over time, while maintaining viable enterprises and rewarding good practice. Creating incentives for industry through market-based solutions must go hand in hand with enforcing standards and guidelines.
- The fundamentals of sustainable development must become embedded in the culture of mining companies. If this can be done successfully, it will have significant and cumulative effects on a whole range of aspects of company life – from the health and safety of workers and the communities they operate in to long-term skills training.

The Control, Use, and Management of Land

The development of minerals unavoidably competes with other land uses. Uncertainty over the ability to obtain access to land for mineral development imposes serious constraints on industry. At the same time, many other actors – including local communities and indigenous peoples – have vital interests in how land is used and who makes decisions regarding land use.

- Land use decisions should be arrived at by a process of prior informed consent arrived at through democratic decision-making processes that account for the rights and interests of communities and other stakeholders, while still allowing for the negotiated use of renewable and non-renewable resources.¹¹ This should also apply to negotiations for access to land used by people whose rights to that land are not formally recognized by the state or who do not have the capacity to defend those rights.
- The decision of whether or not to mine in a certain area must be based on an integrated assessment of ecological, environmental, economic, and social impacts and thus be governed by a land use strategy that incorporates the principles of sustainable development.

- Decision-making processes must be open to the decision not to mine in circumstances where cultural, environmental, or other factors override access to minerals or where mining would impose unacceptable loss in the view of those it is being imposed on.
- Current and future generations must be compensated for any harm that occurs as a result of land use decisions.

National Economic and Social Development

The potential for mining to bring economic and social development, particularly to developing countries, should be harnessed. Mining should bring benefits that can be sustained at the national level even after mining ceases. Potential benefits are by no means automatic, however. Any country that wishes to translate mineral wealth in the ground into human development for its people faces stiff challenges.

- Creating and sustaining mineral wealth can play an important role in maximizing human well-being, but it must be undertaken in a way that protects environmental quality and other social and cultural values while recognizing the sovereign rights of governments to act in the best interest of the nation.
- The economic efficiency of mineral production should be optimized.
- A portion of the rents derived from minerals and other non-renewable resources needs to be set aside and re-invested, in order to ensure a sustainable income when the resource is used up. This may include investing in financial assets or physical and human resources.
- Revenues should be shared equitably – (a) between the public and private sectors; and, (b) among central, regional and local levels.¹² Decisions on how the surpluses are distributed should be arrived at through democratic decision-making processes.
- Revenue management – which pertains to how these rents are utilized by the public sector to support development at national and increasingly, at regional and local levels – will require a sound macro-economic framework; i.e. pro-poor policies and transparent public expenditure management, as well as adequate capacity on the part of government to manage project-generated revenues.

Community Development

Best use should also be made of the potential for mining to contribute to sustainable development at the local level. The challenge at the community level, as elsewhere, is to maximize the benefits and to avoid or mitigate any negative impacts of mining.

- Priorities and ultimately choices regarding trade-offs relating to different social, environmental, and economic goals need to be determined through democratic processes, involving all relevant actors, including members of the affected community, and in accord with the local context. This requires appropriate processes for participation and dialogue, as well as adequate capacity and access to information for all involved. Potentially disadvantaged groups, such as women, indigenous peoples, and minorities, should be included.
- The relationship between the mining company and other actors needs to be one of collaboration, trust, and respect.

- The goal should be that no one be made worse off, although it is inevitable that there will be losers in both the absolute and the relative sense.
- Priority should be given to ensuring that the rights of marginalized individuals and groups in communities are protected and that they receive a fair share of the benefits.
- The economic benefits brought by mining should be shared equitably within communities.
- To ensure that benefits are sustained, a proportion of the rents should be invested in other forms of capital, such as trust funds, skills training, or social infrastructure.
- Mining should not leave unacceptable environmental or other negative legacies.
- Capacity should be assessed at the local and community level to manage revenues for legitimate development needs and support public-private partnerships which can contribute to local capacity building; e.g. regional development planning, project implementation and financial management.

Environmental Management

There is a considerable degree of environmental impact associated with most mining and mineral processing, and negative impacts can be spread over large areas. Though ideally the minerals sector should not operate at the expense of the environment, in practice there is a balance to be struck if the decision to proceed with an operation is made. The challenge becomes how to optimize the trade-off between environmental damage and the potential development benefits to local and national economies.

