

PART II  
*Chapter 11*

## **Minerals and Pro-Poor Growth**

*Access to minerals is essential to modern economies. As a result, in many developing countries the flow of foreign direct investments to the minerals sector by far exceeds aid flows. This chapter highlights strategies that can help poor countries harness their mineral wealth as a source of pro-poor growth. It demonstrates how good governance, strong institutions, effective regulatory frameworks and rigorous environmental and social safeguards can help ensure that the presence of mineral wealth represents a “blessing” rather than a “resource curse”.*

## 11.1. Overview

Rising demand for mineral resources from fast-growing markets in Asia has contributed to a surge in mineral prices over the past five years. This is particularly true of metals such as aluminium, nickel, copper and zinc. The boom in mineral commodity prices has highlighted the impact of mineral exploitation on development processes. Yet mineral markets are volatile and the contribution of mining activities to positive long-term development outcomes, such as the attainment of the MDGs and sustainable development, during this period of opportunity has never been under closer scrutiny.

Driven by the prospect of higher revenues, developing countries are increasingly turning to their minerals wealth as a source of growth and new economic development opportunities. However, they are also increasingly aware of the adverse impacts that these resource endowments may have, if not prudently managed during their exploitation.

The extractive industry sector is very diverse. Classification may refer to scale of operation, nature of activity (underground, off-shore, open-cast, etc.), material extracted (industrial minerals, gemstones, precious metals, oil and gas etc), utility (energy, metallic and non-metallic, e.g. industrial minerals and precious stones) or degree of capitalisation.

However, the unifying feature of all extractive operations is that the resource being extracted, on human time-scales at least, is non-renewable. The goal of non-renewable resource exploitation, in terms of sustainability, is not extraction *per se*, but the conversion of natural capital into other forms of capital (human, financial, and manufactured) and more sustainable livelihood opportunities. Mineral prices are volatile. They have risen significantly in the past five years, creating renewed interest in many developing countries from large-scale operators but also a boom in the “artisanal” (small-scale, independent, self-employed and/or subsistence) sector. Between 2000 and 2005 the value of world trade in minerals grew by 17% annually (WTO, 2006).

In terms of scale, three general levels of extractive operation are suggested: large, medium and small/artisanal.

- **Large-scale:** dominated by a small number of capital-intensive, multi-national or parastatal operations. These use extraction and processing technologies that require high levels of investment and skills. Significant revenues, economies of scale and efficiencies result from these operations.
- **Medium-scale:** includes state-run enterprises, such as national oil and gas producers and numerous “expansionary juniors” (with less than USD 100 million assets) in the hard rock mining sector.
- **Artisanal and small-scale mining (ASM):** represents the historical foundations of all mining and includes a range of low-cost operations from individuals using rudimentary technology through to typical SME operations with minimal capital investment, high labour intensity and low levels of technology for extraction and processing. This scale of operation is characterised by inefficient recovery rates and technologies that limit the

resource that can be accessed. This dimension is almost exclusively limited to hard rock mining and represents the majority of people engaged in the sector in many developing countries, most of whom are abjectly poor. It is estimated that ASM produces up to 31% of the global production of minerals including 20% to 30% of gold, 20% of coal, 10% of diamonds and 75% of non-diamond gemstones. (See CASM, 2007).

This chapter focuses primarily on the hard rock mining sector.

## 11.2. The economics of mining

Mining can contribute to economic development in several ways: foreign direct investment (FDI), employment, government revenues, foreign exchange earnings, innovation and development of related sectors.

Minerals represent only a small part of world production and trade and global FDI flows. However, their supply is essential to modern economies and minerals exploitation represents the major part of FDI flows in many developing countries, often dwarfing aid flows.

### 11.2.1. The contribution of mining to growth, exports and fiscal revenues

Accurate statistics of the economic benefits derived from mining are difficult to obtain, especially when the full scale range of the sector is considered. For example, the informal and frequently illegal nature of ASM activities results in significant losses of potential government revenues. Where figures are available and reliable they indicate an important contribution by mining to the GDP of many of the poorest countries, including Botswana (38%), Guinea (17-20%), the Democratic Republic of Congo (10%), Zambia (10%), Ghana and Bolivia (5%). (USGS, 2005). Ore and metal exports constitute a large part of total exports for several countries, in particular for countries in West and South Africa and in South America (see Table 11.1). In Tanzania, mining represents 40 % of national exports, 75% of foreign direct investments and is estimated to have contributed about 6 % of the total annual GDP growth rate of 4.8 % between 1996 and 2003 (ICMM / World Bank, UNCTAD, 2006a).

