

# Chapter 25

## Mining

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## 25.1 Introduction

This chapter provides instruments for policymakers in countries where mining has the potential either to contribute significantly to poverty reduction or to heighten risks to the lives of the very poorest of society. Policymakers will find that, to a large extent, depending on how well mining policies and frameworks are developed, the mining sector will be biased toward either exerting a positive or a negative influence on development in these countries. Mining is a unique industry whose impact extends to national and local economic development, environment, and sociocultural profiles, often specific to a few large mining areas in a particular region or country.

There are approximately 60 developing and transition countries where mining is or could become an important economic activity. These include (a) countries that are important mineral producers in the international marketplace, (b) countries that are modest producers by international standards but where mining makes an important contribution to the regional or national economy, and (c) countries where small-scale or artisanal mining provide significant employment in rural or remote communities. Table 25.1 lists countries in these categories.

This chapter discusses the four dimensions of poverty—economic opportunity, capability, security, and empowerment—in the context of two generically different forms of mining: (1) large-scale mining and (2) small-scale and artisanal mining.<sup>1</sup> Both create very different contexts for opportunities and risks that may evolve from the use of natural resources. We recommend referring to dedicated chapters of this book for specific information on such issues as macroeconomics, environment, water, health, transport, private sector development, energy, and participation.

**Table 25.1. Countries Where the Mineral Sector Does or Could Have an Impact on Poverty Based on Existing Mineral Resources**

<i>Latin America and the Caribbean</i>	<i>Sub-Saharan and North Africa</i>	<i>Europe, Middle East, and Asia</i>
Argentina	Angola	Bhutan
Bolivia	Botswana	Bosnia
Brazil	Burkina Faso	China
Chile	Central African Republic	Fiji
Colombia	Congo	India
Ecuador	Eritrea	Indonesia
Guyana	Ethiopia	Jordan
Jamaica	Ghana	Kazakhstan
Mexico	Liberia	Kyrgyz Republic
Peru	Madagascar	Malaysia
Venezuela	Mali	Mongolia
	Mauritania	Pakistan
	Morocco	Papua New Guinea
	Mozambique	Philippines
	Namibia	Poland
	Niger	Romania
	Sierra Leone	Russia
	South Africa	Solomon Islands
	Tanzania	Sri Lanka
	Tunisia	Thailand
	Zambia	Turkey
	Zimbabwe	Ukraine
		Uzbekistan
		Vietnam
		Yugoslavia

**Large-scale mining.** Large mines generate about 85 percent of the world’s nonfuel minerals and more than 95 percent of the world’s total mineral production. The industry employs an estimated 2.5 million people worldwide and is dominated by some 50 major mining and metals companies, each with an average of approximately US\$4.3 billion in revenue. These companies operate globally and are by origin concentrated in four countries: the United States, South Africa, Australia, and Canada. They invest annually about US\$25–US\$30 billion worldwide.

**Small-scale mining.** Artisanal and small-scale mining generate about 15 percent of the world’s nonfuel minerals yet are a major source of income—in about 30 countries around the world—for at least an estimated 13 million people, a significant proportion of whom are women and children. Between 80 million and 100 million people are estimated to depend on small-scale mining for their livelihood. While the definition of small-scale mining varies widely, levels of employment are considered to be typically less than 50 workers per operation. Production is labor intensive with little and quite basic mechanization.

### 25.1.1 Who should use this chapter?

This chapter is designed to be helpful to policymakers in countries in which mining has the potential to significantly influence regional and national poverty profiles—either optimally, by contributing to poverty reduction or, if not managed well, by creating risks to which the poor are particularly exposed. It also can be useful for other stakeholders, such as investors, communities, and nongovernmental organizations concerned with the mining sector and its local and national impact.

Mining issues are not relevant to all countries. Worldwide, there are approximately 60 countries—which collectively contain about three-quarters of the population of developing and transitional economies—in which the mining sector can factor into poverty reduction strategies. (For a full list see table 25.1.) These include “mining countries,” often well known for the sector’s contribution to economic growth through exports, such as Chile, Mexico, Peru, Botswana, Ghana, South Africa, Jordan, Indonesia, and Papua New Guinea, in addition to less well-known mining countries such as Argentina, Mali, and Tanzania. In some countries, the sector also serves large domestic markets and employs millions of workers: China, India, Brazil, Indonesia, and the Russian Federation (Weber-Fahr 2002).

In some countries, the contraction of the mining industry has resulted in mine closures and consequent severe poverty increases. The tin industry collapse had this effect in Bolivia, while Peru, Zambia, and Romania were affected by base metal mine closures; and the Russian Federation, Poland, Romania, Ukraine, and China have felt the impact of coal mine closures.

Finally, mining wealth has been squandered in some countries that today are no better-off—and in some cases have seen poverty levels worsen—in the wake of mismanaged mining development and plundered mineral wealth. Examples include the Democratic Republic of the Congo, Angola, and Sierra Leone

A country’s mining sector can play an important role in poverty reduction strategies if the approximate share of the mining sector is one or all of the following: (a) > 5–10 percent of fiscal revenue; (b) > 10–25 percent of export earnings; (c) > 3–5 percent of the gross domestic product (GDP); or (d) > 10–15 percent of the industrial workforce. Where any of these indicators apply to a region or federal state, the impact of the mining sector on poverty reduction can have similar significance on a regional scale.

Mining can provide the government with budgetary resources that would be necessary for poverty reduction programs and that can have the potential to be significant catalysts for further private sector development in the region or country, as has occurred in Chile, Botswana, and South Africa. The histories of mining in these countries contrast markedly with that of the Democratic Republic of the Congo, which as noted above illustrates the potential for negative consequences due to sector mismanagement.

At the same time, policymakers need to remain mindful of the social and environmental consequences of mine sector restructuring and mine closure to ensure that these are mitigated and do not ultimately cause significant harm to the poor or increase regional poverty profiles, as has occurred in Poland, Ukraine, Romania, and the Russian Federation.

Separate consideration must be given to countries that to date have had no large mining sector but in which development of natural resources appears to be the only option, or a key option, for generating growth and economic development. An example is Mali, which in 1990 had no operating mine; after 10 years and significant policy and sector reform, there are two mines in operation and a third under development. Mineral exports have become its largest single export commodity and have strongly contributed to Mali's income and economic performance. Indicators for this situation would be geological data that would show the potential for a mining sector to become significant for a country's economy in the future.

Yet another set of circumstances arises in countries with clusters of small-scale miners, people living on relatively large surface areas and often generating below-subsistence incomes, largely without environmental or social protection or governance structures. When these clusters cumulatively comprise tens of thousands of individuals or more, the government should consider active implementation of a poverty reduction strategy that takes into consideration potentially explosive environmental and social consequences and cultural and political conflicts that can arise in the context of small-scale mining. Examples of such countries include, among others, Brazil, China, India, Indonesia, Sierra Leone, and the Democratic Republic of the Congo.

### 25.1.2 How to develop a section on mining for a Poverty Reduction Strategy Paper

In developing a section on mining for a Poverty Reduction Strategy Paper (PRSP), policymakers will want to focus on (a) gathering relevant data to understand actual and potential poverty-related impacts, risks, and opportunities of the mining sector in their country (see also section 25.3 of this chapter); (b) setting clear objectives and identifying priorities for intervention in a consultative process regarding poverty impacts and the mining sector; (c) identifying the mechanisms to achieve the objectives, including needed changes to policies, laws, and regulations; and (d) establishing the necessary institutional arrangements, including authorities, responsibilities, and capabilities, to implement the mechanisms. Depending on a country's civil society, the consultation and priority setting should include local community representatives and community-based organizations (CBOs), local government representatives from respective mining regions, industry associations, trade unions, nongovernmental organizations (NGOs), and other relevant parties. In most cases, it would be useful if the process were led by the country's mining ministry or agency. Typically, these have harnessed the country's mining expertise and will be ready to contribute to formulating policy for poverty reduction. A constructive partnership can almost always be created with the medium-scale and large-scale mining private sector, so that all data and expertise available can be leveraged to create sustainable development opportunities for a vibrant mining sector that contributes to poverty reduction (see chapter 7, "Participation").

#### **Potential positive impacts on the poor**

Mining can contribute to poverty reduction in a variety of ways; most linkages work directly by generating income and creating opportunities for growth for lateral or downstream businesses. There are also indirect linkages through investments, which, in turn, enable better social services and catalyze improvements in physical infrastructure.

- **Fiscal impact and foreign exchange income.** Commercial-scale mining can be an important source of foreign exchange and fiscal receipts for governments. When managed well, the net foreign exchange and taxes generated by mining can be used by governments as an engine for overall economic growth and as a funding source for social sector and poverty reduction programs. In countries such as Chile, Mexico, Botswana, Ghana, and South Africa, substantial positive fiscal impact from mining has contributed to economic and social development (see chapter 12, "Macroeconomic Issues").
- **Income generation.** Small-scale mining provides a livelihood for approximately 13 million workers and their families worldwide, particularly in countries such as Bolivia, Brazil, Burkina Faso, China, Colombia, the Democratic Republic of the Congo, Ghana, Ecuador, India, Indonesia, Madagascar, Tanzania, and Thailand. Large-scale mining provides direct employment and eco-

conomic self-sufficiency for some 2–3 million workers and their families worldwide. In addition, for every job created directly by large mines, between 2 and 25 jobs are created with suppliers, vendors, and contractors to the mine and to miners and their families, typically provided in the context of small and microenterprise activity (Remy and others 2002).

- **Local economic development.** Large mining operations often invest substantially in local economic development through training, social services, and public goods such as clean water, transport, energy, and other infrastructure. They can also be a catalyst for improvements in local government capacity as they work with local governments and communities to avoid the creation of a culture of dependency on the mine. There are various mechanisms to ensure that mining operations are not “islands of prosperity” in a “sea of poverty” but rather have a sustainable positive impact on local economic development, ranging from enhancement of supply-chain linkages, to establishment of local foundations, to equity share arrangements.
- **Improved land-use planning.** Geoscience and mapping data collected for mining purposes can contribute to improved land-use planning. This can benefit the poor by helping identify and address issues related to competing land uses, which in turn helps to avert negative impacts on agricultural production and food security.
- **Source of energy.** In countries with significant coal resources, such as China, India, and South Africa, coal is an important source of energy contributing to economic growth. In countries with severe winters, such as the Russian Federation, Poland, Ukraine, Mongolia, and Kazakhstan, coal is essential, particularly for poor households, since it provides accessible and affordable heating (see chapter 21, “Energy”).

