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Global



Mining

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Large Mines and Local

Communities:

FORGING

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SUSTAINABILITY

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2002

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This is the second in a series of short papers that the World Bank Group's Mining Department will publish to share some of the experience and knowledge gained through daily work with developing country policymakers, the mining industry, and mining communities and their organizations. Over the coming years, as the sector expands, governments, businesses, and communities in many developing countries will face more and more complex issues and difficult trade-offs. We hope to see the "Mining and Development" series inform a wide range of interested parties on the opportunities, as well as the risks, presented by the sector.

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FOREWORD

The costs and benefits of large mines to local communities and the relationship between mining companies and communities are subjects that have become important in developing and developed countries alike. To date, however, there has been a dearth of comprehensive research on these topics. Given that the relationship between mining companies and communities is changing rapidly – albeit unevenly and unsystematically – the need to develop tools to better assess the impact of different approaches on this relationship, and on the ability to maximize sustainable benefits from mining, has become paramount.

To address these needs, and to answer questions as to who benefits and who does not from the opening and operation of a large mine, the World Bank Group's Mining Department and the International Development Research Center (IDRC) in Canada funded a study by independent researchers that looked at several mines in developing and developed countries. This paper summarizes their results, with a focus on the benefits and the costs of the mines in their neighboring communities and on the impact that the rules of engagement and the management of the process had on those costs and benefits. Three of the six studies centered on three traditional mining countries in Latin America; the other three focused on mines in Canada and Spain, so as to compare experiences of developed and developing countries.

The general message of the study is a hopeful one: the relationship between mining operations and local communities is undergoing a largely positive evolution. Moreover, there are very practical programs and policies that can be followed to increase the probability of positive experiences. Among these:

4 First, mining companies need, as much as their legal license, a “social license” to operate. This social license would be the

result of work undertaken in processes of consultation, participation, and, increasingly, of a strong trilateral dialogue among the mining company, the local community, and the government at the local, regional, or national level.

4 Second, the trilateral dialogue would need to focus on the *sustainability* of benefits. The most successful cases found were those where local communities gradually got involved in providing many of the goods and services needed by the mining companies. To make sure this happens, communities require support from the mine – in the economic, social, cultural, and environmental areas, especially in the early stages of an operation. These issues also need to be addressed in anticipation of eventual mine closure.

4 Third, the process of facilitating community and economic development programs yields a great benefit in and of itself: it fosters the formation of local social capital. Over time, through a constructive process, local communities can learn how to organize, how to negotiate, and how to take advantage of the opportunities offered by the mining operations to pull themselves up by their own bootstraps.

The challenge is for mining companies, communities and governments to “operationalize” these concepts. As initiatives and programs show success, these experiences can be woven into ongoing operations if lines of communication are kept open. In this process, international financial institutions can play an important role: They can promote the dialogue among the various stakeholders and disseminate the results of efforts that have helped enhance the sustainability of the economic impacts of mining.

James Bond
Mining Department, World Bank Group
April 2002, Washington D.C.



Large Mines and Local Communities:

The opening of a large mine has economic, environmental, and social consequences at the national, state or provincial, and local levels. Large mines generate foreign exchange earnings and tax revenues and create employment directly and indirectly.

This paper attempts to fill a gap in research about the impact of large mines. Most analyses of the impact of mining in developing societies have traditionally focused on broad macro-economic effects. The economic, environmental, and social effects of large mines in their neighboring communities have yet to be examined systematically to any extent. Furthermore, the concerns raised by those most affected by mining – the local communities – require an analysis not only of the *impacts* themselves but also of the *practices* used in managing them. To answer

Who benefits – and who does not – from mining?

questions as to who benefits – and who does not – from the effects of the opening and operation of a large mine, and why, the World Bank Group's Mining Department and the International Development Research Center of Canada funded a study by independent researchers in five countries, the results of which are summarized in this paper. In particular, researchers analyzed the costs and benefits and the impact of the rules of engagement and of the management of the process that a few selected mines brought about in their neighboring communities. Three of the six studies centered on Latin America, covering a total of seven mines – five large and two medium mines - in Bolivia, Chile, and Peru (see Appendix A). Each study followed similar methodologies, addressing the issues described above. The other studies focused on mines in Canada and in Spain. Each case was selected to further illuminate the results of the Latin American studies and provide additional lessons for developing countries involved in large-scale natural resource extraction.

