

Mining and Poverty Reduction

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Summary and Overview

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Mining and poverty reduction

This chapter provides instruments for policymakers in countries where mining has huge potential to either contribute significantly to poverty reduction, or to risk and endanger the lives of the very poorest of society. Policymakers will find that, to a large extent, it will depend on how well mining policies and frameworks are developed, whether the sector is tilted towards exerting a positive or a negative influence on development in their countries. Mining is a unique industry due to its complex set of impacts on national and local economic development, environment, and sociocultural profiles, often specific to very few large mining areas in a particular country or region. 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. Both provide very different contexts for opportunities and risks that may evolve from the use of natural resources. Depending on the issues raised—for example, **Macroeconomic Issues**, the **Environment**, **Water**, **Health**, **Transport**, **Private-Sector Development**, and **Energy**—we recommend referring to the specialized chapters of this Sourcebook.

Who should use this chapter?

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

Mining does not apply to all countries. Worldwide, there are about sixty countries—containing about three quarters of the population of developing and transitional economies—where the mining sector should be taken into account when devising poverty reduction strategies. (For a full list see Annex 1 to this chapter). Some of these countries are “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. Others are lesser known mining countries such as Argentina, Mali, and Tanzania. Furthermore, there are also countries where the sector serves large domestic markets, employing millions of workers, such as in China, India, Brazil, Indonesia and Russia. In some of these countries, the contraction of the mining industry has resulted in mine closures and consequent severe poverty increases; countries affected are Bolivia (tin industry collapse), Peru, Zambia and Romania (base metal mine closures), and Russia, Poland, Romania, Ukraine and China (coal mine closures). Finally, there are countries where mining wealth has been squandered and where the countries are no better off, if not worse off, because of mismanaged mining development and plundered mineral wealth.

Examples include Congo, Angola and Sierra Leone. (For a full list of mining countries, see Annex 1 to this chapter).

A country's mining sector is relevant for poverty reduction strategies if one or more of the following situations occur:

- 1) The contribution of the mining sector to a country's economy at large is significant enough to warrant special attention as:
 - it can have significant macroeconomic and fiscal effects, providing government with budgetary resources necessary for poverty reduction programs, potentially being a significant catalyst for further private-sector development in the country or region. Examples include, amongst others, Chile, Botswana and South Africa. On the other hand, the Republic of Congo would be an example for the negative consequences of sector mismanagement.
 - social and environmental consequences—following mine sector restructuring or mine closure—need to be mitigated as they could otherwise significantly harm the poor and/or increase regional poverty profiles. Examples include, amongst others, Poland, Ukraine, Romania, and the Russian Federation.

'Significant' in this context implies the approximate share of the mining sector to be one or all of the following: 1) > 5-10 percent of fiscal revenue; 2) >15-25 percent of export earnings; 3) >3-5 percent of the gross domestic product (GDP); or 4) >10-15 percent of the industrial workforce.

- 2) A country has no mining sector yet; however, developing its natural resources appears to be the only option, or a key option, for generating growth and development. An example is Mali, which in 1990 had no operating mine; ten years and significant policy and sector reform later, there are two mines, a third is under development. Mineral exports have become the largest single export commodity, significantly contributing to Mali's fiscal income and economic performance. Indicators for this situation would be geological data and would show the potential for a mining sector to become significant for a country's economy, as indicated in 1) above.
- 3) A country has clusters of small-scale miners, people living on relatively large surface areas, often generating below-subsistence incomes, largely without environmental or social protection or governance. If these clusters comprise cumulatively about 50,000 individuals or more, a government would want to consider incorporating action in a poverty reduction strategy, as environmental and social consequences and cultural and political conflicts can be explosive (see paragraph on "socio-cultural impact" below). Examples for such countries include, amongst others, Brazil, China, India, Indonesia, Sierra Leone, and Congo.

How to develop a section on mining for a PRSP

In developing a section on mining for a Poverty Reduction Strategy Paper (PRSP), policymakers will want to focus on: (1) gathering relevant data to understand actual and potential poverty-related impacts, risks, and opportunities of the mining sector in their country (see also section 2 in this chapter); (2) setting clear objectives and identifying priorities for intervention in a consultative process regarding poverty impacts and the mining sector; (3) identifying the mechanisms to achieve the objectives, including needed changes to policies, laws and regulations; (4) 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, local government representatives from respective mining regions, industry associations, trade unions, nongovernmental organizations (NGOs), and other relevant parties. In most cases, it would be most useful if the process were lead by the country's Mining Ministry or Mining Agency. Typically, these agencies have harnessed the country's mining expertise and will be ready to contribute to formulating policy for poverty reduction. Almost always, a constructive partnership can 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 on **Participatory Processes**.)

Mining: Risks and Opportunities for the Poor

Potential positive poverty impacts

Mining can contribute to poverty reduction in a variety of ways, mostly directly, through generating income and through creating opportunities for growth for lateral or downstream businesses. It also contributes indirectly, through investments enabling better social services and catalyzing 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 source of financing to support social-sector and poverty reduction programs. Substantial fiscal impact from mining, contributing to economic and social development, can be found in countries such as Chile, Mexico, Peru, Botswana, Ghana, and South Africa. (See chapter on **Macroeconomic Issues**.)
- **Income generation:** Small-scale mining provides employment for about 13 million workers and their families worldwide, in particular, in countries such as Bolivia, Brazil, Burkina Faso, China, Colombia, Congo, Ghana, Ecuador, India, Indonesia, Madagascar, Tanzania and Thailand. Large-scale mining provides direct employment for about 2-3 million workers and their families worldwide; for every job created directly in mines, between 2 and 25 jobs are created with suppliers, vendors and contractors to the mine and to miners and their families, typically provided through small and micro-enterprise activity.
- **Local economic development:** Large mining operations can be found to invest substantially in local economic development, through providing training, social services and public goods, such as clean water, transport, energy, and 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 impacts on local economic development, ranging from the establishment of local foundations to equity share arrangements.
- **Improved land-use planning:** Geo-science and mapping data collected for mining purposes can contribute to improved land use planning and can benefit the poor by

helping identify and address issues relating to competing land uses, thereby avoiding 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 Russia (eastern regions), Poland, Ukraine, Mongolia, and Kazakhstan, coal is essential, in particular for poor households, as it provides accessible and affordable heating. (See chapter on **Energy**.)

Potential negative poverty impacts

Mining, as well as the cessation of mining where it has become uneconomic, can also be a cause of poverty. It can adversely affect the living conditions of the poor and other vulnerable groups.