Many governments derive a large part of fiscal revenues from the mining sector. In Botswana more than half of fiscal revenues are derived from mining (USGS, 2005) whereas mining accounts for 43% of government revenues in Peru (gold, copper, zinc, etc.) (UNCTAD, 2007), and 22% of fiscal revenues in Chile (copper) (ECLAC, 2007).

### 11.2.2. The contribution of mining to employment and subsistence

The ILO has estimated that the mining sector employs 22 to 25 million people worldwide, approximately 1% of the total global workforce (ILO, 2007). Large-scale mining is an increasingly efficient and capital-intensive activity requiring increasingly higher skills levels.

The nature and dynamics of the artisanal sector, often illegal and always informal, make precise numbers extremely difficult to estimate. This is coupled with the fact that mining may be pursued during periods of agricultural inactivity or other underemployment.

The sector often operates in poor, remote locations that create opportunities for the sector to provide pro-poor benefits that other private sectors, government or donor initiatives are unable to provide. Figure 16 shows how ASM mining is spread across the globe.

ILO estimates of 11.5 to 13 million people being directly engaged in ASM are known to be extremely conservative (ILO, 2007). Driven by rising metal prices, the ASM sector is a growing phenomenon. In Zimbabwe, for example, small-scale mining activities are likely

**Table 11.1. Developing and transition economies with higher dependency on exports of minerals: Mining's contribution to total exports**

Economy	Ores and metals	Product description
Guinea <sup>2, 3</sup>	89.8	Bauxite, alumina, gold and diamonds
Botswana <sup>4</sup>	87.2	Diamonds, copper, nickel
Suriname <sup>2</sup>	70.0	Alumina (aluminium oxide)
Zambia	61.5	Copper, cobalt
Jamaica	60.8	Alumina, bauxite
Niger <sup>2</sup>	46.1	Uranium and gold
Chile	45.0	Copper
Mozambique <sup>2</sup>	42.3	Aluminium
Papua New Guinea <sup>2</sup>	38.6	Gold, copper
Congo Republic <sup>5</sup>	34.0	Various metals
Ghana	33.3	Gold
Cuba	33.2	Nickel
Peru	32.9	Gold, copper, zinc
Rwanda <sup>2, 6</sup>	32.2	Various metals
Uzbekistan	30.3	Gold
Georgia	24.9	Various metals
South Africa <sup>3</sup>	21.7	Platinum, gold
Bolivia	19.1	Zinc, gold
Kazakhstan	18.0	Various metals
Bahrain	16.8	Aluminium

1. Fuels include SITC 3. Ores and metals include SITC 27+28+68 and, when relevant, diamond ore has been added.

2. Two to four years average.

3. The Economist Intelligence Unit.

4. Bank of Botswana, Financial Statistics.

5. IMF, Direction of Trade and Statistics.

6. IMF, Direction of Trade Statistics.

Source: UNCTAD (2007), calculation based on COMTRADE database and other sources.

to triple within the decade from 2000 to 2010; the situation in other parts of the region should largely follow a similar pattern (Drechsler, 2001).

In individual countries the ASM sector often exceeds numbers in formal mining. At least 5 million of the global total of the ASM sector are thought to be women and over 1 million children (ILO, 2007). Those involved in artisanal and small-scale mining are typically highly vulnerable. Legal protection is often minimal and the risks for expulsion and human rights violations high. In addition, safety, health and environment considerations are frequently non-existent and social dysfunction rife in ASM communities.

### 11.3. Environmental impacts of mining

In comparison with agriculture or commercial forestry, mining is not generally an extensive form of land use. Widespread impacts can occur as a result of catastrophic pollution of water bodies, etc., but the footprint of mining can usually be managed to limited spatial coverage.

However, where it occurs, it can have significant and irreversible impacts. Storage of tailings and waste may be a more damaging activity than the mining operation itself.

The negative environmental impacts of mining include energy and water consumption; air, water and land pollution; subsidence; landscape alteration, etc. Impacts

from artisanal and small-scale mining in particular include the silting up of rivers, exploitation of bush meat, deforestation, and mercury and cyanide pollution.

The consequences of polluted water, land and soils can be seen in terms of bad health, lost agricultural productivity and damaged ecosystems. There is also the issue of inherent clashes of interest between miners and other residents, such as between mining companies and indigenous peoples over cultural or local resources.

Negative environmental impacts can be managed through better planning, including the use of environmental impact assessments, environmental management systems, mine management plans and post-closure, or simultaneous, rehabilitation and closure plans. These are increasingly negotiated into start-up contracts and include payments into legacy funds during operation when revenues are being received.