### **Potential negative impacts on the poor**

Mining, and the cessation of mining where it has become economically untenable, can also be a cause of poverty. It can become a drain on a government’s budget and can, directly or indirectly, adversely affect the living conditions of the poor and other vulnerable groups. Areas of concern that require monitoring include:

- **Governance, corruption, and macroeconomics.** If poorly managed, a large and profitable mining sector can have negative consequences on governance and macroeconomic development. The often substantial fiscal incomes derived from mining can create a cycle of corruption and inefficient governance in mineral-dependent economies. Mining incomes can get diverted for personal or political gain, eventually draining rather than supporting state budgets. At the same time, a dominant mining sector can lead to a positive shock (boom), with consequent Dutch disease<sup>2</sup> effects on the nonmining economy, endangering the development of other sectors. In some cases, state-owned industries incur heavy losses, requiring large subsidies. In all cases, inappropriate management of the situation will incur high opportunity costs for the economy, considering that revenue and opportunities for economic development are based on a nonrenewable natural resource (see the toolkit section in chapter 12, “Macroeconomic Issues”).
- **Environment.** Food security can be threatened or compromised by mining-related factors such as loss of agricultural land; water pollution; water supply (which can be affected when the demands of mining operations divert excessive amounts of water from the local supply); tailings management of mineral and stone waste; noise; dust; and land disturbance often associated with mining activities. Each of these therefore presents a potential threat to the health and livelihood of the poor and vulnerable groups who have little mobility or means of alleviating negative impacts. Such environmental damage can be caused by small-scale mining as well as by large-scale mining, if no appropriate precautions are taken or deemed affordable.
- **Health and human development.** Small-scale and large-scale miners are often migrant workers who live without their families and within disrupted social contexts. This situation can encourage a high prevalence of HIV/AIDS and other communicable diseases in and around mining communities. Indeed, several mines in southern Africa report infection rates of more than 30 percent among their workforces, well above national averages. Work-related injuries and health risks—for

example, lung cancer associated with coal mining—also reduce miners’ life expectancy and often put families in precarious situations.

- **Sociocultural issues.** Mining projects frequently are located in remote areas where indigenous communities are members of a distinct cultural group, often a minority within a community of minorities. Here mining activities can have a negative impact on the livelihood of indigenous people, especially with regard to issues concerning land tenure, often causing sociocultural conflicts within and among communities. At the same time, the lure of new opportunities can create in-migration that may cause new tensions in the community between existing residents and newcomers.
- **Negative impacts on nonmining sectors.** Large mining operations can inadvertently have an adverse effect on the ability of the local nonmining population to achieve and sustain economic self-sufficiency. The ability of this population to earn a living can be threatened or impaired by the mine’s use of natural resources, such as land and water, on which the poor depend. In remote areas, the demands of mining operations on infrastructure services, for example, may put those services beyond the reach of the poor, either because their prices have become prohibitively high or because of simple usage limits. Overall, mining also can drive regional price levels to a point that leaves the poor unable to afford basic goods and services
- **Barriers to economic restructuring and mine closure.** Large losses by state-owned mining industries have been a significant barrier to economic restructuring and recovery, for example in the coal mining industries in Eastern Europe and the former Soviet Union. Closure of unprofitable mines has added to poverty, especially in mono-industry communities and mineral-dependent regions. In addition to the loss of jobs among the local population, essential public goods and services originally provided by the mining company—transport, energy, and water, for example—ceased to be delivered, with particularly harmful effects on the poor and other vulnerable groups. Mine closures have also affected countries such as Zambia, Bolivia, Peru, Namibia, and the Philippines.

### **Maximizing the benefits of mining for poverty reduction**

Countries can take the following steps to obtain the greatest benefits from mining for poverty reduction (details on maximizing benefits to the poor are given in section 25.4 below).

**Collect data and information on the poverty-related impacts of the mining sector and the associated opportunities and risks.** This needs to be done by all countries with commercial-scale, artisanal, and small-scale mining. Some countries, such as Chile, Brazil, Mexico, and Peru, have very good data on their mining industries. For these countries the data are often comprehensive from a technical and financial standpoint but may not reflect environmental and social impacts. Any such gaps should be identified and addressed.

Other countries with an established mining industry often do not have good data on the industry and its impacts, or the data exist but are held tightly by the industry and not made available to decision-makers and affected communities. This is often the case in countries of Eastern Europe and the former Soviet Union. For such countries, reforms are needed both to ensure that there is a fully comprehensive database and that it is available to all branches of government and other appropriate parties on an unrestricted basis. There are also many smaller countries that are unfamiliar with the mining sector and, therefore, are poorly prepared when development takes place. Lack of geological data, however, can inhibit private investment in a country’s mining sector, and thus prevent developing opportunities for growth and poverty reduction.

For countries that do not have good data on the technical characteristics, geological resources, and fiscal, economic, social, and environmental impacts of the mining industry, it will be important to collect and organize accurate data for commercial-scale as well as for artisanal or small-scale mining. Data can include macroeconomic information regarding mining (GDP contribution, exports, taxes, and similar issues), geological and technical data related to mining regions and specific operations, economic and financial data regarding specific operations, employment and environmental data, as well as information regarding social and environmental impacts, throughout the mining operation’s full life cycle. This

includes mine closure and post-mine closure, since it is the poor who bear the brunt of any negative legacy that might be left behind (see section 25.3).

**Consultations.** Many socioeconomic and environmental issues with a potentially strong impact on the poor can be unknown to administrative authorities and the mining company alike. Well-designed consultation processes are an effective measure for understanding these impacts, both for the company and for the government. Topics for this can be health (risks regarding communicable diseases as a consequence of particular migratory patterns), environment (specific local conditions that affect the handling of hazardous materials, including weather conditions), and local patterns of opportunity and income (location of farming, fishery, and hunting areas). By *not* insisting on incorporation of the voices of the poor in the mine's plans and activities, governments are forgoing the opportunity to substantially increase the services and infrastructure available to the poor. At the same time, they risk introducing mining activities that may cause harm to the most vulnerable groups in the society.

**Establish clear objectives and a sound policy environment.** This involves the following six steps:

1. Establish clear objectives for the mining sector with a mining policy paper, approved by the cabinet, that provides the framework for developing sound mineral legislation and sound macroeconomic policies. The objectives must take into consideration the minerals sector, effective measures to attract private investors, early planning for mine closures, and effective mitigation of economic, environmental, and sociocultural risks.
2. Establish a sound mineral regulation and licensing system for large-scale mining. This involves ensuring uniform and transparent treatment of investors, with ease of entry and responsible exit; sound tax and fiscal policy; and avoidance of subsidized, state-owned mining enterprises (SOEs), or, if they already exist, the privatization of SOEs.
3. Ensure sound macroeconomic policies so that mineral-rich countries benefit from the developmental impact that mining can have instead of experiencing obstructed nonmining sectors, wasted opportunities, and increased poverty.
4. Attract responsible private sector investment and encourage private sector development through appropriate laws and regulations. Within reliable regulatory frameworks, substantial potential exists for developing downstream and lateral economic activity for suppliers and refiners, particularly for small- and medium-size enterprises. This, in turn, generates employment opportunities for nonminers in the surrounding area.
5. Encourage early planning for mine closure by requiring a conceptual closure plan before mining begins, supporting the buildup of local administrative and management capacity, and designing and implementing appropriate regulation and oversight for mine closure and post-closure monitoring and supervision.
6. Mitigate economic, environmental, and sociocultural risks, including specific attention to poverty-related impacts. This involves establishing a regulatory regime for environmentally and socially sustainable mining; addressing questions of ownership; land; water use; social and environmental standards; procedures for public consultation and information; occupational health and safety standards; and ensuring that responsibilities are clarified, implementation is monitored, and information and education are provided.

On the basis of the three points above (collect data, consult, establish objectives and policy) policy-makers can prepare and present the mining section of their PRSP. In doing so, governments can take a proactive role in facilitating partnerships between mining companies and mining communities and NGOs, in particular, where this can empower communities to actively participate in the monitoring of social and environmental impacts. This can also contribute to mitigating unintended negative effects on nonminers' income-generation opportunities. Where mining companies are to invest in mining communities it is important to establish a public-private partnership arrangement that makes use of the mining companies' abilities to invest while not taking over government's role in providing these services.

## 25.2 Mining and Poverty Reduction: Key Linkages

This section explores the linkages between mining operations and the four dimensions of poverty—economic opportunity, capability, security, and empowerment—in the context of two generically different forms of mining: (1) large-scale mining and (2) artisanal and small-scale mining. The opportunities and the risks begin at the exploration stage and continue through mine construction, operation, closure, or cessation of mining activity, as well as during post-closure years. The linkages between large- and small-scale mining and poverty are summarized in figures 25.1 and 25.2. The chapters pertaining to macroeconomic, environment, water, health, transport, private sector development, energy issues, and participation provide detailed information and recommendations in each of those areas.

### 25.2.1 Mining and economic opportunities

#### ***Large-scale mining: Positive impact on opportunities***

At the national level, fiscal income generated through taxes collected from the mining operation—for some countries a substantial part of the government’s revenue base—can be used for means-tested or otherwise targeted policy interventions for poverty reduction. Tax receipts from a single mining company can amount to 30–50 percent of a country’s fiscal income.

However, this potential may not always be used as efficiently as possible, particularly if governance is poor, corruption issues are prevalent, or in cases of state ownership or control of the mining operation. The reform and privatization of state-owned mining companies is therefore often the first step toward realizing the potential for a positive fiscal impact by substantially increasing efficiency in operation and management as well as in accountability. When governments choose to get out of the business of running mines, there are significant and positive budgetary implications: the reduction or abolition of subsidies for the mining sector can free substantive resources that then become available for focused poverty reduction interventions; taxes and royalties from privatized mining operations tend to be higher than those from state-owned or quasi-state-owned firms; and privatization of previously state-run mining operations often opens the sector for further exploration activities by the private sector, which in turn will contribute to economic growth and increased fiscal income.