- **Governance, corruption, and macroeconomic issues:** A large and profitable mining sector, if not managed well, can also have negative consequences on governance and macroeconomic development. The often substantial fiscal incomes derived from mining can lead mineral-dependent economies in a cycle of corruption and inefficient governance. Transparency International report a high correlation between corruption and the dominance of extractive sectors. Mining incomes can get diverted for personal or political gain, eventually draining state budgets rather than supporting them. At the same time, a dominant mining sector can lead to a positive shock (boom) with consequent Dutch Disease¹ effects on the non-mining economy, endangering the promotion 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 cost for the economy, considering that revenues and economic development opportunities are based on a natural resource which is non-renewable by nature. (See also toolkit on **Macroeconomic Issues**).
- **Environment:** Loss of agricultural land, water pollution, water quantity, tailing management, noise, dust, and land disturbance are issues that can adversely affect food security, the health and livelihood of the poor and vulnerable groups with 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:** Miners in small-scale mining as well as in large-scale mining are often migrant workers, living without their families and within disrupted social contexts. This situation can contribute to a high prevalence of human immunodeficiency virus (HIV) and other communicable diseases in mining communities. Indeed, several mines in Southern Africa report infection rates of about 50% amongst their workforce, well above national averages. Also, work-related injuries and health risks—for example, lung cancer associated with coal mining—reduce the miners' life expectancy and often put families in particularly precarious situations.

¹ 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 non-tradable sector and the boom sector, and away from tradable manufacturing and agricultural products. The exchange rate shifts can cause problems in promoting competitive diversification into non-commodity sectors.

- **Socio-cultural impact:** Mining projects are often 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 socio-cultural conflicts within and between communities. At the same time, the lure of new opportunities can create in-migration which may cause new tensions in the community between existing residents and new-comers.
- **Negative impacts on non-mining sectors.** Large mining operations can inadvertently impact negatively on the income generation ability and livelihood of the local population that is *not* involved in mining. The mine might use natural resources such as land and water on which the poor may depend. Furthermore, in remote locations, the mining operation might use regional infrastructure services to the extent that the poor will entirely lose access, either due to the services' increased prices or due to simple usage limits (e.g. ferry services between islands in PNG). Overall, regional price levels might increase due to the presence of the mine, with the poor left behind, unable to afford basic goods and services.
- **Barriers to economic restructuring and mine closure:** Large losses by state-owned mining industries, especially coal mining, have been a significant barrier to economic restructuring and recovery, especially in Eastern Europe and the former Soviet Union. Closure of loss-making 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—cease to be delivered, with particularly harmful effects on the poor and other vulnerable groups. Mine closures have also affected other countries such as Zambia, Bolivia, Peru, Namibia, and the Philippines.

What countries can do to maximize the benefits of mining for poverty reduction

Countries can take the following steps to obtain the greatest benefits from mining for poverty reduction (more details in section 3: “Managing the Impact of Mining for the Poor”).

1. **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 for commercial scale, artisanal and small-scale mining. Some countries, such as Latin American countries like Chile, Brazil, Mexico and Peru have very good data on their mining industries. For these countries, the data is often comprehensive from a technical and financial standpoint, but may be lacking in terms of 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 exists but is held tightly by the industry and not 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 data base and that it is available to all arms of Government and other appropriate parties on an unrestricted basis. There are also many smaller countries which are not familiar with the mining sector and therefore ill prepared when development takes place. 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 size of mining operations, location, production, revenues, investments, financial performance, employment, exports, imports, sources of local supplies, and impacts on local communities and regional and national economies. It is important to note that for some countries 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. Also, countries need to **monitor** the social and environmental impacts of mining in communities and regions along the entire mining cycle, including mine closure and post-mine closure, since it is the poor who bear the brunt of any negative legacy that might be left behind. (More details in section 2 of this chapter: "Suggested Diagnostics").

2. **Consultation.** It has become clear that 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. Examples for this can be health issues (e.g. risks regarding communicable diseases as a consequence of particular migratory patterns), environmental issues (e.g. specific local weather conditions impacting on the handling of hazardous materials), as well as issues pertaining to local communities' patterns of opportunity and income (e.g. 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.
3. **Establish Clear Objectives and a Sound Policy Environment.** This involves the following six steps
 - **Establish clear objectives for the mining sector** with a cabinet approved mining policy paper that provides the framework for developing sound mineral legislation, sound macro economic policies taking into consideration the minerals sector, effective measures to attract private investors, early planning for mine closure and effective mitigation of negative health, environmental and socio-cultural risks.
 - **Establish a sound mineral regulation and licensing** system for large-scale mining. This involves creating "a level playing field," with ease of entry and responsible exit, sound fiscal policy and avoidance of subsidized state-owned mining enterprises (SOE), or, if they already exist, the privatization of SOEs.
 - **Ensure sound macro-economic policies** so that mineral-rich countries benefit from the developmental impact that mining can have, rather than seeing non-mining sectors obstructed, opportunities wasted and poverty increased.
 - **Attract private-sector investment and encourage private sector development** through appropriate laws and regulations. Within reliable regulatory frameworks, there is substantial potential for developing downstream and lateral economic activity for suppliers and refiners,

particularly for small- and medium-sized enterprises, in turn generating employment opportunities for non-miners in the surrounding area.

- **Encourage early planning for mine closure** by requiring a conceptual closure plan before mining begins, by supporting the build-up of local administrative and management capacity and by designing and implementing appropriate regulation and oversight for mine closure.
- **Mitigate health, environmental, and sociocultural risks including specific attention to poverty-related impacts, risks and opportunities**
This involves establishing a regulatory regime for environmentally and socially sustainable mining, addressing questions of ownership, land and water use, socio-environmental standards, procedures for public consultation and information, and occupational health and safety standards, ensuring responsibilities are clarified, implementation is monitored, and information and education is provided. This is the framework within which the section on mining for a county's Poverty Reduction Strategy Paper (PRSP), policymakers should be prepared. The government can take a pro-active role in facilitating partnerships between mining companies and mining communities and NGOs such that communities are empowered to participate in the monitoring of social and environmental impacts. This can also contribute to mitigating unintended negative effects on non-miners' income generation opportunities. The provision of appropriate and accessible infrastructure and community, health, and education facilities can be negotiated directly with the mining company, however, it is important to find 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.

1. Mining and Poverty Reduction: Key Linkages

Mining and Poverty Linkages

This part of the chapter 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, as well as 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. Depending on the issues raised—for example, **Macroeconomic Issues**, the **Environment**, **Water**, **Health**, **Transport**, **Private-Sector Development**, and **Energy**—we recommend referring to the specialized chapters of this Sourcebook.

1.1 Mining and Economic Opportunities

Large-Scale Mining

Positive impacts on opportunities: On 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% to 50% of a country's fiscal income (e.g. Debswana in Botswana and HALCO in Guinea).

However, this potential may not always be used as efficiently as possible, in particular, in the context of governance and corruption issues and where state ownership of the mining operation is involved. The reform and privatization of state-owned mining companies is therefore often the first step toward realizing the potential for fiscal impact by substantially increasing efficiency in operation and management, as well as in accountability. Whenever governments choose to get out of the business of running mines themselves, either directly or indirectly, there are significant and positive budgetary implications: 1) the reduction or abolishment of subsidies for the mining sector can free substantive resources which are then available for focused poverty reduction interventions; 2) taxes and royalties from privatized mining operations tend to be higher than those from state-owned or quasi-state-owned firms; and 3) privatization of previously state-run mining operations often opens the sector for further exploration activities by the private sector and thus contributes to economic growth and increased fiscal income.