- The negative effects of minerals and metal products on the environment and human health should be minimized through all phases of the minerals life cycle.
- Long-term damage should be avoided. No permit should be sought on the basis of a trade-off today against long-term and irreparable legacies that may harm future generations. Prudence should be exercised where the environmental impacts or damage are not known.
- Best-practice appropriate technologies and modern management techniques should be adopted, and research and technological innovation accelerated, to produce the smallest possible environmental footprint while not entailing excessive cost. This can be achieved through improved resource and energy efficiency as well as cleaner technologies.
- Minerals and metals themselves can play a crucial role in minimizing negative environmental impacts, as they are important components of pollution prevention and cleaner production technologies.
- Consistent with the need to internalize costs, polluters should pay for clean-up, remediation, and prevention. Where no owner can be located, mechanisms to set priorities and deal with the legacy of liabilities must be developed.
- Mine closure and, more important, post-closure should be planned for. This should ensure that the land and structures can be restored for alternative uses after the mine closes.
- By paying much closer attention to the potential to restore and replenish natural ecosystems, the mineral sector can play a part in maintaining the diversity of plant and animal species on which the survival of the planet depends.

The Use of Minerals

The use of minerals is essential for modern living – for meeting basic requirements and the aspirations for improved welfare for current and future generations. Yet current patterns of use face a growing number of challenges, ranging from concerns about efficiency and waste minimization to the hazards of using certain minerals. Added to this is the call for more equitable shares in mineral use world-wide.

- The basic needs of individuals and communities for mineral products should be met.
- Effort should be made to attain more a equitable distribution of consumption between industrial and developing countries.
- While recognizing the essential need for minerals, efficient use should be encouraged to reduce waste, depletion, and pollution. Remanufacture, reuse, and recycling should be encouraged, and uses that dissipate minerals should be phased out. The social and economic impacts associated with these changes must be assessed and responded to.
- Life-cycle thinking should be used as a decision-making tool to assess production processes, mineral uses, and the impacts and alternative materials choice. Where the risks associated with certain end-uses are unknown, prudence should be exercised.
- Responsible stewardship of minerals should be promoted throughout the life cycle.
- Minerals and metal consumers, many of whom are large equipment manufacturers and contractors, must increasingly be prepared to give preference and potentially pay more to mineral producers that behave in a responsible manner. Ultimately, end-use consumers must be prepared to pay the full internalized costs of metal and mineral production.
- Best use of mineral products and metals in facilitating development through their input to physical infrastructure and other applications should be made.
- In their use of non-renewable resources, the present generation needs to consider the needs of future societies.

The Flow of Information

Sustainable development requires increased openness and greater transparency in information production and dissemination throughout the minerals life cycle. The processes by which information is generated and communicated play a key role in building or undermining trust and in improving all players' ability to negotiate effectively.

- Authoritative, independent sources are critical to ensure that information is trusted and to respect the right of stakeholders to have access to accurate and relevant data.
- Access to information is linked to the ability of individuals to secure and defend fundamental rights to resources. Information must be collected and distributed in an equitable manner to ensure this.
- Systems of accountability and verification are essential to monitor the performance of companies, governments, and civil society.
- Knowledge needs to be shared and gaps progressively filled.

Artisanal and Small-scale Mining

Artisanal and small-scale mining (ASM) activities can play a crucial role in providing sources of income in poor areas. The sector is currently better known, however, for its high environmental costs and poor health and safety record. Irrespective of whether it is a net contributor to sustainable development, the fact remains that ASM activities will persist for at least as long as poverty continues to make them attractive.

- The sector's contribution to poverty alleviation and local economic development must be optimized by investing a proportion of the revenue generated in other forms of capital, such as education and alternative income-producing opportunities, and through ensuring that ASM activities are incorporated into broader local development planning.
- The negative environmental and social impacts of small-scale mining as well as adverse impacts on human health should be avoided or reduced.
- Where applicable or feasible, alternative economic activities more appropriate for working towards sustainable development should be sought.
- The collective capacity of artisanal and small-scale miners should be developed to enable them to better contribute to sustainable development.
- The development of 'fair trade' markets for artisanal and small-scale mining products should be encouraged to ensure that producers get a fair return and that they adhere to the practices of sustainable development.

Roles and Responsibilities

Accompanying the rights of different groups are corresponding responsibilities to safeguard the interests of others. The boundaries of responsibility and what is considered good behaviour have to be agreed upon and respected if progress is to be made. These will be led by the best practice of the day, but may well change as knowledge improves.