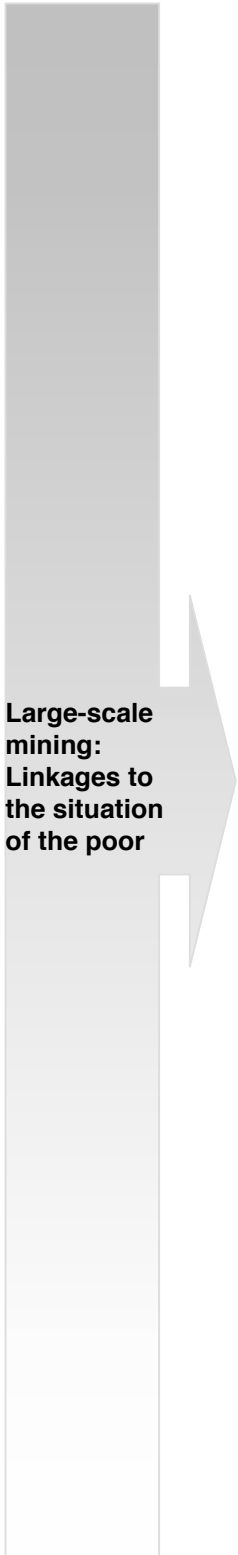
At the regional and local level, any large-scale mining operation has the potential to significantly and positively affect economic opportunities for the poor. In the region where the mining operation is located, it can provide substantial additional employment opportunities, with higher income-generation potential than most, if not all, other employment in the area. It can also stimulate investments in basic public infrastructure, goods, and services with universal access, such as transport, water, and power. Aside from a mining operation’s direct employment effect, it may present the potential for developing substantial downstream and lateral economic activity with suppliers and refiners, particularly for small- and medium-size enterprises, which in turn will generate employment opportunities for nonminers in the surrounding area. Studies have found that every dollar spent by a mine on operations generates an average of 2.8 dollars in the local economy in terms of induced economic activities (Remy and McMahan 2002).

A successful mining operation can also be a catalyst for further private sector investment in a country or region if the mining takes place within a supportive policy context characterized by reliable regulatory frameworks. After an economic or political crisis, the natural resource sector is often the first to attract foreign investors’ attention because of its potential for foreign-currency-denominated export earnings and close links to local energy sectors. Other investors tend to closely observe the performance of mining operations as they make decisions about their own risk assessment and consequent investment strategies.

Coal mining can help countries with significant coal resources (for example, China, India, and South Africa) to access cheap energy. This can fuel economic growth and creates further opportunities for those not involved in the mining sector.



Figure 25.1. Linkages between Large-Scale Mining and Poverty



<i>Poverty dimensions</i>	<i>Potential key positive effects</i>	<i>Potential key negative effects</i>
<b>Economic opportunity</b>	<ul style="list-style-type: none"> <li>• Significant fiscal income and foreign exchange</li> <li>• Employment generation—directly and indirectly</li> <li>• Investment in local infrastructure—transport, power, water—as a basis for future economic development</li> <li>• Private sector development: downstream and lateral business activity—suppliers and refiners (microenterprises)</li> <li>• If coal mining: source of energy important for economic growth (see chapter 21, “Energy”)</li> </ul>	<ul style="list-style-type: none"> <li>• Macroeconomy: Dutch disease effect on nonmining sectors with downward shifts in employment and wage levels</li> <li>• Poor governance of SOEs: Cycle of inefficiencies, subsidies, corruption</li> <li>• Fewer opportunities for nonmining sectors who compete for use of natural resources (land, water) and infrastructure (transport)</li> <li>• Potential for corruption: Benefits of mining diverted for personal and political gain, even to military conflict</li> </ul>
<b>Capability</b>	<ul style="list-style-type: none"> <li>• Training and education within the company, with spillover to community</li> <li>• Training for suppliers (small- and medium-size enterprises) in quality and reliability management</li> <li>• Investment in local government capacity</li> <li>• Investment in health and education with universal access</li> </ul>	<ul style="list-style-type: none"> <li>• Health risks (see “Security,” below) impact negatively on the poor’s capabilities</li> <li>• Culture of dependency: Government tendency to leave service delivery to mining company, creating a vacuum during mine closure and post-closure periods</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• If coal: Lifeline for heating in severe climates (see chapter 21, “Energy”)</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental risks, and related impact on health, <i>during</i> and <i>after</i> mine operation (tailing and waste management, water, dust, land disturbance)</li> <li>• Work-related health risks, widespread HIV/AIDS, alcoholism, and related gender issues</li> <li>• Income security of nonminers at risk, resulting from sharp local price increases following premium incomes for miners, or due to competing use of resources (land and water for agriculture, fishery, and hunting)</li> <li>• Sudden end of economic opportunities and employment in the context of mine closure</li> <li>• Threats to indigenous people’s land ownership and use in absence of legal frameworks</li> <li>• Risks to political stability and peace (use of revenue for political gain, “conflict diamonds”)</li> </ul>
<b>Empowerment</b>	<ul style="list-style-type: none"> <li>• Public consultation and disclosure of information can lead to incorporation of the poor’s needs into the mine’s activities</li> <li>• Potential for capacity building through consultation; partnerships with NGOs and the mining company</li> </ul>	<ul style="list-style-type: none"> <li>• Local communities often kept without access to information and denied participation in key decisionmaking processes</li> <li>• High levels of corruption can further exclude the poor from decisionmaking processes</li> </ul>

**Figure 25.2. Linkages between Small-Scale Mining and Poverty**

<i>Poverty dimensions</i>	<i>Potential key positive effects</i>	<i>Potential key negative effects</i>
<b>Economic opportunity</b>	<ul style="list-style-type: none"> <li>• Employment generation</li> <li>• Potentially higher incomes than from alternative activities</li> <li>• Can be a source of cash income on a seasonal basis, often very important for women</li> <li>• Private sector development and related employment: downstream and lateral business activity—suppliers and refiners—microenterprises</li> </ul>	<ul style="list-style-type: none"> <li>• Some of the poor might find themselves with significantly fewer opportunities for income generation and subsistence than previously as they compete for the use of natural resources (land and water) and infrastructure (transport) with incoming groups of small-scale miners</li> </ul>
<b>Capability</b>		<ul style="list-style-type: none"> <li>• Lack of health care and education facilities for small-scale miners in the context of an unregulated environment</li> <li>• Significant use of child labor with negative effects on health and education</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• If coal: Lifeline for heating in severe climates</li> </ul>	<ul style="list-style-type: none"> <li>• Work-related health risks as well as widespread increase in infectious diseases (for example, HIV/AIDS), alcoholism, and consequent gender issues.</li> <li>• Environmental and resulting health risks for miners, their families, and surrounding communities, particularly from water pollution and use</li> <li>• Risk of losing property and income where mining rights are not regulated or protected</li> <li>• Invasion of lands of indigenous or tribal people by miners</li> <li>• Risk of severe cultural conflicts between miners and local or indigenous population</li> <li>• If diamonds: risk of illegitimate diamond trading to finance regional conflicts</li> </ul>
<b>Empowerment</b>		<ul style="list-style-type: none"> <li>• Often little access for miners and their families to any public decisionmaking process because of absence of local government structures</li> <li>• Indigenous groups at risk of remaining without access to decisionmaking regarding their land and property rights</li> </ul>

**Small-scale mining: Linkages to the situation of the poor**

**Large-scale mining: Negative impact on opportunities**

For the poor, mining represents dual risks: that they will be excluded from participating in the economic opportunities it offers and, at the same time, that they will bear many of the costs and risks that result from the introduction of a mine in an undeveloped area. A large-scale mining operation requires major capital investment in infrastructure, technology, services, and employment. The ability of the poor to participate in this investment may be limited by their education and work skills. Even worse, their income-sustaining opportunities and livelihood might be reduced because of the presence of a mine. This can happen in several ways: (a) the mine might use natural resources such as land and water on which the poor may particularly depend for incomes from agriculture, fishing, or hunting; (b) the mining operation might use regional infrastructure services to the extent that the poor will entirely lose access,

either as a result of increased prices of services or due to simple capacity limits (for example, construction of a new mine on an island in Papua New Guinea created an unanticipated, overwhelming demand for ferry and other boat services that effectively excluded the poor from using them and drove up the cost of goods because of rapid increases in ferry and boat prices); (c) higher incomes of mine workers can lead to rising local prices for key goods (food, fuel, land, and housing) and services—with others in the area not only left behind but with significantly reduced real incomes. These risks and ways to alleviate them are discussed in sections 25.2.3 and 25.4.1.

Furthermore, environmental damage incurred during a mining operation, or left behind after mine closure, can range from water pollution or restrained water quantity to tailings and subsidence and can seriously limit people’s current and future income opportunities, particularly when dependent on agriculture, fishery, forestry, or hunting.

Corruption and macroeconomic mismanagement can severely limit the positive impact of mining’s ability to create opportunities at the national level. Countries such as the Democratic Republic of the Congo and Zambia where state ownership and mismanagement have long characterized the sector, have shown little overall development benefit from the copper production of the past decades. Large state mining industries can become a state within a state, which tends to result in operational inefficiencies, lost income for the state, and large subsidies to these state-owned entities that come at the expense of investments in other sectors. The income of state mining companies can be diverted for personal gain by political leaders or provide “off balance sheet” financing for political campaigns or military expenditures (see sections 25.2.3 and 25.4.1).

Other sectors in the economy might be impeded in their development in a situation in which large mining investments lead to a positive shock (boom), with consequent Dutch disease effects on the nonmining economy endangering the promotion of other sectors. Production, employment, and wage levels in these other sectors (agriculture, for instance) would contract, and those least able to move to the growing, mining-related sectors would be affected most adversely.