On 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: 1) substantial additional employment opportunities—with higher income generation potential than most, if not all, other employment in the area; and 2) investments in basic public infrastructure, goods, and services with universal access, for example, transport, water, and power. Aside from a mining operation's direct employment impact, there is substantial potential for developing downstream and lateral economic activity with suppliers and refiners, particularly for small- and medium-sized enterprises, in turn generating employment opportunities for non-miners in the surrounding area. Typically, employment generated

indirectly by a mining operation amounts to twice to 25 times the number of direct employees, in certain cases even more than that (e.g. Yanacocha in Peru, Ok Tedi in Papua New Guinea). Studies have found every dollar spent by a mine on operations to generate an average of 2.8 dollars in the local economy, in terms of induced economic activities².

A successful mining operation can also be catalytic for further inflow of private-sector investment in a country or region if it 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 sector to attract foreign investor's attention due to 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.

Mining for coal can help countries with significant coal resources (e.g. China, India, and South Africa) to access cheap energy, thereby fueling these countries' economic growth and creating further opportunities for those not involved in the mining sector.

Negative impact on opportunities: The poor are at some risk of not participating in the economic opportunities of mining while bearing many of the costs as well as 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 is limited by their education and work skills. Even worse, their income sustaining opportunities and livelihood might be reduced due to 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 in particular the poor may depend by limiting opportunities to generate 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 due to the services' increased prices or due to simple capacity limits (e.g. an unanticipated effect of construction of a new mine on an island in Papua New Guinea was overwhelming demand for ferry and other boat services which 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/housing) and services—with others in the area not only left behind, but with significantly shrunk real incomes. These risks, as well as ways to alleviate them, are discussed in particular in sections 1.3 and 3.1 of this chapter.

At the same time, environmental damage incurred during a mining operation, or left behind after mine closure, ranging from water pollution or restrained water quantity to tailings and subsidence, can seriously limit people's current and future income opportunities, in particular when dependent on agriculture, fishery, forestry or hunting. Environmental issues, and ways how to manage them, are discussed at more detail in sections 1.3. and 3.1 of this chapter.

Corruption and macro-economic mismanagement can severely limit the positive impact of mining creating opportunities on the national level. Countries such as Congo and Zambia have shown little overall development benefit from the copper production of the

² These figures are based on World Bank studies of the economic contribution of mines in Latin America, Africa, and Asia.

past decades, with state-ownership and mismanagement characterizing the sector. Large state mining industries can become a “state within a state” resulting in operational inefficiencies, foregone income for the state, and—furthermore—in large subsidies to these state-owned entities which 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 expenditure (see more in section 1.3 (“security”) and 3.1).

At the same time, 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 Disease³ effects on the non-mining economy, endangering the promotion of other sectors. Production in these other sectors (e.g. agriculture) would contract, with resulting downward shifts in employment and wage levels. Those who are least able to move to the growing, mining-related sectors will be hit hardest.

Artisanal and Small-scale mining

Small-scale mining (SSM) and artisanal mining⁴ can be an important source of employment and income for workers, families, and communities. Income generated can be substantial and critical for further economic development, giving rise to the growth of micro-enterprise activity supplying miners and their families. In some cases, artisanal mining has been well established for many decades and takes place in an orderly manner and provides 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 geographical areas. If so, 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 the small-scale mining activities, profiled below, determines whether poverty among miners and their families is drastic and requires outside intervention, or whether mining is an activity that makes them economically better off than other community members:

- **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 will spend all of their lives working in the same region; other times, they will 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. When they do, the above-subsistence funds can be used for entrepreneurial development and for the education of their children. In Indonesia, for example, artisanal and small-scale mining is very well established and mining incomes are reported to be many times higher than in the miners’ previous occupations; there are even strong multiplier

³ 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 non-tradeable sector and the boom sector, and away from tradeable manufacturing and agricultural products. The exchange rate shifts can cause problems in promoting competitive diversification into non-commodity sectors.

⁴ There is no widely accepted definition for small scale mining (SSM) - different countries have their own select definition for SSM. For example in Ghana, Zambia and Zimbabwe the criteria for defining SSM 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 on 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 “Design and Pilot Implementation of a Model Scheme of Assistance to Small-Scale Miners”, July 2000, project report available from DFID, KAR Project No. R7181).

effects to the rest of the area. Communities interviewed during the course of a recent study⁵ 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** can be a regular, often life-long source of income, performed in the context of seasonal work. Agricultural labor moves to the mining areas during the off-seasons, generally to mine relatively high-value minerals, notably gold and precious stones. This practice is common in the Sahel countries in West Africa. In addition to the incomes directly generated, this type of mining may lead to significant entrepreneurial development among the miners, the traders, and the shops that supply the mining communities. By generating above-subsistence incomes, savings can be an important source of funds for developing other businesses. For example in East Kalimantan (Indonesia) with the abate of the timber boom in late 1960s, the majority of Dayaks in the Middle Mahakam area would alternate their incomes by mining the rivers 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:** Practiced by a largely itinerant, poorly educated populace with little other employment alternatives, typically as a consequence of recent loss of employment in other sectors or other regions. For example in South Africa, the droughts in 1973-1974 and 1984-1985 destroyed many farmers’ crops and drove large numbers of the rural population in the SSM sector as a source for 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. Mostly, small scale mining’s actual economic potential is lost due to: (a) the absence of a legal or fiscal framework; (b) rudimentary production and processing techniques (e.g. 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 operating in this sector do so because they have no choice and miners remain trapped in a low revenue earning cycle. In this case SSM can either be the cause or the result of poverty with neither really taking precedence. Since few of these miners are pursuing their activities with a long-term view, the mining methods employed often cause grievous environmental damage.
- **“Gold rush” type mining:** Leads to an often 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 petty entrepreneurial activities. Examples include gold rushes in Brazil, Philippines and Papua New Guinea. This concentration happens when mining promises, often falsely, to be far more lucrative than anything else people are currently engaged in. As in poverty-driven mining, the lack of a long-term perspective often leads to mining methods causing serious environmental damage.

⁵ Gary McMahon et al: 2000. 'Mining and the Environment in Indonesia: Long-Term Trends and Repercussions of the Asian Economic Crisis'. EASES Discussion Paper Series. World Bank. Washington DC

While some small-scale miners might enjoy new and significantly enhanced opportunities, their usage of natural resources and land has the potential to directly and negatively impact on the opportunities that exist, in the region, for indigenous people. Conflicts for indigenous people arise, in the context of mining, with both small-scale and large-scale mining. However, the transitory nature of many small-scale mining means that there is a tendency of “outside” ethnic groups to simply “invade” lands and water systems that traditionally belong to indigenous people, right after the discovery of a mining prospect. When this occurs, serious conflicts can arise, bordering on cultural warfare. This has happened, for example, in the Amazon regions. These risks, as well as ways to alleviate them, are discussed in particular in sections 1.3 and 3.1 of this chapter.