#### 11.4. What is the potential for mining to lift the poor out of poverty?

The track record of countries with the opportunity to convert resource abundance into broader development goals is often disappointing. Resource abundance often does not translate into economic prosperity.

A recurring hypothesis in the evaluation of the role of mining in development processes has been whether the occurrence of mineral wealth represents a “blessing” or a “resource curse”. Opinions are divided on whether developing countries suffer or benefit from their mineral wealth (ICMM/World Bank/UNCTAD, 2006b). Intuitively it might be expected that mineral wealth and its prudent exploitation would form the basis for economic growth, poverty reduction and sustainable development. Paradoxically, however, some resource rich countries remain amongst the poorest and have the highest levels of poverty, corruption and conflict.

Amongst the world’s most mineral dependent states, 11 are heavily indebted and five have had recent civil wars. For an example see post conflict Sierra Leone (Box 11.1).

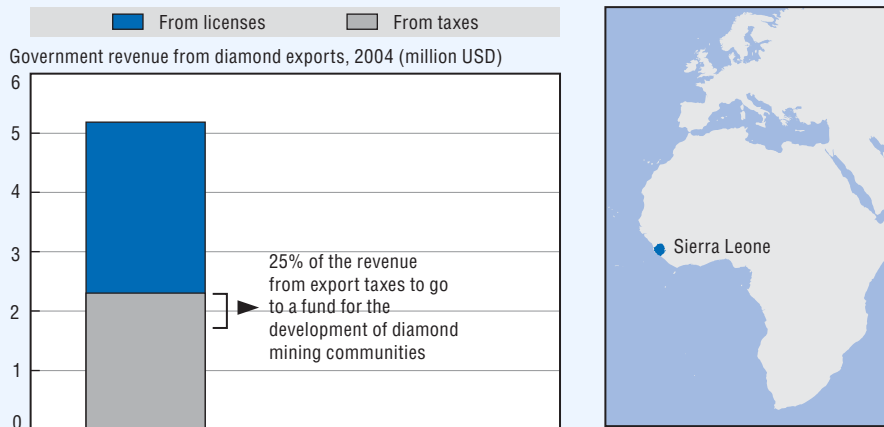
If access to high-value mineral resources can be controlled by factions and elitist groups, the opportunities for conflict and corruption escalate. Once the mineral resources are captured, government and politics are also captured, and the resources can form the basis of political patronage and the benefits for pro-poor growth are few (Archibald *et al.*, 2007). Rent-seeking and corruption tend to be widespread, and in the worst cases the appropriative struggle turns into a full-scale civil war (*e.g.* Sierra Leone’s civil wars included the conflict over control of the diamond fields).

The mining sector may be simultaneously an opportunity and a threat to the development prospects of poorer countries. It has been shown that the “curse” is not inevitable, it can be addressed through good governance (Mehlum and Torvik, 2006).

When benefits flow to the poor, the mining industry can provide a route out of poverty. Indeed, mining was an important driver of growth in the USA, Canada and Australia in the early 20th century. More recently, Chile and Botswana have been examples where mineral wealth exploitation has powered successful development. The challenge is to recognise the potential for the resource curse and work to counter it.

The economic trickle-down effects from mining as a stimulant to other economic activities are not as widespread as they could be and there is still great potential for improvement.

## Box 11.1. Diamond mining in Sierra Leone



In 2004, the government of Sierra Leone saw a total of USD 5.2 million in revenues from diamond related activities. This came in the form of mining, dealer and export licence fees and from export taxes. To feed some of the revenues back to poor communities, the Diamond Areas Community Development Fund (DACDF) was set up, with an annual commitment of 25% of revenue from export taxes. The intention is that this money will be dedicated to community infrastructure, agricultural improvements and training, but the actual distribution of the funds has been problematic. (Diamonds and Human Security Project, 2006. *Diamond Industry Annual Review – Sierra Leone 2006*).

Source: Diamonds and Human Security Project (2006).

According to the Fraser Institute's Annual Survey of Mining Companies (2005-06), the countries with the lowest scores for the overall policy attractiveness for mining exploration and investment were all countries with significant mineral wealth.

Good governance, strong institutions, effective regulatory frameworks, rigorous environmental and social safeguards and the protection of rights including rights from customary tenure are needed to realise the economic potential for pro-poor growth and ensure more equitable distribution of benefits. Lost opportunities arising from poor governance are illustrated by the example from the Democratic Republic of Congo (Box 11.2).