- Participatory and democratic decision-making structures should be adhered to.
- Decisions should be decentralized and taken as close as possible to the stakeholders most directly affected.
- No one component of the minerals sector alone can drive the evolution in thinking and practice that is required; coordinated action is necessary. This also requires the development of trust.
- All actors need to develop the institutional culture, resources, and skills required for the transition to sustainable development.
- Decision-making and dispute resolution need to take place in ways that treat people with equal concern and respect and that recognize their unequal power relationships and vulnerabilities.
- Alliances will need to be constructed between the private sector, the public sector, civil society, and external development assistance partners to manage many of the dimensions of sustainable development. In turn, this will require agreement on mutually agreed objectives, shared responsibilities for outcomes, distinct accountabilities, and reciprocal obligations.

The Challenge of Implementation

One of the key challenges for the minerals sector is implementation. In this it is not alone – as the 10 years since Rio have demonstrated, achieving the goals and objectives of sustainable development presents tremendous challenges for all parts of society.

Implementation requires the development and the refining of integrated tools. Some of these are already available and in use, such as impact assessments of mining operations (whether social, environmental, or conflict impacts), life-cycle thinking and analysis and planning for mine closure, but they may need to be improved. Tools that need to be developed include reliable and accessible measures of sustainable development plus methods for assessing trade-offs and balancing conflicting interests. These tools are discussed in Part III.

Putting sustainable development into practice also requires actors in the minerals sector to be publicly committed to explicit and well-understood goals and objectives. Leadership from the top is a must, as is the need to ensure that all employees understand what sustainable development entails. This is necessary not only for companies but also for government ministries and departments at all levels, as well as labour, civil society organizations, and communities. Capacity building is also key to moving forward.

Various instruments are available to facilitate putting sustainable development into practice. (See Box 1–2.) Policy-makers will need to select a mixture of these, based on the principles outlined in the sustainable development framework described earlier.

Box 1–2. Instruments of Change

A wide range of instruments is available for implementing sustainable development. Some of the instruments are well known; others are in experimental stages.

Legislative, regulatory, and juridical instruments include constitutional guarantees on sustainable development and its elements, as well as laws, by-laws, and regulations that set standards governing ownership, production, consumption, trade, environmental liability, associations, and contracts. Numerous national and international agreements govern social, environmental, and economic behaviour. Legal instruments can set absolute limits and provide clear sanctions, especially in areas with clear consensus. However, they can quickly become outdated in relation to society's rapidly changing aspirations, scientific discovery, technology, and economic conditions. The 'mandate, regulate, and litigate' approach can also be costly to implement in several ways – in direct financial terms, in its blindness to differences in the cost of compliance, in the hostilities it produces, in locking in outmoded or irrelevant technologies, and in the innovation that it may stifle. In addition, regulation can be 'captured' to serve the interests of powerful or narrow interest groups. Finally, public-sector capacity to enforce legal instruments may be weak.

Financial and market instruments include:

- *property rights-based approaches*, including tradable pollution permits or other licences, concessions, and liability claims for environmental damages;
- *price-based approaches*, including pollution or disposal taxes, payments for environmental amenities, auctions of publicly owned resources rather than selling them at administratively determined prices, user fees, tax credits for socially responsible investment funds, and performance bonds;

Box 1–2. Instruments of Change (continued)

- *reform of perverse subsidies* to encourage more efficient use of resources; and
- *market-enabling measures*, including information disclosure requirements, product certification and labelling, and procurement policies.

These various instruments work by influencing behaviour through price signals. Their advantages centre on their ability to benefit from competition and efficiency in the market. They can produce a desired outcome at much lower cost than regulation by encouraging innovation and continuous improvement, by finding solutions suitable for the local situation, and by reducing enforcement and administration costs. Two types of cost-saving are recognized: 'static' efficiency, since environmental improvement is mainly undertaken by those for whom it is relatively inexpensive, and 'dynamic' efficiency resulting from innovation by firms to reduce the costs of compliance even further.

However, considerable capacity is needed to develop and implement these instruments.

Market-based instruments should not be introduced without careful preparation and negotiation, as they may lead to severe economic dislocation. In addition, imposing charges for previously 'free' use of natural resources may not be politically feasible or even desirable for poor groups that are significantly affected.

In the category of *educational and informational instruments* are accessible information on resources, stakeholders and their performances, sustainable development challenges, and opportunities to improve performance; research and pilot projects, especially where stakeholders are themselves involved; and demonstration projects. Also included in this category are public awareness campaigns. The advantage of educational instruments is the ability to raise awareness, encourage self-regulation, and bring about positive peer pressure. They can also reinforce other instruments by improving understanding of the latter's rationale and benefits. On their own, however, educational instruments tend to lack adequate 'sticks and carrots', except in exceedingly publicly minded societies with high educational levels.