1.2 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 particular region in which the mining operation is located. In the medium term, training provided for miners and other skilled employees is likely to have positive spill-over 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: (1) investment in education and health, often provided initially for the mine’s employees but then extended to the general public; (2) investment in local government capacity (planning for and management of services of mutual interest); (3) investment in other community-related services or activities with universal access, best in conjunction with the local authority. 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 needs to be monitored closely, by responsible authorities as well as by the company.

Notwithstanding a mining operations’ potential to positively increase the capabilities of the poor as a group, mining operations can negatively impact on the poor’s capabilities as they entail risks to peoples’ health and the environment. These risks, as well as ways to alleviate them, are discussed in particular in sections 1.3 and 3.1 of this chapter.

Artisanal and Small-scale mining

The “permanent” and “seasonal” types of artisanal and small scale mining generally involve stable communities where 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 is more feasible than otherwise, given the higher incomes and denser populations that these activities often bring. But, in the case of “poverty driven” and “gold rush” artisanal and small scale mining, public or private services rarely exist that would provide essential health care and education to small-

scale miners, many of them women and children. Often, such services do not even exist if they are fairly well-developed in other areas of the country. Due to 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 years, often 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 to intervene, nor feel they have the mandate to do so in the context of such largely uncontrolled and difficult-to-monitor developments.

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 (see below), exposure of women and children to these risks can have significant negative impacts on the capability profiles of poor communities at large, impacting negatively on the women's reproductive health and on the children's development.

1.3 Mining and Security

Large-scale mining

Large-scale mining can contribute, through higher incomes, to better nutrition and better education, and thus to improved health profiles in a community. However, a mining operation can expose the local population, and in particular the poor, to serious risks to their health and well-being, as well as to the stability of their employment, income, and spending power. These risks are discussed below as they would be key areas of consideration for governments when drawing up regulatory frameworks and social or environmental standards for mining investments.

Health risks. Individual health risks associated with large-scale mining evolve around work-related injuries and health risks, as well as around an increased exposure to infectious diseases and environmental issues. The number of injuries and fatalities in mining varies a lot between 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, e.g. respiratory diseases, depends on what mineral resource is mined (coal vs. metals). Investment in occupational safety technologies is often as much a result of government regulation as it is of trade union influence (see also section 1.4/Empowerment). Further to individual health issues, group related health risks and social problems can impact on entire mining communities.

In Southern Africa many miners are migrant workers, sometimes on the companies' demands, sometimes by choice, living without their families and within disrupted social contexts. Along with higher incomes, and a lack of information and education about prevention, this situation can contribute to a high prevalence of human immunodeficiency virus (HIV) and other communicable diseases among miners. Indeed, several mines in Southern Africa report infection rates of about 50% amongst their workforce, well above national averages. Indirect negative health impacts from mining tend to affect women in particular - due to their responsibilities, within the extended families, of caring for children and the sick, elderly, or disabled. Finally, higher incomes and the increased availability of alcohol, as well as the migratory context, 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, ranging from water pollution or restrained water quantity to dust, noise, and subsidence. In the context of mine closure, abandoned or orphaned mines often are serious causes of concern, continuing to cause ongoing pollution and potential public danger. Environmental and health standards may not have been agreed upon at the beginning of a mining operation, or they may not be easily monitored. Indeed, lack of preparation for mine closure at the time of a mining operation almost certainly increases negative impacts on local environments and regional economies upon closure, in turn affecting government budgets (cost of “clean-up”) and societal stability.

Risks to the stability of employment, income, and spending 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 impact the poor who depend on these resources for their livelihood and food security. For example in Irian Jaya (Indonesia) the indigenous Amungme people eventually filed a law suit against the mining company for environmental damages, compensation for native lands and human rights violations. In Western Australian, for many years the aboriginal people did not share as well as other groups in the benefits from the iron ore mining industries, nor did they feel they had been 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 (ATAL) as a means of increasing aboriginal participation in the industry, supporting their traditions and culture through consultation and cooperation. In the context of mine closure, the sudden end of economic opportunities, when not planned for, tends to increase local poverty levels dramatically. In Namibia, in the late 1990s, foreign mining investors closed their operations and withdrew without notice leaving the Government and the local communities to deal with the mine closure without any preparedness. Sudden mine closure can also deprive the local population of the most basic social services and of access to public goods, such as clean water, energy, or transport, if these previously had been provided 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 local economic development in the aftermath of mine closure, with government resources typically hard to free up for these areas. The problematic social and environmental legacies left behind by mining operations, then, can compromise the economic benefits they once yielded.

Risks to socio-cultural stability. One of the significant impacts of large scale mining on the local community is a rapid change in the economic and social fabric of society. As disparities in incomes 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 with 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 that can be created by mining has the potential to lead to conflict for the control of those mineral resources, or they can be

used to finance political or military conflicts. “Conflict diamonds” are a prime example. They help fuel the civil war (Sierra Leone and Congo DR) and are used to finance ongoing military conflicts (Angola). Political stability, non-corrupt practices, democracy and a clear legal regime for mineral rights and social acceptance of the local community through consultation and appropriate revenue sharing can help avoid such conflicts.

Small-Scale Mining

Health Risks. Depending on the situation (see Section 1.1), the benefits from SSM 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, from work-related injuries and the increased spread of communicable diseases to the loss of land to “invading” groups of small-scale miners. In Latin America, the location of small scale / artisanal mining and the incidence of infectious diseases appear to be highly correlated. In Zimbabwe there are a disproportionately high 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. Group risks mostly stem from environmental damage and sociocultural conflicts. Particularly when lacking a longer-term perspective for their activities, miners in SSM pay little or no attention to environmental concerns. Water pollution is often widespread, 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 often view small scale miners as the group bringing environmental degradation and diseases to previously balanced regions, endangering – and competing in the use of - the very environment that provides for their livelihood (through agriculture, fishery, hunting). Furthermore, in an unregulated environment, indigenous people as well as small-scale miners risk losing their property and future revenues: 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 financially benefit from their personal investment in using the land, be it for mining or for other uses.

Risks to Political Stability and Peace. Small scale mining revenues can be involved in providing finance for military conflicts similarly as large scale mining revenues (see above).

1.4. Mining and Empowerment

Large-scale mining

Participatory rights of local communities. Local communities often find themselves disempowered during decision-making processes regarding mining operations that concern the land and resources they live of or are otherwise connected with; they are left without appropriate access to information and denied – implicitly or explicitly – participation in these decision making processes. In most countries, local communities hear about the acquisition of a mining license only after the fact, and subsequently often find themselves dependent on the good-will of individual mining company officials, trying

to understand the meaning of key documents, often prepared in technical language and far exceeding any layman's ability to digest details. Mining companies do not always have the skills, or the necessary persistence, to organize and sustain inclusive, well-managed and trust-inspiring consultation processes. While most governments by 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 break-down of communication, with national or international arbitration institutions unavailable⁶. 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 often at risk themselves, as the abundance of financial flows from mining, real or imagined, contributes to increases in national, regional and local corruption. This, in turn, leads to a decreasing access for the poor to public decision-making processes.