Mineral wealth exploitation is usually governed in developing countries by mining codes. The evolution of "mining codes" has been described as having three phases. The first has been characterised by major withdrawal of state intervention. It has been argued that this went too far in reducing the role of the state in favour of attracting foreign direct investments and resulted in driving down standards in areas of social and economic development. The second places greater emphasis on the responsibilities of companies for socio-economic development. In Mali, for example companies are required to pay a tax directly to regional governments for re-allocation to local communities. The third places greater emphasis on the participation of affected people and enhanced government responsibility for environmental and social safeguards. The Democratic Republic of Congo (DRC), for example, has made provision to ensure revenue distribution favours those directly impacted by mining companies (60% of royalties remain with the central

**Box 11.2. Artisanal mining in the Democratic Republic of the Congo (DRC)**

The DRC contains some of the richest and most diverse minerals in the world including gold, silver, tin, copper, coltan, cobalt, zinc and uranium.

Artisanal mining is responsible for 80% of the DRC's mining activity. It is a sector that has been associated with corruption, conflict, human rights abuses, environmental degradation, hazardous working conditions for miners (including women and children), regional instability, etc.

In 2004, revenues from mining were calculated at USD 15 million. It has been estimated, however, that the state lost revenues 10 times this amount, money that could have been invested in health care, education, etc. The value of illegal exports of gold, copper, cobalt and diamonds is estimated by the United Nations to be about USD 3 billion per year.

Of the population of the DRC 80% exist on less than a dollar a day. The exploitation of minerals could clearly be a key driver of growth and poverty reduction in the DRC through the generation of fiscal revenues for pro-poor programmes.

Source: Unpublished briefing paper for CASM workshop, Kinshasa (2007): "ASM in DRC – key issues, challenges and approaches", CASM, [www.casm.site.org](http://www.casm.site.org).

government, 25% go to the provinces and 15% to the community where the mining occurs (CASM, 2007).

Although a unique example in many ways, Botswana provides a striking example of a developing country using its mineral wealth (diamonds) for poverty reduction. It has evolved from being one of the poorest countries in the world to a middle-income country. This success has been widely attributed to sound economic policies, especially in managing its large diamond resources, and a commitment to fiscal stability (Box 11.3).

**Box 11.3. Diamond mining in Botswana**

On independence in 1966, Botswana was a country of 1 million people and an economy dependent on the cattle industry. It was dominated by the institutions and customs of the main Batswana tribe: the BamaNgwato.

The first government after independence made two decisions that would later prove to be crucial to growth and development. A Mines and Minerals Act gave all mineral rights to the state rather than to the tribal authorities. Foreign firms were invited to explore for minerals. It soon became apparent that the country was richly endowed with, amongst other assets, kimberlitic diamond deposits. The second crucial decision was a renegotiation of the deal with the mining firm DeBeers in 1975. This allocated the state half of all profits of diamond revenues.

Government revenues, primarily from diamond exports, were channelled into investments in education, health-care, and infrastructure while maintaining tight fiscal control. A contributing factor has been the creation of a set of rules, a Sustainability Budget Index, to avoid fiscal deficits by keeping track of the ratio between consumption expenditures and non-mineral revenues. Natural resources revenues are used for investments rather than consumption as long as the ratio remains less than one. Botswana experienced almost three decades of high growth rates. By the late 1990s, the country rose to the status of a middle-income country.

Source: Acemoglu et al. (2003).

## 11.5. The politics of increasing the role of mining to promote pro-poor growth

Good governance is critical if the benefits from mining are to reach the poor and contribute to sustainable growth. Recent debates have emerged on ensuring greater development outcomes from mineral extraction. Five issues are central: fairer contracts; increasing revenue transparency; pro-poor benefits sharing; beneficiation (adding value prior to export); and corporate social responsibility.

### 11.5.1. Improving the contractual framework

Contracts will determine the legal rights and terms under which companies exploit mineral wealth and the benefits host countries and their citizens get in return. Well managed mineral institutions and a good geological database and inventory of mineral resources enhance the government's chances of entering into equitable deals.

The differences between different types of contracts are generally over how the risks and rewards are to be shared between company and host government. The negotiations over the terms of these contracts are therefore critical in achieving pro-poor outcomes from mining ventures.

Host governments are keen to increase their share of benefits not only from revenues but also from transfer of technology. Concerns are expressed that large companies have a disproportionate amount of power in negotiation contracts – financial resources, legal and negotiating expertise, political influence, and lobbying tactics.

Contracts which have been negotiated during periods of weak governance (e.g. in post conflict situations) are being increasingly questioned (Democratic Republic of Congo), and in several countries new governments have put significant pressure to renegotiate contracts for better conditions or greater national control over assets (Russia, Venezuela, Chad, Peru and Bolivia). The long term success of such changes partly depends on the governments' ability to attract sufficient investments in the sector.