Institutional instruments tend to rely on self-interest and the innovation that can be found in multistakeholder approaches. But there are real limits to what can be achieved through voluntary approaches, partly because real change in behaviour may be less evident than rhetoric implies (especially in the absence of 'sticks and carrots'). In addition, these efforts can actually be so successful that government is left behind, producing a climate of neglect by the state in which weaker groups may become more vulnerable. Included in this category are fora and facilities for dialogue; partnerships (public-private) and associations (corporate or mixed); environmental management systems; full privatization of resources, rights, and services to companies or communities; decentralization of rights and responsibilities; codes of conduct by individual corporations and associations; citizens' actions; contracts and agreements on access, management, and service provision; and common property management regimes.

Source: Dalal-Clayton and Bass (2001) pp.22–24.

When selecting the instruments, many factors must be considered. Anything selected should be:

- *effective* in delivering environmental and social outcomes or in tackling the root causes of problems;
- *efficient*, such as having low marginal cost or providing incentives for innovation and improvement;
- *administratively feasible* and built on existing instruments, where appropriate, that work well on the ground;

- *transparent* about the purpose of instrument, the mechanism used, and who is affected and how;
- *acceptable* to the groups affected, *credible* to stakeholders in general, and with *awareness* of possible perverse impacts;
- *reliable and reproducible* across different groups and regions; and
- *equitable* in cost-benefit distribution.

Conclusion

The concept of sustainable development is an emerging framework for many actors – whether from government, industry, or civil society. The ideas are not new – rather they are brought together from a long history of human development into one system of thought. But the concept is perceived very differently by various interest groups. There is no one definition of sustainable development or set of agreed principles. Nor is there a framework for action based on the principles. This is because sustainable development is a dynamic process that aims to maximize gains and encompasses choices or trade-offs between competing interests. It is an integrative approach to human development, and the way choices are arrived at is a key part of the process. It provides an iterative and ever-improving approach – accommodating changes in technology, political preference, economic circumstances, and so on.

Because there is no one way – no magic bullet – all that [*report title*] can do is to test and test again all the activities along the minerals supply chain to see how they stand up to the principles and ideas in the sustainable development lexicon. Equally important is understanding how these activities should change for the better, and how such change can be implemented. The Agenda for Change in Chapter 16 will reflect four criteria that have to be applied. Any suggested actions have to be:

- consistent with the sustainable development framework;
- based on best practice and incentives to change towards better practice;
- SMART – specific, monitorable, achievable, realistic, and time-bound; and
- moving towards higher levels of trust and cooperation.

In many ways the picture today is more positive. Concerns about the social and environmental effects of minerals development and disparities in the distribution of costs and benefits are still real. There remains much to be done in improving the sector’s contribution to all aspects of sustainable development. But the largest companies and their newest operations at least are now being held to higher standards. Indeed, the best mining operations are now in the sustainable development vanguard – not merely ahead of what local regulations demand, but achieving higher social and environmental standards than many other industrial enterprises. Similarly, many governmental and other players are continually raising the bar. This report is designed to see that both these trends continue and that the standards of poor performers are raised.

Endnotes

¹ Throughout this report, the term minerals sector is used to describe all the key stakeholders associated with the sector: government, industry, international organizations, non-governmental organizations, civil society, communities, and labour.

² World Bank (2000b)

³ World Bank and IFC (2002 draft)

⁴ Cited in Dalal-Clayton and Bass (2001) Chapter 7, p.4.

⁵ Agreement signed in April 1994. See <http://wto.org>

⁶ ICMM SD Charter can be found at http://www.icmm.com/html/charter_intro.php.

⁷ Brundtland (1987) p.43.

⁸ see, for example, Secrett (1995), p.7.

⁹ Dalal-Clayton and Bass (2001) Chapter 8, p.14.

¹⁰ Dalal-Clayton and Bass (2001) Chapter 2, p.21.

¹¹ Democratic decision-making on land use is not always appropriate in indigenous cultures. In some indigenous societies, decisions about land use are made through consensus by senior knowledgeable men and women steeped in the religious and spiritual traditions of those societies. On a case by case basis just how and in what form 'democracy' takes needs to be established with great cultural sensitivity.

¹² Revenues are defined as project-related taxes, royalties, and other transfers paid by the company to government.