### ***Artisanal and small-scale mining***

Small-scale and artisanal mining can be important sources of employment and income for workers, families, and communities. The income they generate can be substantial and critical for further economic development, giving rise to the growth of microeconomic enterprises that supply miners and their families. In some cases, artisanal mining has been well established for many decades, taking place in an orderly manner, and providing reliable cash incomes. However, more often than not, small-scale mining is a default option chosen as a direct result of economic contraction in other sectors or geographic areas. In that case, miners and their families often expose themselves to harsh working conditions for minimal income in a high-risk context, endangering their health and often the surrounding environment. The local structure of small-scale mining activities determines whether poverty among miners and their families is drastic enough to require outside intervention or whether mining is an activity that makes them better-off economically than other community members. The following discusses these local structures:

- ***Permanent artisanal and small-scale mining.*** Many small-scale miners are involved in the activity year round for most of their productive careers. Sometimes they spend all of their lives working in the same region; other times they move to other areas as new opportunities arise—at times giving the appearance of gold rush miners. While it is difficult to categorize these miners, they often have substantially higher incomes than they would in other activities. In such cases, they can use their above-subsistence incomes for entrepreneurial development and for the education of their children. In Indonesia, for example, artisanal and small-scale mining is, in many areas, very well established and mining incomes are reported to be many times higher than in the miners’ previous occupations; there are even strong multiplier effects to the rest of the area. Communities interviewed during the course of a recent study (McMahon and others 2000) affirm that the increased incomes they received as a direct and indirect result of the mining more than compensated for the problems associated with the activities.
- ***Seasonal artisanal and small-scale mining.*** This type of mining work can be a regular, often lifelong source of income. Agricultural labor moves to the mining areas during the off-season,

generally to mine relatively high-value minerals, notably gold and precious stones. This practice is common in, among other regions, the Sahel countries of West Africa. In addition to the incomes directly generated, this type of mining may lead to significant entrepreneurial development among the miners, traders, and shops that supply the mining communities. The resulting savings generated by those who earn above-subsistence incomes can be an important source of funds for developing other businesses. For example, in East Kalimantan, Indonesia, with the abatement of the timber boom in the late 1960s, the majority of Dayaks in the Middle Mahakam area alternated their incomes by mining the river beds and turning to agriculture during the time of the rice planting season. When gold prices dropped, they would work full time on agriculture, but during periods of drought or harvest failure, they would once again go down to the rivers to supplement their incomes.

- **Poverty-driven mining.** This type of mining is practiced by a largely itinerant, poorly educated populace with few employment alternatives, typically as a consequence of recent loss of employment in other sectors or other regions. In South Africa, for example, the droughts in 1973–74 and 1984–85 destroyed many farmers' crops and drove large numbers of the rural population into the small-scale mining sector as a source of survival. In Bolivia, the collapse of the tin industry in the 1980s drove many workers out of the commercial industry into artisanal and small-scale tin mining. However, the small-scale mining sector's actual economic potential is lost most often as a result of (a) the absence of a legal or fiscal framework; (b) rudimentary production and processing techniques (unprotected handling of mercury in small-scale gold mining) that also cause serious health risks for miners and their families; and (c) the weak position of the typically poorly educated small-scale miner in purchase, sales, and marketing, resulting in extremely low pay and income. Many of the individuals in this sector have no other choice, and miners remain trapped in a low-revenue cycle. Since few of these miners pursue their activities with a long-term view, the mining methods employed often cause grievous environmental damage.
- **"Gold rush" mining.** This type of mining often leads to a short-term concentration of small-scale and artisanal miners, consisting of both those normally operating in the sector and those temporarily leaving their regions and traditional occupations, such as farming and microeconomic entrepreneurial activities. Examples include gold rushes in Brazil, the Philippines, and Papua New Guinea. This concentration happens when mining promises, often falsely, to be far more lucrative than anything else in which people are currently engaged. As in poverty-driven mining, the lack of a long-term perspective frequently leads to the application of mining methods that cause serious environmental damage.

While some small-scale miners might enjoy new and significantly enhanced opportunities, their usage of natural resources and land has a potential direct and negative impact on indigenous people's opportunities. After the discovery of a mining prospect, the transitory nature of much small-scale mining may lead to a tendency by "outside" ethnic groups to simply "occupy" lands and water systems that traditionally belong to indigenous people. When this occurs, serious conflicts can arise that border on cultural warfare, as has happened, for example, in the Amazon region.

## 25.2.2 Mining and capabilities

### **Large-scale mining**

Any large-scale mining operation has the potential to significantly and positively increase the capabilities of the poor as a group in the region where the mining operation is located. In the medium term, training provided for miners and other skilled employees is likely to have positive spillover effects on the surrounding workforce and community. Mining companies may also provide training for small enterprises that supply them with goods and services, bringing them up to international standards in terms of quality and reliability. In the course of granting exploration and mining rights, a government may negotiate agreements with the mining firm for public-private partnerships through which these and other goods and services can be provided. They can take the form of (a) investment in education and health, often provided initially for the mine's employees but then extended to the general public; (b) investment in local government capacity (planning for and management of services of mutual interest);

(c) investment in other community-related services or activities with universal access, best accomplished in conjunction with the local authority. However, in some cases company-led investments can have the negative effect that these investments actually replace government financing of basic services in the mining region and give an excuse for neglect by the central government. This may be an unintended consequence of well-intentioned and well-planned community development programs, but it needs to be monitored closely by responsible authorities as well as by the mining company.

Notwithstanding a mining operation's potential to positively increase the capabilities of the poor as a group, mining operations can negatively affect the poor's capabilities, as they entail risks to people's health and the environment (see sections 25.2.3 and 25.4.1).

### ***Artisanal and small-scale mining***

The permanent and seasonal types of artisanal and small-scale mining generally involve stable communities in which mining makes a positive contribution. In regions with long-established small-scale mining communities, the provision and private financing of primary health care and education are more feasible than otherwise, given the higher incomes and denser populations that these activities often bring. In the case of poverty-driven and gold rush artisanal and small-scale mining, however, public or private services rarely exist that would provide essential health care and education to small-scale miners, many of whom are women and children. Often such services do not even exist if they are fairly well developed in other areas of the country. Because of the often erratic nature of small-scale mining, local governance structures and financial systems needed to provide such services are not created before miners gather in particular areas to exploit the natural resources discovered. Within months, previously uninhabited areas can be populated by 50,000 to 100,000 miners and their families, without any water, transport, education, or health services. Typically, regional authorities are neither able nor feel they have the mandate to intervene in developments that are largely uncontrolled and difficult to monitor.

Small-scale mining more often than not involves significant numbers of women and children. Aside from the individual health risks that exist for all small-scale miners, exposure of women and children to these risks can have a significant negative impact on the capability profiles of poor communities at large, especially with regard to the women's reproductive health and the children's development.

## **25.2.3 Mining and security**

### ***Large-scale mining***

Large-scale mining can contribute through higher incomes to improved nutrition, education, and health care in a community. However, a mining operation can also expose the local population, particularly the poor, to serious health risks and pose a threat to the natural environment as well as to local communities' stability of employment, income, and purchasing power. These risks, discussed below, are key areas of consideration for governments drawing up regulatory frameworks and social or environmental standards for mining investments.

***Health and safety risks.*** Individual health risks of large-scale mining include work-related injuries, increased exposure to infectious diseases, and environmental hazards. The number of injuries and fatalities in mining varies greatly among countries, mostly depending on mining methods and technologies used and whether minerals are mined in open pits or underground. The level of other work-related health risks, such as respiratory diseases, may depend on what mineral resource is mined (coal versus metals). Investment in occupational safety technologies is often as much a result of government regulation as it is of trade union influence (see section 25.2.4). Health and safety issues can also arise beyond the mine, for example as a result of increased heavy vehicle traffic on roads built right through local communities. Risks extend to mineral processing facilities, ports, and transport routes that may run hundreds of miles from the site of a mine itself; thus, any accidents may be the shared responsibility of transport and mining companies. Furthermore, miners often are migrant workers, which means they live without their families and within disrupted social contexts often associated with a high prevalence of HIV/AIDS and other communicable diseases. Such negative health impacts from mining tend to affect women in particular because of their responsibilities, within the extended families, of caring for children

and the sick, elderly, or disabled. Moreover, higher incomes and the increased availability of alcohol may increase the potential for violence against women.

Environmental damage *during* a mining operation can lead to further health risks that may be caused by a variety of effects, including water pollution, reduced water quantity, waste dumps, tailings, impoundments, dust, noise, and subsidence. Environmental and health standards may not have been agreed on at the beginning of a mining operation, or they may not be easily monitored. Mine *closure* has its own consequences, as abandoned or orphaned mines can cause ongoing pollution that remains a danger to public health. Lack of preparation for mine closure at the time of a mining operation almost certainly increases negative effects on local environments and regional economies and affects both government budgets (cost of cleanup) and societal stability.

**Risks to employment, income, and purchasing power.** The positive economic development that often follows the establishment of a mining operation can also have negative effects on consumption levels of the poor. Higher incomes of mine workers, especially in relatively isolated areas, can lead to rising local prices for key products (food, fuel, transport), with the poor left behind. Mining can use significant amounts of land and water, which can affect the poor who depend on these resources for their livelihood and food. For example, in Irian Jaya, Indonesia, the indigenous Amungme people eventually filed a lawsuit against the mining company that sought, among other things, compensation for damage to native lands. In western Australia, for many years the aboriginal people did not share equitably with other groups in the benefits from the iron ore mining industries, nor did they feel they were adequately involved in decisions affecting their traditional lands, culture, and heritage. Steps taken to correct the situation included the establishment of an Aboriginal Training and Liaison Unit as a means of increasing aboriginal participation in the industry and supporting their traditions and culture through consultation and cooperation.

The sudden end of economic opportunities that results from an unanticipated mine closure tends to dramatically increase local poverty levels. In the late 1990s in Namibia, some foreign mining investors closed their operations and withdrew without notice, leaving the government and the local communities unprepared for the mine closure. In addition to the loss of employment and income, sudden mine closure can deprive the local population of the most basic social services and access to public goods, such as clean water, energy, or transport, if these services had been provided previously by the mining company. Lack of these services and goods affects vulnerable groups more drastically than others. The often remote location of mining operations increases the challenges for encouraging sustainable local economic development, with government resources typically hard to free up for these areas. The problematic social and environmental legacies left behind by mining operations can compromise the economic benefits they once yielded.

**Risks to sociocultural stability.** One of the significant effects of large-scale mining on the local community is a rapid change in the economic and social fabric of society. As disparities in income emerge, the lure of new opportunities creates in-migration. Different groups compete for access to public goods and social services and new tensions in the community abound. New types of poverty are created, with a mixture of original residents who have been unable to share in employment opportunities and newcomers who have migrated in the hope of finding employment but have been unsuccessful in doing so. Social ills such as alcohol abuse, prostitution, and child labor often increase.