Sustained efforts toward public consultation and disclosure of information at the onset of mining activities, during its operation as well as in anticipation of mine closure, have been shown to effectively facilitate 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 for 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 also section 2.2. (empowerment) in this chapter). Careful design of consultation processes is particularly critical if the mining operation involves issues that impact on the poor's ability to participate in choice and implementation of public actions with regard to managing risks and opportunities from the mining operation. Some of these issues include:

- Re-location and in-migration, with consequent changes in demography and settlement patterns, in particular where indigenous people are involved;
- Change and disorder in the existing social structures, hierarchy and leadership, possibly due to a breakdown in the traditional regulatory and authority systems, where elders no longer have the skills and education to represent the changing needs of their constituencies;
- Weaknesses in the formal government systems/structures to deal with the changing social and economic situation, in particular where the sudden increases in fiscal revenues have fostered corruption and other governance malfunctions;
- Conflict and civil strife over the use and distribution of resources in terms of water, land and access to infrastructure;
- Significant differences between international standards and legal and regulatory requirements in the country, in particular with regard to environmental and labor issues (health and safety, trade union/freedom of organization, etc.);
- Changes in the existing value systems from traditional or customary systems of ownership to that of a monetary transfers (e.g. land use systems, natural resource utilization (terrestrial and aquatic)).

⁶ Note that since 1999, for mining operations financed with the involvement 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 Ombudsman office aims at resolving issues 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).

Well designed consultation processes, may - due to the typically remote location of mining operations - be the first time for local authorities and communities to be involved in such a systematic process. Knowledge transfer and local capacity building can be the beneficial side effects for groups that are otherwise marginalized.

Corruption puts access to decision-making at risk. Mining involves the creation of economic resources and power; both can result in significant corruption, both at the national and the local level, disempowering the poor and those within the local communities unable to participate in the cycle of corruption. Mining companies are affected as officials require pay-offs to release inputs for mining or to expedite local clearances for mining activities. Where the ills of corruption spread to public decision-making and government control and monitoring functions originally designed to protect and support local mining communities, consequences can be detrimental for these communities, and in particular for the poorest and most vulnerable.

Small-scale mining

Local governance structures and institutions are typically underdeveloped or non-existent 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 own situation, to manage and reduce environmental, social, and cultural risks, or to improving their access to technologies or marketing structures that could enhance their own economic opportunities.

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

1.5 Summary of Linkages

Figure 1. Linkages Between Large-Scale Mining and Poverty

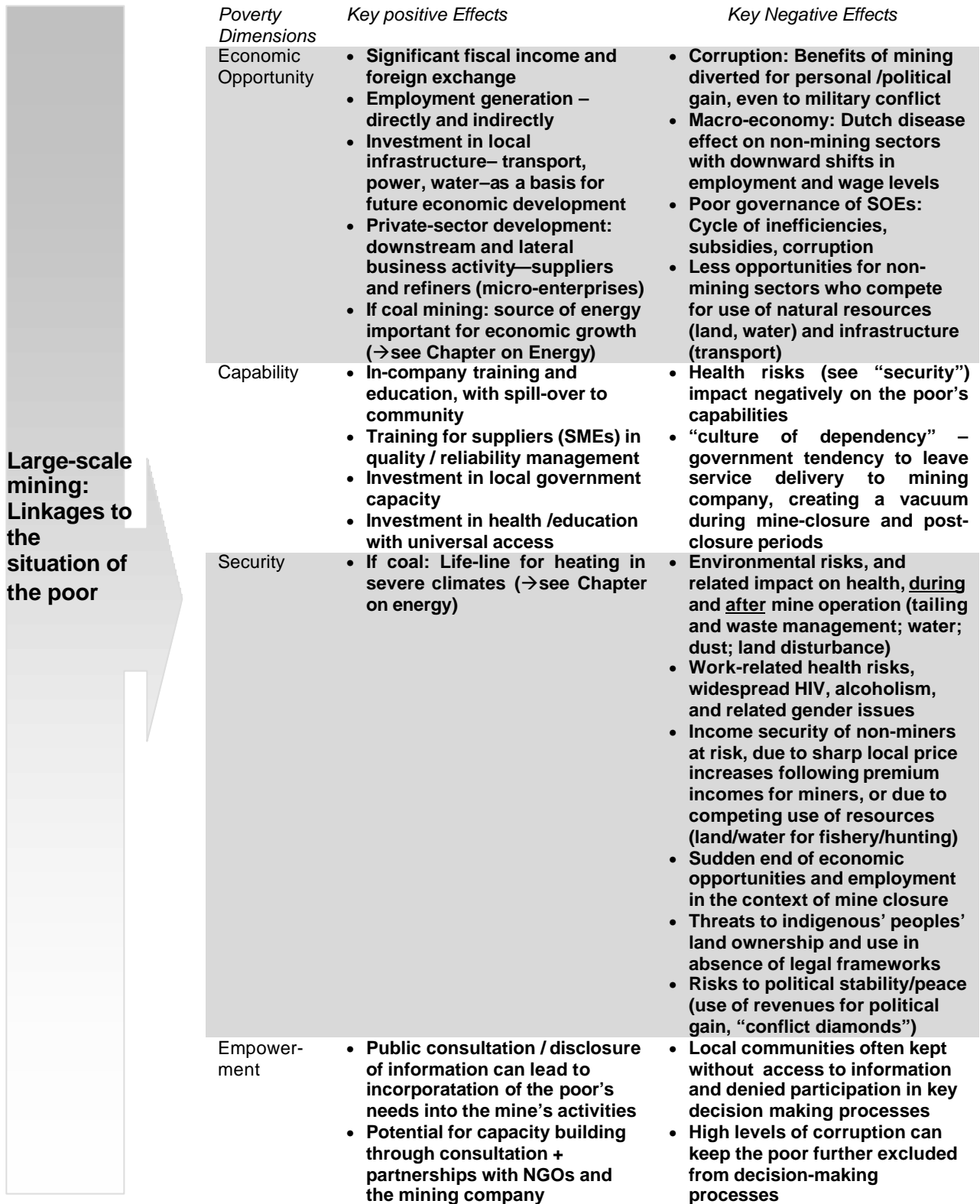
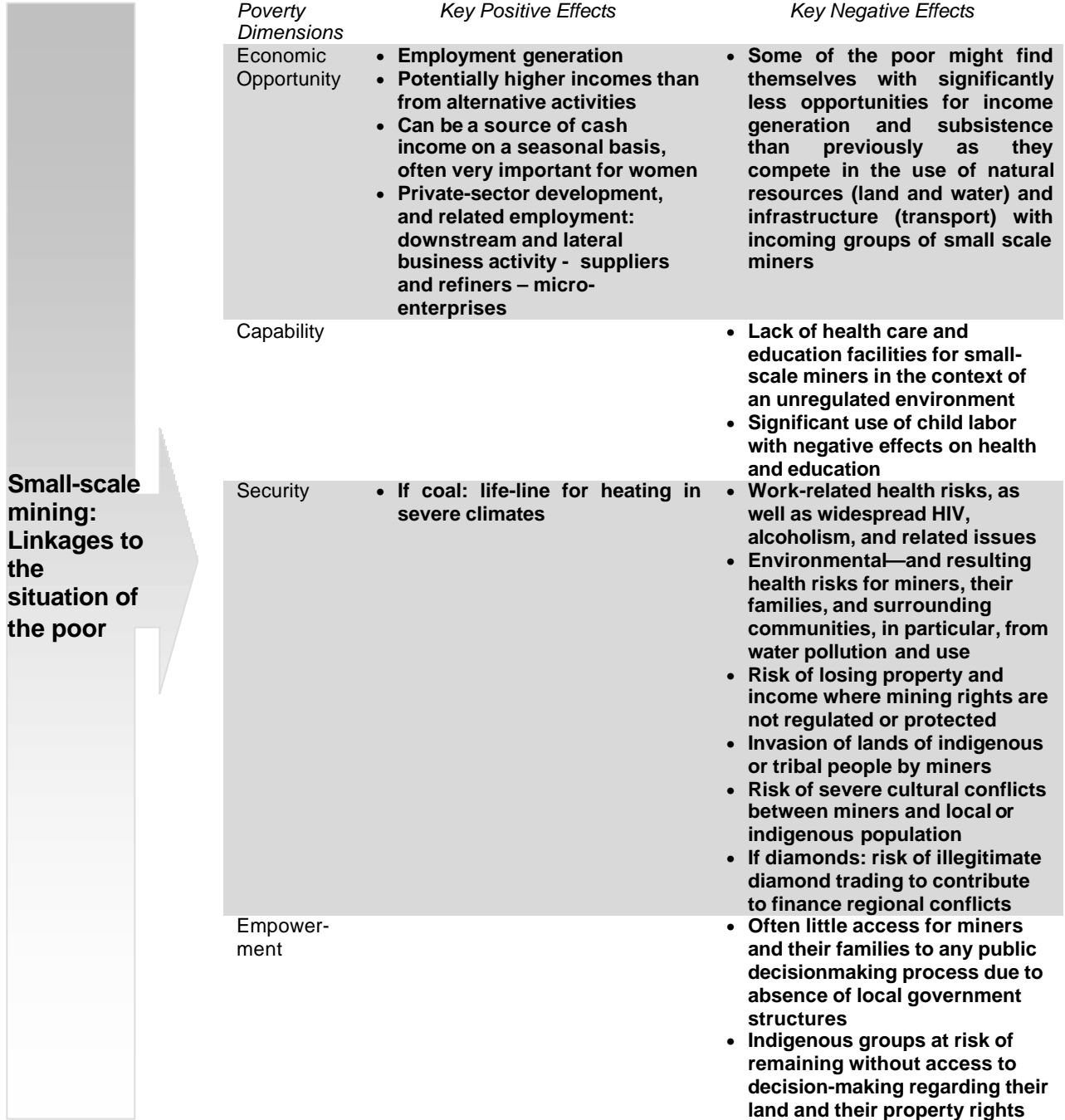