### 11.5.2. Increasing revenue transparency

A transparent and enforceable set of mining contracts (within the bounds of commercial confidentiality), together with transparency over revenue payments and receipts, will enable a country's civil society to hold its government to account for the way in which national mineral assets are being developed and spent. The Extractive Industries Transparency Initiative is an example where the private sector, governments and civil society are working together to increase transparency (Box 11.4).

### 11.5.3. Pro-poor benefits sharing

A current issue of debate is whether a national government should give preferential treatment to mining communities in the allocation of the mining revenues it receives. Policies and programmes can also be tailored to support small-scale and artisanal miners. Some programmes seek to empower artisanal miners by protecting their rights, providing better access to markets, or transferring knowledge in order to increase the share of benefits that stays with the poor. Programmes often set out to create awareness of the health and environmental impacts of artisanal mining operations.

Conflicts between large-scale and small-scale/artisanal miners are growing, especially, but not exclusively, in areas where commercial mining concessions and activities restrict (or displace) the activities of artisanal miners. This is an issue addressed



by De Beers in partnership with the government of Tanzania through the Mwadui Community Diamond Partnership, a pilot project aimed at giving miners a fair share of diamond-mining revenues and investigating alternative sustainable livelihoods, thereby alleviating poverty and accelerating pro-poor growth in communities around the Williamson diamond mine (UNGC, 2007).

#### **11.5.4. Adding value prior to exports: Beneficiation**

Beneficiation involves refining an ore, or separating the valuable material of an ore from the waste material, for further processing or direct use. It can not only dramatically improve the value of mineral exports but also leave a long-term legacy beyond mining. India, for example, used to be the largest diamond-producing country in the world, until the mines were exhausted around the turn of the century. A thriving legacy of diamond cutting and polishing businesses, however, remains based on imported rough diamonds.

#### **11.5.5. Involving the private sector: Corporate social responsibility**

In the absence of sound policies and in countries where enforcement of laws and regulations is weak, voluntary corporate codes can play an important role. Through the influence of processes such as the Mining, Minerals and Sustainable Development study set in motion by the World Business Council for Sustainable Development (IIED/WBCSD, 2002) and the subsequent creation of the business association International Council on Mining and Metals (ICMM), the mining sector's contribution to sustainable development has made several advances. Commitments are well ahead of most developing country national industry norms. These developments have partly been in response to pressure from civil society and shareholder groups in both OECD countries and developing countries.

Characterised as enclave operations in the past, leading mining companies are moving towards greater community engagement and support to community development (ESMAP/World Bank/ICMM, 2005). The success of these initiatives will be improved if local authorities have stronger capabilities to work alongside companies as equal partners.

#### **Box 11.4. The Extractive Industries Transparency Initiative**

The Extractive Industries Transparency Initiative (EITI) is a partnership between the private sector, civil society and governments from both industrialised and developing countries. The objective is to increase transparency in payments made by companies to host governments and in receipts by host governments from the companies. East Timor, Nigeria, Azerbaijan, the Democratic Republic of Congo and Ghana are among the countries now actively engaged in the EITI initiative. As a result of EITI, Nigerians could in 2006 for the first time find in their newspapers a fuller picture about the oil revenues, USD 8.9 million in 2004, being collected by the government.

Source: <http://eititransparency.org>, accessed in March 2007.

**Box 11.5. Three key elements of good governance**

**Enforceable and transparent contracts.** A transparent and enforceable set of mining contracts (within the bounds of commercial confidentiality) together with transparency over revenue payments and receipts will enable a country's civil society to hold its government to account for the way in which national mineral assets are being developed and spent.

**Stable macro-economic policies.** To achieve high economic growth-rates and avoid the Dutch disease effects (*i.e.* appreciation of exchange rates making exports of other commodities uncompetitive), governments should follow prudent fiscal and monetary policies and reduce foreign debt. Should rents and exports be so high that they run the risk of appreciating the country's currency, a long-term investment fund could be instituted for the benefit of future generations, when the mineral supply is depleted.

**Diversification.** Given that mines are by definition depleting finite resources, diversification into other economic activities is vital. A diversification of the economy should be accompanied by a broadening of the tax base, so that the government revenue is not restricted to a limited range of commodities.

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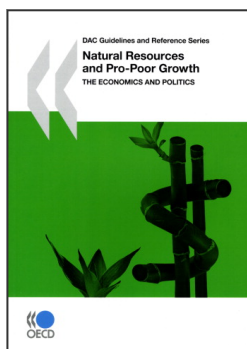
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