**Risks to political stability and peace.** The wealth created by mining can lead to competition for the control of mineral resources, which some may want to use to finance political or military conflicts. “Conflict diamonds” are a prime example. They have helped to fuel civil wars in countries such as Sierra Leone and the Democratic Republic of the Congo and are used to finance ongoing military conflicts in countries such as Angola. Political stability, democracy, transparent revenue management processes, and a transparent legal regime for mineral rights and for appropriate revenue sharing can help avert such conflicts.

### **Small-scale mining**

**Health and safety risks.** Depending on the situation, the benefits from small-scale mining can be overshadowed by its negative repercussions, primarily affecting the poor by exposing them to risks they experience as individuals and as part of the group. Individual risks from small-scale mining mostly relate

to health and property issues, work-related injuries, and the increased spread of communicable diseases in addition to the loss of land to groups of small-scale miners. In Latin America, for instance, the location of small-scale artisanal mining and the incidence of infectious disease appear to be highly correlated. In Zimbabwe there is a disproportionately higher number of deaths in mining, mainly caused by small-scale miners entering gold mines illegally to win gold from pillars and from alluvial miners burrowing into uncompacted river beds.

*Environmental risks.* Risks to groups mostly stem from environmental damage and sociocultural conflicts. Miners who lack a long-term perspective in relation to their small-scale mining activities pay little or no attention to environmental concerns. Water pollution is often widespread; it is the product of causes as varied as the dumping of waste mercury used in processing in waterways to heavy siltation caused by riverbed mining and dredging. This damage can have health and economic effects on the surrounding communities.

*Risks to income and property.* In particular, indigenous groups view small-scale miners as the group bringing environmental degradation and disease to previously balanced regions, competing for the use of, and simultaneously endangering, the very natural resources that provide their livelihood through agriculture, fishing, and hunting. Furthermore, in an unregulated environment indigenous people and small-scale miners risk losing their property and future revenue: where there is no system of establishing secure land tenure rights, both groups are exposed to all types of criminal or otherwise corrupt behavior that endangers their livelihood as well as their ability to benefit financially from their personal investment in using the land, be it for mining or other uses.

*Risks to political stability and peace.* As with large-scale mining, the revenue of small-scale mining can also finance local conflicts.

## 25.2.4 Mining and empowerment

### *Large-scale mining*

*Participatory rights of local communities.* Local communities often find themselves disempowered during decisionmaking processes regarding mining operations concerning the land and resources that sustain them or to which they are otherwise connected. They are left without appropriate access to information and denied, implicitly or explicitly, participation in these decisionmaking processes. In many instances local communities hear about the acquisition of a mining license only after the fact, and subsequently often find themselves dependent on the goodwill of individual mining company officials, trying to understand the meaning of key documents frequently prepared in a technical language that far exceeds any layman's comprehension. Mining companies do not always have the skills, or the necessary persistence, to organize and sustain inclusive, well-managed, and trustworthy consultation processes. Although most governments now require some form of consultation with local communities, there is typically little guidance in terms of quality and level of the processes or the staffing of key liaison personnel. Such situations are exacerbated in the case of actual accidents or conflicts as tensions and fear on both sides lead to a de facto breakdown of communication, with national or international arbitration institutions unavailable.<sup>3</sup> Even within an ideal regulatory framework, compliance with consultation and disclosure regulations requires regular monitoring. Yet governments who could play a key role in ensuring compliance are not always trusted by local communities, as the abundance of financial flows from mining, real or imagined, can create conflicts of interest as well as opportunities for corruption at the national, regional, and local levels. This, in turn, can decrease the poor's access to transparent and effective public decisionmaking processes.

Sustained efforts toward public consultation and disclosure of information at the onset of mining activities, during operation, and both prior to and following mine closure have been shown to effectively facilitate positive interactions between a mining company and the communities affected by its operation. Occupational health and safety and related issues are typically at the center of a long-established practice of mining companies to consult with trade unions, over and above typically regular wage negotiations. Large mining companies are also beginning to make it a part of their regular practice to consult the public about their upcoming and ongoing investment, and governments are incorporating related requirements

into their legal and regulatory frameworks (see section 25.3.2). Careful design of consultation processes is particularly critical if the mining operation involves issues that affect the poor's ability to participate in the choice and implementation of public actions in managing risks and opportunities from the mining operation. These issues include the following:

- relocation and in-migration, with consequent changes in demography and settlement patterns, particularly where indigenous people are involved;
- change and disorder in the existing social structures, hierarchy, and leadership, possibly due to a breakdown in traditional systems of rules and authority in which elders may no longer be considered by their communities to have the skills and education necessary to represent the changing needs of their constituencies;
- weaknesses in the formal government systems and structures to deal with the changing social and economic situation, particularly where sudden increases in fiscal revenue have fostered opportunities for corruption and other governance malfunctions;
- conflict and civil strife over the use and distribution of water and land resources, and access to infrastructure;
- significant differences between international standards and legal and regulatory requirements in the country, especially with regard to environmental and labor issues (health and safety, trade union and freedom of organization, and so forth); and
- changes in the existing value systems from traditional or customary systems of ownership to those of monetary transfers (land-use systems and natural resource utilization, whether terrestrial or aquatic).

Because of the typically remote location of mining operations, it may be the first time that local authorities and communities are involved in systematic processes of consultation. Here, knowledge transfer and local capacity building can be beneficial side effects for groups that are otherwise marginalized.

*Corruption puts access to decisionmaking at risk.* Mining involves the creation of economic resources and power; both can result in significant opportunities for corruption at the national and the local levels, disempowering the poor and those within the local communities who are outside the cycle of corruption. Mining companies are affected as officials require payoffs to release inputs for mining or to expedite local clearances for mining activities. Corruption that has penetrated public decisionmaking, government control, and monitoring functions, which in principle exist to protect and support local mining communities, can produce particularly disastrous consequences for these communities and, especially, for their poorest and most vulnerable members.

### ***Small-scale mining***

Local governance structures and institutions are typically underdeveloped or nonexistent in areas or regions with substantial small-scale mining, leaving miners and their families largely on their own with little opportunity to join in collective efforts to improve their situation. Cooperatives are often the only means for small-scale miners to improve their situation and to manage and reduce environmental, social, and cultural risks, or to improve their access to technologies or marketing structures that could enhance their economic opportunities.

Issues of empowerment also arise for indigenous populations that live in the area. When small-scale miners make increasing claims on their land, indigenous populations may find their culture and their livelihood endangered. These groups typically have little or no access to or experience in dealing with institutions or administrative structures that would enable them to participate in decisionmaking about the use of land and the protection of their rights.

## **25.3 Poverty Diagnostics for Managing Opportunities and Risks from Mining**

Most countries with a mining sector will already have information relevant to a good understanding of the industry and its fiscal, economic, social, and environmental impacts. Mining ministries and agencies



often collect and organize relevant data for commercial-scale and artisanal or small-scale mining, such as size, location, production, revenue, investments, employment, exports, imports, sources of local supplies, and financial performance. It is important to note that a lack of geological data can inhibit private sector investments in a country's mining sector and thus prevent appropriate use of existing resources for economic development.

To formulate a mining strategy for a PRSP, available information would need to be organized from a poverty perspective, with a particular focus on vulnerable groups and their risks and opportunities in the context of mining. In particular, monitoring of the social and environmental impacts in communities and regions affected by mining or by mine closure may need to begin systematically. General poverty-related information to be provided would focus on (a) levels and trends in employment shares (large-scale versus small-scale mining, women, children); (b) levels and trends of poverty profiles, particularly in the mining regions; and (c) levels and trends in general health, education, and infrastructure indicators in the mining regions.

A typical diagnostic study may take up to six months and involve, at a minimum, the input of an economist, an engineer, an environmental or agricultural specialist, a lawyer, and a sociologist or anthropologist. While all sections outlined below are important for a good understanding of the mining sector impact on poverty, key sections for a successful diagnostic study have been marked "priority" with an arrow.

### 25.3.1 Large-scale mining

This section looks at diagnostics needed across multiple dimensions of poverty. The types of information needed to inform policy design are summarized in figure 25.3.

**Figure 25.3. Key Information Needed to Design Policy Interventions for Large-Scale Mining**

<i>Key aspects</i>	<i>Questions to be asked</i>
<b>Economic opportunity</b>	<ul style="list-style-type: none"> <li>• Are the income and cost of mining operations fully disentangled, properly measured, and understood?</li> <li>• Is macroeconomic management sound?</li> <li>• Are SOEs operating on a fully commercial and nonsubsidized basis? Are financial flows from the SOE to the government transparent and disclosed?</li> <li>• Does the government have agreements with mining firms to support local and regional economic development?</li> <li>• Has downstream or lateral economic activity developed around mining operations?</li> <li>• Does a legal and regulatory environment exist that can attract private sector investment and development? Are mining rights and obligations clear, quantifiable, and secure? Are marketing and foreign exchange freedoms and fiscal structures competitive?</li> <li>• Are processes for collection, management, and distribution of tax revenue from mining fully transparent and understood? What share of revenue is directed to the national, regional, or local levels? Do local government institutions have the capacity to manage revenues?</li> </ul>
<b>Capability</b>	<ul style="list-style-type: none"> <li>• Are there any partnership arrangements with the mining company that result in investments in education and health with universal access?</li> <li>• Is company-provided training designed such that capabilities are transferred to workers and their communities?</li> <li>• Are resources and capabilities in place to continue social services and education in case of mine closure?</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• What are the results of the direct environmental impact assessment? What do local communities have to say about the results?</li> <li>• Are safeguards adequate, respected, and monitorable? Are safeguards used in order to market the sector internationally (reduction in risk, greater operational ease)?</li> <li>• Is there a closure plan? Are resources adequate and responsibilities defined? What about abandoned sites?</li> <li>• What are arrangements for post-closure monitoring, site stability, and environmental protection from any potential problems such as acid rock drainage?</li> <li>• What is the dependency profile of the region? What are the risks for a collapsing local economy resulting from mine closure?</li> <li>• Is regional development planning appropriate?</li> <li>• Which labor market interventions are needed? What about vulnerable groups?</li> </ul>
<b>Empowerment</b>	<ul style="list-style-type: none"> <li>• Are consultation and disclosure policies adequate, implemented, and respected? Is compliance monitored?</li> <li>• Are all relevant stakeholders included? Do they have access to the information provided, in terms of language and analytical or presentational detail?</li> <li>• Is there support for partnership organizations or arrangements that can support and empower the poor?</li> </ul>

### **Economic opportunity**

**PRIORITY**

- **Fiscal impact.** While the fiscal impact from large-scale mining at the local, regional, and national levels can be substantial, especially in smaller economies, the measures for quantifying the impact often are not well understood. Governments need to be aware of the *net* impact, that is, costs, as well as direct revenue. This requires disentangling an often complex web of government and quasi-government provisions and special investments or exemptions. In the case of countries with state mining industries, it is especially important to identify any hidden subsidies, such as unpaid taxes or trade protection. It is also important to understand where, within a system of national and subnational governments, the revenue is directed. Questions that require particular attention include measures to manage volatility of income streams from mining, systems for ensuring that investment decisions are taken in a rational and transparent manner, and the extent to which fiscal revenue benefits the mining region directly, the extent to which benefits accrue to the poor and, if the impact on the poor is negligible, the reasons for this.
- **Macroeconomic impact.** Is the impact of the mining sector's growth on the overall economy adequately managed and monitored? Are potential negative repercussions on other sectors managed, monitored, and addressed?