Figure 2. Linkages Between Small-Scale Mining and Poverty



2. Diagnostics Suggested to Manage Opportunities and Risks From Mining in the Interest of the Poor

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, revenues, investments, employment, exports, imports, sources of local supplies, and financial performance. 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 Poverty Reduction Strategy Paper (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- vs. small-scale mining; women, children); (b) levels and trends of poverty profiles, in particular 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 would involve at very minimum an economist, an engineer, an environmental / agricultural specialist, a lawyer, and a sociologist / 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.

2.1 Diagnostics: Large-Scale Mining

Economic Opportunity

priority

- **Fiscal impact:** While the fiscal impact from large-scale mining at the local, regional, and national levels can be substantial, in particular in smaller economies, the actual size of the impact is often not well understood. Governments need to be aware of the *net* impact, that is, costs, as well as direct revenues. 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 sub-national governments, the revenues are directed to. How much of fiscal revenues benefits the mining region directly? How much benefits the poor? If the amount is small – why?
- **Macroeconomic impact.** Is the impact of the mining sector's growth on the overall economy adequately monitored, and are potential negative repercussions on other sectors monitored and addressed?

- **Governance.** Are state-owned enterprises managed in a fully commercial, arms-length manner (in particular mineral sales) 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 whether there are opportunities for arrangements with mining companies that can be mutually beneficial, in particular, 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 services commitments, including tax credit schemes. What initiatives by mining companies that would directly result in generating 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 jobs possibly destroyed by in the SSM sector and elsewhere. Has substantial lateral or downstream economic activity developed? If not, why?
- **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, five areas need to be examined: 1) Is the constitutional and statutory basis for private mining rights and obligations clearly defined and based on transparent rules? 2) Is private sector access to mining rights granted? 3) Are mining titles secure? 4) How should statutory maintenance obligations be quantified? 5) Are marketing and foreign exchange freedoms competitive and stable? Additional questions include: 1) Does the existence of state mining enterprises provide an obstacle to private investment (as SOEs hold exploration rights or are subsidized)? 2) What, if any, are the legal or regulatory restrictions that impede investments? 3) Which regulatory reforms or legal initiatives could most increase the country's attractiveness for the private sector? 4) Are there international financial institutions or other organizations that can be a partner in promoting the mining sector internationally? 5) What lessons learned in attracting and dealing with private-sector investors in mining can be transferred to other sectors or investors?



priority

Capabilities

- **Direct impacts on the poor:** What initiatives by mining companies directly benefiting the capabilities of the poor 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 not only relate to health services, education and infrastructure, but could also include sports, culture, gender, and local business development.
- **Training and education.** Do mining companies have training programs designed to transfer capabilities not only to workers but also to the communities?
- **Local government capabilities.** Does the local government have the necessary finances and capabilities 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 developed?



priority

Security

priority

- **Adequacy of environmental laws, regulations, and policies.** When examining, and possibly re-designing, laws, regulations, and direct agreements with mining companies, as well as proactive policy interventions, regarding environmental social issues, six types of direct environmental impacts need to be taken into account, covering the entire cycle of a mining project (exploration, construction, operation, closure, and post-mine 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 risks; and potential environmental risks, and the plans and actions 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 used for marketing the sector to potential investors (e.g. by advertising the reduced investment risks and greater operational ease)? If the system of laws and regulations is found not to be adequate: 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?
- **Health and Humand Development Risks.** Are workplace health and safety risks properly managed by the company? Are there any significant community related health risks (e.g. HIV/Aids) that need greater government attention or give scope for public-private partnerships?
- **Risks from sudden mine closure** 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, as well as the capacity of local administration. 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 are:
 - **Timing and structure of mine closure:** 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 upon 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 of mine closure:** What social and economic responsibilities continue for the mine operator after mine closure? Are transfer-arrangements for socioeconomic infrastructure in place for the case of mine-closure? Are adequate resources committed by the mining company to ensure this process takes place? What different financial mechanisms are available for making these resources available? Are other future risks taken into account, such as fluctuations in metal prices which may unexpectedly bring mine closure

forward? 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 out-of-country experience that could help improve systems and agreements?