FORGING PARTNERSHIPS, BUILDING SUSTAINABILITY

Large mines also impact the physical environment and can have strong social and cultural repercussions on local communities, especially indigenous populations. Yet the mine's impact – positive and negative – can vary significantly at the local, state or provincial, or national levels, depending on the “rules of the game” – as set by the regulatory framework – and depending on the management of the operation.

Over the past years, the ground rules for opening and operating large mines have shifted: Governments have begun to focus on their role as regulators rather than owners of mines, and the international community has come to expect mining companies to behave responsibly with regard to the environment and their relationships with local communities. It is now generally accepted that avoiding the potential detrimental effects that mining can have on fragile ecosystems and local communities should be made a priority. Experience has shown that large international mining companies are generally better environmental citizens than smaller, domestically owned mines. Yet a number of negative incidents have drawn widespread interest in and criticism of their practices, as well. Local and international environmental groups have become increasingly involved in mining disputes. Meanwhile, local communities have become more and more concerned that they shoulder all the negative impacts of mining but receive few of the benefits. This is especially the case because capital-intensive large mining operations generate only a fraction of the jobs that they did a generation or two ago.

Generating Economic Benefits: A Little Effort Can Go a Long Way

The sources of income that a mine generates – directly and indirectly – at the national, state or provincial, and local levels are diverse. The impact at each level can vary substantially, depending on the rules established by the national legal and fiscal frameworks and the management attention given to the relevant issues. The level of the tax burden, including indirect taxes, is still an important issue. However, many countries have reduced taxation levels and eased repatriation requirements in order to attract foreign investment. These steps, in turn, should generate additional taxation, as well as increased economic activity at each level. However, in some countries, obsolete fiscal regulations still prevail, depriving the host country of a fair share of the benefits. At the same time, many other countries have been decentralizing tax and expenditure systems, resulting in more benefits for regional and local governments. More importantly, a proactive company policy of training and employing of locals and of engaging local contractors will yield benefits, in the form of greater local incomes – and taxes – that companies with a more passive approach may not generate.

Large or medium-scale mining operations have economic and social impacts on local communities and affect their environment, health, and culture. The extent and severity

Impacts depend largely on how mining operations are regulated and managed

of the impacts depend largely on the legal-regulatory framework under which the operations take place and on the management of the relationships and processes involved.

Then there is the issue of how the benefits are allocated within the host country. The division of taxes and royalties among different levels of governments – national, state or provincial, or local – will be an important factor in determining the ultimate distribution of the benefits and costs of the mine. Similarly, employment policies will affect the geographic distribution of benefits and costs, to the extent that they treat all nationals on an equal basis or favor locals. The influx of new migrants from other regions of the same country will put great strains on the existing social and economic infrastructure. It is essential that some mechanism exist to ensure an orderly expansion of activities and provision of services.

Environmental and Health Issues: Impacts Vary Widely and Are Complex

Critics sometimes charge that large international mining companies seek pollution havens in which to conduct their operations. There does not seem to be any hard evidence to substantiate this claim. With some exceptions, international mining companies use the same technology in developing countries that they do in their home countries, and they often supersede local environmental standards. Yet management teams at the operational level have, in some cases, been stretched thin. This has caused a number of large incidents in recent years, which mining critics eagerly point out. In this study, the researchers assessed the general environmental performance of the mining operations and their general compliance with national and international processes and standards. The assessment was based primarily on discussions with the various stakeholders.