**PRIORITY**

- **Legal and regulatory framework for the private sector.** To understand whether laws and regulations in a given country are designed to attract investment in mining and to maximize benefits from mining while minimizing risks, a number of areas need to be examined: Is the constitutional and statutory basis for private mining rights and obligations clearly defined and based on transparent rules? Is private sector access to mining rights granted? Are mining titles secure? How should statutory maintenance obligations be quantified? Are marketing and foreign exchange freedoms competitive and stable? Additional questions include the following: Does the existence of SOEs provide an obstacle to private investment as they may hold exploration rights or be subsidized? What, if any, are the legal or regulatory restrictions that impede investments? Which regulatory reforms or legal initiatives could most increase the country's attractiveness for the private sector? Are there international financial institutions or other organizations that can be partners in promoting the mining sector internationally? What lessons learned in attracting and dealing with private sector investors in mining can be transferred to other sectors or investors?
- **Governance.** Are SOEs managed in a fully commercial, arm's length manner and subject to unrestricted competition from the private sector? Are opportunities for privatization explored and implemented? Are the earnings, as well as income flows to the government, appropriately documented, fully transparent, and disclosed?
- **Local and regional economic impact.** Governments should investigate opportunities for arrangements with mining companies that can be mutually beneficial, particularly for local and regional economic development. This may include agreements about royalties, landowner and government compensation, employment priorities for local and national workers, infrastructure, and social service commitments, including tax credit schemes. What initiatives by mining companies that would generate direct opportunities for the poor could be encouraged or supported? In this context, the net employment impact would need to be estimated by taking into account whether large-scale mining enterprises have possibly destroyed jobs in the small-scale mining sector or elsewhere. Has substantial lateral or downstream economic activity developed? If not, why?

### **Capabilities**

**PRIORITY**

- **Direct impacts on the poor.** What initiatives by mining companies that benefit the capabilities of the poor directly could be encouraged or supported by governments? What would benefit the quality of life of the poor as well as of employees of the mining operation? Issues addressed would relate not only to health services, education, and infrastructure, but should also include local business development.

- **Training and education.** Do mining companies have training programs designed to transfer capabilities not only to workers but also to others in the communities?
- **Local government capacity.** Does the local government have the necessary finances and capacity to deliver needed services (especially in health and education)? Is there scope for public-private partnerships that could enhance local government capabilities? Is a culture of dependency developing or has it already developed?

### Security

#### PRIORITY

- **Adequacy of environmental laws, regulations, policies, and relevant institutions.** When examining or redesigning laws, regulations, direct agreements with mining companies, and proactive policy interventions regarding environmental social issues, six types of direct environmental impacts need to be taken into account. These cover the entire cycle of a mining project (exploration, construction, operation, closure, and postmine closure): (1) land and water use; (2) waste management; (3) chemicals and pollutants; (4) tailings disposal; (5) air pollution; and (6) noise control and abatement. These impacts need to be addressed and managed in terms of potential human health and environmental risks along with the plans and actions necessary to mitigate these risks. If mining companies have agreed to follow voluntary codes of practice and management systems, do these have international acceptance? Do they go beyond legal requirements? If so, are there any enforcement mechanisms built into the voluntary agreement? Can the different types of safeguards (laws, regulations, policy interventions, voluntary agreements) be considered adequate, respected, and implemented, and can they be monitored? Is there independent monitoring by third parties or participatory monitoring with representatives of local communities? Can safeguard mechanisms, once established, be leveraged in a program of marketing the sector to potential investors and appealing to their interest in, for example, reduced investment risks and greater operational ease? If the system of laws and regulations is found to be inadequate, is a *process* for establishing such a system chosen that would balance national and regional priorities and circumstances with the need to ensure international best practice? (See also Weber-Fahr and others 2002.)

#### PRIORITY

- **Environmental aspects of mine closure.** Are environmental responsibilities defined for orphaned sites and for decontamination of the land? What is the definition of closure, reclamation, and cleanup? What is the definition of rehabilitation; for example, returning disturbed land to a predevelopment state or alternative uses of the land? What agreements can be reached on the use of land after mine closure, particularly for land rehabilitation? Are post-mine safety issues, such as tailings spills, addressed adequately in the mine closure plan? What are the arrangements for post-closure monitoring, site stability, and environmental protection?

#### PRIORITY

- **Dependency increases risks from mine closure.** What would be or are the impacts of mine closure on the poor? What share of local and regional economic activity depends on mining, directly or indirectly? Are there any industries or sectors with growth potential that do not depend on mining? What public goods or services are being provided for or maintained by the mining company? What are the opportunities for infrastructure built especially for the mine to become an engine of growth for future development? How can maintenance and operation of this infrastructure be sustained after mine closure? Are local and regional governments prepared for the transfer of certain public services and goods?
- **Health and human development risks.** Are workplace health and safety risks properly managed by the company? Are there any significant community-related health risks (HIV/AIDS, for instance) that need greater government attention or give scope for public-private partnerships?
- **Risks from sudden mine closure.** These can be assessed at the outset and during a mining operation by analyzing existing or negotiated mine closure plans, the structure of the local economy, and the capacity of local administration (see also Sheldon and others 2002). Good examples for early closure planning are the Rossing Mine (uranium) in Namibia, the Misima Mines (gold) in Papua New Guinea, and Kelian Equatorial Mining (gold) in Indonesia. Key issues to be taken into account during diagnostics on mine-closure planning include:

- **Timing and structure.** Can a closure plan be made a prerequisite to a mining concession? Are regular reviews and monitoring in place to update and reflect changing circumstances as well as compliance? Are post-closure management and monitoring mechanisms agreed on in advance and currently in place? Can standards and arrangements for mine closure be negotiated with existing mining operations at a later stage?
- **Social and economic aspects.** What social and economic responsibilities continue for the mine operator after mine closure? Are transfer arrangements for socioeconomic infrastructure in place in the event of mine closure? Are adequate resources committed by the mining company to ensure this process takes place? What different financial mechanisms exist to ensure that these resources are made available? Are other future risks taken into account, such as fluctuations in metal prices that may unexpectedly shorten the life of the mine? If the legal and regulatory systems, as well as the sets of agreements with mining companies, are found to be inadequate to ensure the social and economic sustainability of mining communities, is there any relevant experience from outside the country that could help improve systems and agreements?
- **Development planning to mitigate risks.** Do national, regional, and local authorities include the scenario of mine closure in their development planning? Are provisions established to ensure that benefits generated from mining activities will be used to support development initiatives geared to mine closure?
- **Labor market interventions.** What types of labor market interventions will be needed in the event of mine closure? Early planning can contribute to the sustainability of interventions.

### Empowerment

PRIORITY

- **Consultation and cooperation.** Have any consultations about the mining operation, at the beginning of and during the operation, taken place? Is there a public disclosure plan? Which stakeholders should be included in the consultation and information activities? Is the mining company compliant with agreed-on processes, timing, and content for consultation and disclosure? Can the government support the flow of information from the company to the communities concerned? Is information packaged so that local communities can access it and understand the potential implications?

### 25.3.2 Small-scale mining

Overall, it is important to design interventions appropriate to each situation with regard to the different types of small-scale mining (“permanent,” “seasonal,” “poverty-driven,” or “gold rush” mining). However, the *information* needed for the design of a sector strategy and for related decisionmaking processes applies to all types of mining. Figure 25.4 presents a summary.

**Figure 25.4. Key Information Needed to Design Policy for Small-Scale Mining**

<b>Key aspects</b>	<b>Questions to be asked</b>
<b>Economic opportunity</b>	<ul style="list-style-type: none"> <li>• Are there alternative income sources?</li> <li>• What is the small-scale miners’ position in the production chain? What share of the value added can they claim for themselves? If the share is disproportionately low, why?</li> <li>• Are ownership rights protected? What is the relationship between indigenous people’s property and small-scale mining? What is the relationship between small-scale mining and large mines?</li> <li>• What is the impact of small-scale mining on the local economy? Has downstream or lateral economic activity developed? If not, why?</li> <li>• Is the legal and regulatory environment adequate, implemented, and respected? Are mining rights and obligations clear, quantifiable, and secure? What about land rights? Is compliance to requirements monitored?</li> </ul>
<b>Capability</b>	<ul style="list-style-type: none"> <li>• Are basic health services and education available? Is education or information on health issues available?</li> <li>• Does child labor exist, and to what extent? Do gender issues prevent small-scale miners from benefiting appropriately from their activities?</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• What types of minerals are mined? What techniques are used (more versus less hazardous)?</li> <li>• How many miners are involved? What is the relation to other local populations and communities? What is the origin of the miners? Are there any cultural or other tensions?</li> <li>• What types of illnesses affect small-scale miners disproportionately, and in what severity? What are the causes of any systematic patterns?</li> <li>• Are environmental laws and regulations adequate, implemented, and respected? Is compliance monitored?</li> </ul>

Figure 25.4. Key Information Needed to Design Policy for Small-Scale Mining (*continued*)**Key aspects****Questions to be asked****Empowerment**

- Do informal governance structures exist locally? Are there any well-defined communities? Are there special interest groups; for example, women's groups, regional groups?
- What is the potential for supporting community-driven development? Who would be the relevant groups; for example, women, indigenous groups?
- Does consultation take place when designing a government intervention? Are all stakeholders included?