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 clean-up? 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, in particular, for land rehabilitation? Are safety issues, such as tailings dam spills, in the post-mine context taken into account in the mine closure plan? What are the arrangements for post-closure monitoring, site stability and environmental protection?.
- **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? How competent are local and regional governments? Do they need to be prepared for the transfer of certain public services and goods?
- **Development planning to mitigate risks from mine closure:** Do national, regional, and local authorities include the scenario of mine closure in their development planning? Are provisions established ensuring 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.

priority

Empowerment

- **Consultation and cooperation:** Have any consultations about the mining operation, at the beginning of, as well as during, 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-upon 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 can understand the potential implications?

priority

Figure 3. Key Information Needed to Design Policy Interventions for Large-Scale Mining

<i>Key Aspects</i>	<i>Questions to be Asked</i>
Economic Opportunity	<ul style="list-style-type: none"> • Are the income and cost of mining operations fully disentangled, properly measured and understood? • Is macroeconomic management sound? • Are SOEs operating on a fully commercial and non-subsidized basis? Are financial flows from the SOE to the government transparent and disclosed? • Does the government have agreements with mining firms to support local and regional economic development? • Has downstream or lateral economic activity developed around mining operations? • 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?
Capability	<ul style="list-style-type: none"> • Are there any partnership arrangements with the mining company that result in investments in education and health with universal access? • Is company provided training designed such that capabilities are transferred to workers and their communities? • Are resources and capabilities in place to continue social services and education also in case of mine closure?
Security	<ul style="list-style-type: none"> • What is the results of the direct environmental impact assessment? What do local communities have to say to the results? • Are safeguards adequate, respected and monitorable? Are safeguards used in order to market the sector internationally (reduction in risk; greater operational ease)? • Is there a closure plan? Are resources adequate and responsibilities defined? What about abandoned sites? • What are arrangements for post-closure monitoring, site stability and environmental protection from any potential problems such as acid rock drainage. • What is the dependency profile of the region—what are the risks for a collapsing local economy due to mine closure? • Is regional development planning appropriate? • Which are the labor market interventions needed? What about vulnerable groups?
Empowerment	<ul style="list-style-type: none"> • Are consultation and disclosure policies adequate, implemented, respected and is compliance monitored? • Are all relevant stakeholders included? Do they have access to the information provided, in terms of language and analytical or presentational detail? • Is there support for partnership organizations or arrangements that can support and empower the poor?

2.2 Diagnostics: Small-Scale Mining

While it is important to design interventions appropriate to each situation—in particular, adjusted to the original motivation of mining (“permanent” mining, “seasonal” mining, poverty driven mining, or “gold rush” mining)—the information needed for the design of a sector strategy and for related decision-making processes applies to all types.

Economic Opportunity

- **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 only give it up 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?
- **Supply and Marketing** methods and channels: Where do miners receive their supplies from? 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 purchase of equipment and materials and in sales and marketing?
- **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 due to mining? Do miners invest their savings locally?

Priority

Capabilities

- **Education and Health:** Is there any form of functioning local or regional governance operating 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?

Priority

Security

- **Structure 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 SSM versus large-scale mining?
- **Application of regulations:** Does a lack of a legal title inhibit SSM? Do the authorities monitor and implement regulations, in particular, for environmental damage and invasion of the properties of large mines? Is the lack of government activity due to a lack of will or a lack of funds?

Priority

- **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 role 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 and mining approach being used.
- **Excavation and processing techniques** used by the miners and the related environmental damage: Different techniques have different implications for safety and pollution. Are more environmentally friendly technologies available? Are miners using them, and if not, why?
- **Types and severity** of major health and occupational health and safety problems related to the mining activities.
- **Origins of different groups in the context of the mining activities:** Where are the home communities of the miners? Do they primarily come from areas near the mines, or are they migrants from other regions or countries? Are conflicts likely due to 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 due to environmental, social, or other socioeconomic problems? Are there serious cultural problems between the miners and indigenous peoples?

Priority

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 decisionmaking 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-type interventions? Are there any women’s groups or other special interest groups? What is the profile of cultural and indigenous groups? (See above.)

Figure 4. Key Information Needed to Design Policy for Small-Scale Mining

<i>Key Aspects</i>	<i>Questions to be Asked</i>
Economic Opportunity	<ul style="list-style-type: none"> • Are there alternative income sources? • 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? • What is the impact of SSM on the local economy? Has downstream or lateral economic activity developed? If not, why? • 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?
Capability	<ul style="list-style-type: none"> • Are basic health services and education available? Is education or information on health issues available? • Does child labor exist, and to what extent? Do gender issues prevent small scale miners from benefiting appropriately from their activities?
Security	<ul style="list-style-type: none"> • What types of minerals are mined? What techniques are used (more vs. less hazardous)? • 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? • What types of illnesses affect small scale miners disproportionately, and in what severity? What are the causes of any systematic patterns? • Are ownership rights protected? What is the relationship between indigenous people's property and SSM? What is the relationship between SSM and large mines? • Are environmental laws and regulations adequate, implemented and respected? Is compliance monitored?
Empowerment	<ul style="list-style-type: none"> • Do informal governance structures exist locally? Are there any well-defined communities? Are there special interest groups—for example, women 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?

3. Managing the Impact of Mining for the Poor

3.1 Large-scale mining: Safer opportunities for the poor

Regulatory framework : “Setting the scene”

Investments: laws and regulations for large-scale mining should aim to promote private-sector investment in mining in an economically, socially, and environmentally sustainable way. 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 used actively 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.

- **On the national level,** the framework and instruments may include: 1) a well articulated and clearly stated government policy for sector development and oversight; 2) capacity building for regulatory role, including environmental management and safety issues; 3) proper collection and equitable sharing of fiscal revenues; 4) in the context of licensing contracts: agreement with the mining company about local and regional socioeconomic and environmental responsibilities, in particular, 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; 5) reviewing and reforming legal and regulatory frameworks to attract private-sector investment in mining and in other industries; 6) arrangements for monitoring industry performance in terms of not only compliance with regulatory requirements and good international practice but also impact on the poor; 7) privatization of state-owned enterprises (SOE) 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 be 1) capacity building to manage regional infrastructure and fiscal revenues; and 2) linking mine development to regional development planning.
- **On the local level** instruments may be: 1) capacity building of local government and communities to manage local infrastructure, social services, and fiscal revenues, in particular, in the context of strategic local development planning; 2) promotion of local business and employment opportunities; and 3) assurance of adequate representation and consultation of the local community in the mining project.

Distribution of benefits: Mining is a very localized activity. Many of the major impacts of a mining operation 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 therefore believe they should also share in the wealth created by the mine. Investing parts of mining revenues in local communities can be an important to broaden the impact of mineral development, ensuring a constructive relationship and inclusion of the poor. Revenues 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 revenues between 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 mining company) can be signed regarding money that will be provided (from national government or the mining company to local government or local community/landowners) and how it will be used.

Government: 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, and considering the extent to which improvements are sustainable in the longer term or not. Improvements may include areas such as infrastructure, health, education, and the stimulation of the local economy. Given that minerals as a natural resource are non-renewable, it is important to emphasize the sustainability of any improvement, including the development of non-mining dependent activities alongside the mining operations. This will be key to ensuring that people can sustain their livelihood also after mine closure. Mine closure planning should be an important part of government negotiations with mining companies.