**Economic opportunity****PRIORITY**

- **Supply and marketing methods and channels.** What is the miners' source of supplies? To whom do they sell their output? Are these competitive markets? What is the relative position of the miners in price negotiations for minerals, as well as in negotiations with suppliers of materials needed for mining? Are women particularly disadvantaged when involved in purchases of equipment and materials or in sales and marketing?

**PRIORITY**

- **Structure and application of ownership rights.** Do the miners have legal title to their claims? Can they transfer them and use them as collateral? Are there different laws and regulations for small-scale versus large-scale mining? Does a lack of a legal title inhibit small-scale mining? Do the authorities monitor and implement regulations, particularly for environmental damage and invasion of the properties of other mines? Where there is a lack of government activity, is it due to a lack of will or a lack of funds?
- **Alternative income sources of the miners and relative incomes from mining versus these sources.** What other options exist for the miners? Is mining so much more lucrative than other types of work that miners would give it up only if the government used force? Or is mining being taken up only as a last resort by people migrating from other economically contracting sectors or regions?
- **Economic impact of the mining activities on local communities.** Do miners buy inputs or consumption items locally? Has there been a large increase in commerce because of mining? Do/can miners invest their savings locally?

**Capabilities****PRIORITY**

- **Education and health.** What is the local or regional governance functioning in the region of mining activities? Are there any schools and health care facilities? If not, which local or regional government level should be responsible for providing these? What needs to be done in order to encourage the provision of services?
- **Human development.** To what extent are women and children involved in mining? Is child labor a problem? Are women benefiting economically from the mining activities? Is the system of property rights preventing women from benefiting economically? Are pregnant women involved in mining?

**Security****PRIORITY**

- **Types and severity of major health and occupational health and safety problems related to the mining activities.** Techniques used in mining are dictated by the minerals being mined, as well as the skills and technologies available. Each mineral and associated techniques carries its own implications and health risks (for example, handling of mercury). Universal health risks, including increased incidence of HIV/AIDS or other communicable diseases, are likely to be outcomes of the size of the miner population, the extent to which it is a migrant population, and the availability of critical infrastructure, such as access to clean water.
- **Connection to large-scale mining.** What is the extent to which small-scale miners are working on the claims of large mining firms? Is claim invasion a major problem? Are large mining firms and small-scale miners working cooperatively toward solutions? What roles are government agencies and police taking in the matter?

- **Types of minerals being mined and the number of miners.** Different minerals have different environmental and marketing implications. The scale of the problem will likely be highly related to the number of miners in a given location and the type of mining techniques being used.
- **Excavation and processing techniques used by the miners and the related environmental damage.** As techniques differ, so do their implications for safety and pollution. Are more environmentally friendly technologies available? Are miners using them and, if not, why?
- **Origins of different groups in the context of the mining activities.** Where are the home communities of the miners? Do they originate primarily from areas near the mines, or are they migrants from other regions or countries? Are conflicts likely to be the result of regional or cultural diversity among the miners themselves, or between (immigrant) miners and the local population?
- **Relationships between groups in the context of the mining activities.** How are the relationships between the miners and local community members? Are there conflicts between different cultural groups? Is there an adversarial relationship between the miners and community members as a consequence of environmental, social, or other socioeconomic problems? Are there serious cultural problems between the miners and indigenous peoples?

### **Empowerment**

- **Public consultation.** To what degree are “regular” governance structures absent from the small-scale mining area? To what degree do alternative, informal mechanisms of self-determination and public decision-making exist?
- **Community-driven development.** To what extent do community structures exist that have already taken over the provision of certain public goods, such as security and transport? To what extent could these groups be involved in designing cooperative types of interventions? Are there any women’s groups or other special interest groups? What is the profile of cultural and indigenous groups?

## **25.4 Managing the Impact of Mining for the Poor**

### **25.4.1 Large-scale mining: Safer opportunities for the poor**

This section covers policy instruments for managing the impact on poverty of large-scale mining. For a summary, see figure 25.5.

#### **Government: Regulatory frameworks, institutional capacity, and direct intervention**

Regulatory frameworks for mining operations are best developed in a collaborative manner, involving governments, the private sector, and civil society. Given the complexity of the consequences of mining on the socioeconomic situation and on the environment, interventions initiated by only one of these three parties are not likely to succeed in the long run.

**Attracting investments.** Laws and regulations for large-scale mining should aim to promote private sector investment in mining in an economically, socially, and environmentally sustainable manner. Strong competition exists for investment in mineral exploitation; therefore, laws and tax regimes must be internationally competitive to attract such investment while providing proper safeguards for the environment and for social concerns. Reform of mining laws has been shown to lead to a significant increase in investment. Increasingly, mining companies understand the relationship between an appropriate regulatory framework and the mitigation of their own long-term investment risk; indeed, reforming regulations and laws can be actively used for marketing the sector internationally. To ensure acceptance and functioning of laws and regulations on the local level, such a framework must include adequate consultation and inclusion of all stakeholders, including the local communities and the poor.

**Distribution of benefits.** Many of the major effects of a mining operation, whether beneficial or burdensome, occur at the local level. While the state generally owns minerals, local communities often have a strong sense of ownership or attachment to them or to the land. Many local communities,

**Figure 25.5. Policy Instruments for Managing the Impact of Large-Scale Mining on Poverty**

<i>Poverty dimensions</i>	<i>Key government actions</i>
<b>Economic opportunity</b>	<ul style="list-style-type: none"> <li>• Follow sound macroeconomic management.</li> <li>• Strictly adhere to a noncorrupt code of conduct at national and local levels, including rules on transparency and publication of relevant materials on financial flows.</li> <li>• Introduce a sound mineral licensing regime.</li> <li>• Privatize state mining companies.</li> <li>• Promote private sector development.</li> <li>• Introduce regional planning that provides a framework for mining development.</li> <li>• Discuss and build consensus with various levels of government, companies, and communities about the best methods of managing benefits from mining (taxation, local economic development, infrastructure investments, small- and medium-size company development, and so on).</li> </ul>
<b>Capability</b>	<ul style="list-style-type: none"> <li>• Discuss and build consensus with various levels of government, companies, and communities on the best synergies for investments in health, education, and other social development areas of mutual interest.</li> <li>• Finance and support capacity building for local governments, particularly in the mining region, so as to allow for efficient service delivery and management.</li> <li>• Encourage public-private partnerships with mining companies, especially where service delivery (transport, water, and energy) would be in the mutual interests of all concerned.</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• Introduce a regulatory regime to ensure adequate               <ul style="list-style-type: none"> <li>– environmental protection,</li> <li>– disclosure and consultation,</li> <li>– monitoring and enforcement, and</li> <li>– early planning and financing for mine closure and post-closure monitoring and supervision.</li> </ul> </li> <li>• Introduce mechanisms to protect the poor and those not involved in mining from unintended impacts of mining (steep increases in basic food staple prices, loss of access to natural resources needed to sustain livelihoods, and loss of access to basic infrastructure), possibly in partnership with the mining company.</li> </ul>
<b>Empowerment</b>	<ul style="list-style-type: none"> <li>• Ensure rules and regulations regarding consultation and participation are adhered to and implemented in a manner appropriate to the culture of local communities.</li> <li>• Show particular attention to issues of corruption in designing monitoring mechanisms regarding consultation and participation.</li> <li>• Introduce partnerships with local communities and NGOs for monitoring and enforcement of relevant rules and regulations.</li> </ul>

therefore, believe they should also share in the wealth created by the mine. Investing parts of mining revenue in local communities can be important to broadening the impact of mineral development and to ensuring a constructive relationship with and inclusion of the poor. Revenue can be directed to local communities through cash transfers, equity shares, or other mechanisms. There are various types of revenue flows from mining, not just income taxes but also employee-related taxes, municipal taxes, land-use taxes, royalties, land compensation, and even equity. It is important that there be a framework to determine the split of revenue among the national government, regional government, local government, and community (landholders). One way of ensuring an appropriate split of all these inflows as well as their appropriate use, especially as far as the poor are concerned, is for government to establish a framework whereby “contracts” (involving national government, local government, civil society, and the mining company) regulate the provision of funds (from national government or the mining company to local government or the local community and landowners) and the use of those funds.

*Environmental and social safeguards.* These can be both prescriptive and nonprescriptive. From a regulatory viewpoint, in addition to general environmental and social legislation, environmental and social regulations specific to the mining sector are needed. These regulations should be designed to cover the different stages of a mining project: exploration, construction, operation, closure of mine operations, and post-closure periods. Although these laws and regulations do not exist in all countries, large companies often follow good international practices and voluntary agreements, described as self-regulatory or co-regulatory. However, governments would want to ensure that enforcement mechanisms are built into these voluntary agreements (see also Weber-Fahr and others 2002).

**Regional and local economic development.** By incorporating the needs and activities of mining operations into regional planning activities, governments can substantially increase the services and infrastructure available to the poor. Regional and local governments have proven to be the key players in sustaining the benefits brought by a mining operation into a particular location. Major activities to pursue early on include (a) building capacity at the local government and community levels to enable the region and the local community to plan and prepare for closure while avoiding a climate of dependency, (b) integrating mining projects into regional development plans at the earliest opportunity, and (c) planning ahead to sustain and finance social services after mine closure and encouraging local government to eventually take over systems for social protection through, for instance, fiscal decentralization.

**Land rights and land titling.** Governments have an important role to play in ensuring that land purchased by mining companies is transferred in a legally sound and fair manner. Mining companies' land purchases can take place in a variety of circumstances, mostly depending on whether or not current inhabitants have legal title to their lands, with clear demarcations and rules set for title transfer, and whether land is considered individual property or not. National cadastre agencies might be called upon to find unconventional solutions in areas where land is, by tradition, farmed communally, and communal decisionmaking might need external facilitation. Governments can greatly contribute by facilitating open and fair negotiations about property purchases between individuals and local communities on the one side and companies on the other, in particular in circumstances in which the concept of one-off cash payments might be inappropriate given the specific cultural context.