It is key to note that regulatory frameworks for mining operations require a set of laws and regulations 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.

- **Environmental and social safeguards** can be both prescriptive and non-prescriptive. 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 can be designed to cover the different stages of a mining project, i.e. exploration, construction, operation, closure of mine operations, and post-closure periods. While 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.
- **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 into a particular location by a mining operation. Major activities to pursue early on include: 1) building capacity, at the local government and community level, to enable the region and the local community to plan and prepare for closure while avoiding a climate of dependency; 2) integrating mining projects into regional development plans at the earliest opportunity; 3) planning ahead for to sustain and finance social services after mine closure, encouraging local government to eventually take over systems for social protection, e.g. through fiscal decentralization.

- **Preparing for Mine Closure.** Government interventions may include: 1) 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; 2) 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; 3) with regard to environmental and social laws and regulations, defining the monitoring period and ensuring satisfactory monitoring and compliance include post-closure; 4) 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)
- **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, civil society groups and NGO's have a crucial role in ensuring the poor are informed and consulted regarding mineral development in their area 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 decision making 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 in particular vulnerable groups might otherwise be exposed.
- **Labor market interventions** may involve: 1) provision of retraining opportunities and employment services; 2) stimulation of enterprise development and income generation opportunities, in cooperation with the private sector; and 3) marketing the region to international investors.
- **Fostering partnerships and solving conflicts.** Governments can foster partnerships which – in the context of mineral development – provide opportunities for NGOs and civil society to 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 revenues, proper informed consultation and management of expectations. They can also ensure that the poor get a fair deal when such conflicts are resolved.

Mining companies, operators and contractors: Preparing resources and capacity together with the local community

- **Local capacity:** Mining companies can help *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:** Covenants.
- **Consultation:** Mining companies should consult local communities from the start of exploration, disclosing information to all stakeholders in a timely, accurate, and easily comprehended manner. They may also help in facilitating participation of other development players, NGOs, and community-based organizations in the area.
- **Planning for closure** 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 postclosure period.

Civil Society—Communities and NGOs: Consultation and planning

- **Developing leadership and community capacity:** Civil society should not rely on hand-outs and would thus want to seek becoming increasingly independent from the mine for services and economic activities. In this process, 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 (not only economic impacts but also health, cultural, food security impacts etc.) and propose solutions – both to government and to the mining companies – to mitigate such impacts.
- **Active participation:** Civil society should participate, to the extent possible, in all levels of the overall planning process of the area and region. In particular, it would take a long-term view of investing some of the mine-related benefits for a postclosure period.
- **Taking over responsibility:** Wherever appropriate, and as early as possible, civil society would get involved in management and maintenance of specific site assets and infrastructure. This would 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 so as to promote long-term regional planning in the mining area.

Figure 5 Policy Instruments for Managing Impact of Large Scale Mining on Poverty

<i>Poverty Dimensions</i>	<i>Key Government Actions</i>
Economic Opportunity	<ul style="list-style-type: none"> • Follow sound macro economic management • Strictly adhere to non-corrupt code of conduct, at national and local levels, including rules on transparency and publication regarding financial flows • Introduce sound mineral licensing regime • Privatize state mining companies • Promote private sector development • Introduce regional planning that provides framework for mining development • Discuss and agree with various levels of government, companies and communities about best methods of managing benefits from mining (taxation, local economic development, infrastructure investments SME development, etc.)
Capability	<ul style="list-style-type: none"> • Discuss, and agree with various levels of government, companies, and communities, about best synergies for investments in health, education, and other social development areas of mutual interest • Finance and support capacity building for local governments, in particular in mining region, so as to allow for efficient service delivery and management • Encourage Public-Private Partnerships with mining companies, in particular where service delivery (transport/water/energy) would be in mutual interest
Security	<ul style="list-style-type: none"> • Introduce regulatory regime to ensure adequate: <ul style="list-style-type: none"> • Environmental protection • Disclosure and consultation • Monitoring and enforcement • Early planning and financing for mine closure as well as post-closure monitoring and supervision • Introduce mechanisms to protect poor and those not involved in mining from unintended impacts of mining (e.g. steep increases in basic food staple prices; loss of access to natural resources needed to sustain livelihoods, and to basic infrastructure), possibly in partnership with mining company
Empowerment	<ul style="list-style-type: none"> • Ensure rules and regulations regarding consultation and participation are adhered to and implemented in a manner appropriate to the culture of local communities • Give particular attention to issue of corruption in designing monitoring mechanisms regarding consultation and participation • Introduce partnerships with local communities and NGOs, for monitoring and enforcement of relevant rules and regulations

3.2 Small-scale mining: Safer opportunities for the poor

Appropriate government intervention in the context of artisanal and small-scale mining will be country specific, depending significantly on the type of small-scale mining as well as on factors such as the types of technologies in use, the dominance of hard-rock mining 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 SSM 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. Moreover, unregulated mining lends itself to the corruption of miners and bureaucrats (e.g. inspectors). On the other hand, potential negative repercussions have to be expected wherever SSM is required to follow the same regulatory framework as that of large-scale mining. Such regulations can, if not implemented in a simplified version, be impractical for small-scale mining, especially with regard to environmental, occupational health, and safety standards. In this case they would simply be evaded, not enforced or not taken seriously, and give rise to patterns of 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 2.2. Such interventions would typically include:

- Monitoring environmental performance and promoting more environmentally friendly mining and processing technologies.
- Providing communications and training on sexual diseases, sanitation, and occupational health and safety.
- Restricting or regulating, child labor, combined with supportive health, nutrition, and education interventions.
- Supporting structures and initiatives for collective and cooperative actions as 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 in the context of introducing more productive, practical, and affordable technologies.
- Identifying potential cultural “hot spots”, and taking quick actions to restrict SSM in these areas.

Annex: Industry Overview

Industry overview

There are about 60 developing and transition countries where mining is or could become an important economic activity. These include: (a) countries which are important mineral producers in the international marketplace; (b) countries which are modest producers by international standards, but where mining makes an important contribution to the national or regional economy; and (c) countries where small-scale or artisanal mining provide significant employment in rural or remote communities. A list of countries is provided in Table 1.

Table 1. Countries Where the Mineral Sector Does or Could Have an Impact on Poverty, as Based on Existing Mineral Resources

Latin America and the Caribbean	Africa and North Africa	Europe, Middle East and Asia
Argentina	Angola	Bhutan
Bolivia	Botswana	Bosnia
Brasil	Burkina Faso	China
Chile	Central African Republic	Fiji
Colombia	Congo	India
Ecuador	Eritrea	Indonesia
Guyana	Ethiopia	Jordan
Jamaica	Ghana	Kazakhstan
México	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 about 50 major mining and metals companies, with an average of about \$4.3 billion revenues each. These companies operate worldwide and are by origin concentrated in four countries: the US, South Africa, Australia and Canada. They invest, annually, about \$25-\$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 across 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 very little and very basic mechanization.

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