**Preparation for mine closure.** Government interventions may include (a) establishing a carefully developed licensing process, requiring an initial closure plan to be prepared as part of the mine design, to be updated regularly throughout the life of the mine; (b) including in mining legislation and regulations the necessary rules and procedures that will help to ensure good closure practices, including requirements for mine operators to progressively put aside the funds needed for sound closure; (c) defining the monitoring period for environmental and social impacts and ensuring that satisfactory monitoring and compliance include the post-closure period; and (d) determining who is ultimately responsible for the site and facilities after closure. (In the case of some mines in North America with severe acid rock drainage problems, companies have been required by environmental authorities to put in place post-closure monitoring and mitigation arrangements for periods as long as 50–100 years.) (Sheldon and others 2002)

**Labor market interventions.** These may involve (a) provision of retraining opportunities and employment services, (b) stimulation of enterprise development and income-generation opportunities in cooperation with the private sector, and (c) marketing the region to international investors.

**Consultation and disclosure.** Governments can insist that the mining company use appropriate and timely consultation and disclosure, systematically including the local community in these consultation efforts. The government and civil society groups, including community-based organizations and NGOs, have a crucial role in ensuring the poor are informed and consulted regarding mineral development in their areas so that they can also take a more active role in planning to alleviate poverty and determine their own future. This can include managing expectations of what benefits may come from mining and providing a realistic picture of the negative impacts that may occur. In the best cases, it will involve not only consultation but also participatory decisionmaking regarding key matters that directly impact the community and its poorest members. This will ensure that the poor will benefit from the mining operation while limiting the risks to which particularly vulnerable groups might otherwise be exposed.

**Foster partnerships and solve conflicts.** Governments can foster partnerships that, in the context of mineral development, provide opportunities for all parties involved, including civil society groups, to help alleviate poverty and address shared needs or concerns. Some possibilities include community-based monitoring of environmental impacts; public–private partnerships and shared responsibility and provision of health services, joint or shared water or electricity services, and extension of mine-related transportation infrastructure to address the needs of the poorest in the community. When conflicts occur, the poor are invariably the losers. Governments can help to prevent or resolve conflicts between the community and the mine or between the richest and poorest members of the community through appropriate sharing of revenue, proper informed consultation, and management of expectations. They can also ensure that the poor get a fair deal when such conflicts are resolved.



**Government instruments and frameworks.** Government can provide an enabling environment before and during mine operation and before and after mine closure. Governments should assess an existing or proposed mining operation not only based on what it contributes at the national level, but also based on its impact on the socioeconomic well-being and the environment of the communities in the area of its operation, considering whether or not improvements are sustainable in the longer term. Improvements may include areas such as infrastructure, health, education, and the stimulation of the local economy. Given that minerals as a natural resource are nonrenewable, the sustainability of any improvement must be emphasized, including the development of activities *not* depending on mining alongside the mining operations. This will be key to ensuring that people can sustain their livelihood after mine closure.

- **On the national level**, the framework and instruments may include (a) a well-articulated and clearly stated government policy for sector development and oversight; (b) capacity building for the regulatory role, including environmental management and safety issues; (c) proper and transparent collection and equally transparent systems for the distribution of fiscal revenue; (d) in the context of licensing contracts, agreement with the mining company about local and regional socioeconomic and environmental responsibilities, especially for employment, training, provision of public goods and services, environmental and health standards (for example, water quantity and quality and other investments in community development); (e) review and reform of legal and regulatory frameworks to attract private sector investment in mining and other industries; (f) arrangements for monitoring industry performance in terms of not only compliance with regulatory requirements and good international practice but also impact on the poor; and (g) privatization of SOEs in the sector, if any, and disentangling public sector service provision from the activities of the mining companies to prevent or eradicate corruption and inefficiency in this sector and to increase accountability.
- **On the regional level**, instruments may include (a) building capacity to manage regional infrastructure and fiscal revenue and (b) linking mine development to regional development planning.
- **On the local level**, instruments may include (a) capacity building of local government and communities to manage local infrastructure, social services, and fiscal revenue, particularly in the context of strategic local development planning; (b) promotion of local business and employment opportunities; and (c) ensuring adequate representation and consultation of the local community in the mining project.

### ***Mining companies, operators, and contractors***

Mining companies, operators, and contractors can contribute, too, to the creation of a framework and to the buildup of capacity that will facilitate good cooperation with the local community, the region, and the country. Together with the local community, the following issues can be addressed:

**Local capacity.** Mining companies can help to avoid creating a culture of dependency by fostering or leveraging local capacity. This will ensure that communities are eventually better able to plan and manage themselves.

**Data collection and monitoring.** The mining operation's compliance with regulatory frameworks, in particular in the realm of environmental and social issues, typically involves a number of indicators that require regular collection of data for observation. Many of the issues involved are of great concern to the local community—for example, water quality, water quantity, or the number of jobs provided. Involving, where feasible, community representatives directly in the collection of data related to these issues, and integrating them in the task of monitoring these data, can contribute to the buildup of trust and, at the same time, compensate for institutional weaknesses that might exist among, for example, environmental agencies. The mining company may also get involved in measuring and monitoring social and economic impacts.

**Planning for closure.** This should start no later than at the initial development stages of a mining operation, as it will influence the design of the mine and associated infrastructure, the benefits package, and the company's community development programs. In particular, mine-generated benefits and

compensation packages should be designed with the long-term view of saving and investing for the post-closure period.

**Consultation.** Mining companies should consult local communities from the beginning of exploration, disclosing information to all stakeholders in a timely, accurate, and comprehensible manner. They may also help in facilitating participation of other development players, NGOs, and CBOs in the area.

### **Civil society: Communities and NGOs**

Civil society organizations can consult and plan, together with the local community, in the following ways:

**Developing leadership and community capacity.** Civil society, in an effort to reduce reliance on handouts, will strive to become increasingly independent from the mine for services and economic activities. In the process, CBOs and NGOs can play an important role—often in concert with the mine or the government—for community development and for consultations with the mining company. Capacity building can be implemented using mining benefits to build community assets.

**Monitoring impacts on the poor.** Civil society organizations can also help identify the impact of mining activities on the poorest segments of the community (regarding not only economic impacts but also health, cultural issues, food security, and so forth) and propose solutions, both to government and to the mining companies, to mitigate such impacts.

**Participating actively.** To the extent possible, civil society will want to participate in all levels of the overall planning process of the area and region, in particular, where taking a long-term view of investing some of the mine-related revenue for a post-closure period is important.

**Taking over responsibility.** Wherever appropriate, and as early as possible, civil society might get involved in managing and maintaining specific site assets and infrastructure. This can enhance either the local administration's or community organization's capabilities and mission.

**Remaining engaged.** It will be key that various civil society organizations, both formal and informal, remain engaged with the government and the company, through the entire life cycle of a mining operation, so as to promote long-term regional planning in the mining area.

## **25.4.2 Small-scale mining: Safer opportunities for the poor**

Appropriate government intervention in artisanal and small-scale mining will be country specific, depending significantly on the type of small-scale mining and on factors such as the types of technologies in use, the dominance of hard-rock or alluvial mining, accessibility to areas of small-scale mining, and cultural conflicts.

A generic type of intervention, however, is to regularize the activities of the small-scale mining sector within a legal framework. This would be the primary and single most important type of intervention, with the potential to reduce poverty, create opportunities for growth, and enhance social development. In many countries, small-scale mining is illegal or restricted. This means that miners often have no proper legal titles to their claims, resulting in “hit and run” mining with no environmental, health, or safety precautions. It also means that miners cannot use their claims or mines as collateral. Potential negative repercussions of the introduction of regulations should be expected, however, wherever small-scale mining is required to follow the same regulatory framework as large-scale mining. If not implemented in a simplified version, such regulations can be impractical for small-scale mining, especially in relation to environmental, occupational health, and safety standards. In this case regulations would simply be evaded, not enforced, or not taken seriously, furthering the potential for corruption. Nevertheless, regularization of the sector is a necessary but far from sufficient step.

Other key government interventions would need to be tailored to the situation as identified by the diagnostics discussed in section 25.3.2. Such interventions would typically include the following:

- Monitoring environmental performance and promoting more environmentally friendly mining and processing technologies.
- Providing information and education about communicable diseases, sanitation, and occupational health and safety.
- Restricting or regulating child labor, combined with supportive health, nutrition, and educational interventions.
- Supporting structures and initiatives for collective and cooperative actions, since these have been shown to be a key instrument for miners and their families to improve their own situation and their economic opportunities. This can be implemented by introducing more productive, practical, and affordable technologies.
- Identifying potential cultural hotspots and taking quick actions to restrict small-scale mining in these areas.

## Notes

1. There is no widely accepted definition of small-scale mining. For example, in Ghana, Zambia, and Zimbabwe, the criteria for defining small-scale mining is based on concession area; in Columbia, Senegal, and Ethiopia, it is based on depth of working; in Argentina, South Africa, Pakistan, Thailand, and Zimbabwe, it is based on capital investment; in Senegal, it is also based on crude production levels; in Ghana and Sri Lanka, it is based on the use of explosives. Common features in the different definitions are (a) stakeholders are usually limited to citizens of the country, (b) use of sophisticated equipment is restricted, and (c) there are set limits on the level of production, number of miners, and infusion of capital. For further reading, see Department for International Development (2000).
2. The Dutch disease hypothesis is that a positive shock (boom) to an important primary product causes an appreciation of the real exchange rate. This results in a movement of resources to the nontradable and the boom sectors and away from tradable manufacturing and agricultural products. The exchange rate shifts can cause problems in promoting competitive diversification into noncommodity sectors.
3. Since 1999, for mining operations financed with the assistance of the International Finance Corporation (IFC) or insured through the Multilateral Investment Guarantee Agency (MIGA), local communities and other affected groups have access to a compliance advisor/ombudsman. The Office of the Ombudsman attempts to resolve conflicts arising from IFC or MIGA projects by providing a context and process for parties to find mutually satisfactory solutions. It is focused on identifying problems and recommending actions, using conflict resolution and mediation approaches (see [www.ifc.org/cao](http://www.ifc.org/cao)).

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