The health impacts of the opening of a large mine are an important factor from the environmental, social, and cultural perspectives. Potential negative health impacts associated with mining generally receive most of the attention. The most direct of these are occupational health and safety issues. Other important types of health impacts stem from environmental issues, such as flow contamination, or the presence of pollution stocks, accumulated in years of operation or through environmental accidents. Nevertheless, a large mine opening also can have significant positive health impacts if it leads to higher incomes and tax dollars spent locally on health care provision, including better medical facilities.

Social and Cultural Issues: Revival versus Disruption

The greatest concerns with respect to the opening of a new mine are often social and cultural repercussions, particularly when indigenous populations are affected. (Of course, these social and cultural impacts also have strong economic implications.) The influx of migrant workers may lead to social problems stemming from a lack of adequate housing and infrastructure, an easing of access to the area through the development of roads, and deficiencies in over-extended educational and medical facilities. Moreover, workers from other regions of the country or from abroad will often bring different lifestyles and patterns of behavior with them and may create local resentments. Usually, the average “imported” worker will be wealthier than the local population, which may magnify their importance in the eyes of some local residents, especially the young. The growth of bars and prostitution could be an undesirable outcome, particularly when the

workers live at or near the mine site without their families. The uneven distribution of benefits and costs among the locals may upset existing social hierarchies and have dramatic cultural consequences. Notably, the cultural adaptation of indigenous and non-indigenous local communities may be quite different. On the other hand, if managed properly, the increased employment, wealth, commerce, and infrastructure caused by the mine opening can lead to a cultural revival, especially in a depressed area.

As with *economic* benefits and costs, the distribution of *social* benefits and costs is likely to be unequal among different population groups. This is particularly true if indigenous populations are affected. In the past, companies often acted as a surrogate government, providing infrastructure, schools, and medical care. While in recent years this may have continued to be true for the company’s employees, it has been less and less true for the community at large. Therefore, local governments need to be empowered and financed to provide such services. An important part of the analysis in this study was to analyze the implicit distributional effects of the provision of government and company services. The related impact on poverty reduction was also a focus of the study.

Just as Important as What Took Place: Why and How It Took Place

With regard to legal and management issues, two factors are of particular importance. The first is the regulatory framework in effect at the time of project development. The second is the management of the process by the company. This includes the consultative processes followed in the negotiations leading to the opening of the

mine, as well as mediation methods for any conflicts that may develop later.

The outcomes of negotiations will also be greatly influenced by the existing legal and institutional framework. Three factors are particularly important: the rights of local and indigenous communities with respect to natural resources; environmental regulation, monitoring, and enforcement; and the general state of judicial systems and law enforcement. Yet the cornerstone of a process that will lead to the successful integration of the mining operation in the development effort of the region will be the establishment of a trilateral dialogue in which the state fully participates in the definition of programs and relationships with the company and the locals.

SEVEN CASE STUDIES: COSTS AND BENEFITS OF MINING OPERATIONS IN LATIN AMERICA

What are the actual impacts of mines on local communities? The seven large and medium mines that were studied in Latin America present specific evidence about a number of key social and economic variables, including land acquisition, employment, business creation and development, multiplier effects, infrastructure creation, effects on local prices, training and education, and social, cultural, and environmental externalities.

Economic Benefits from Large Mines Are Significant for Andean Countries

The findings of this study are clear: data obtained on investment, production, exports, and fiscal revenues confirmed that

the amounts of investment and production for the large mines are of major significance to the economies of the Andean countries. By contrast, the medium-scale mines are not significant from a macroeconomic perspective.

TABLE 1: INVESTMENT AND REVENUES GENERATED BY LARGE AND MEDIUM MINES

Mines (number and size)	Investment (US\$ million)	Export revenues (US\$ million/year)	Fiscal revenues (US\$ million/year)
5 large	6,200	4,000	400
2 medium	110	40	1

Note: All figures are totals—not averages—for all the mines analyzed.

Source: Authors' calculations.

The legal frameworks for mining in some of the countries reviewed direct a substantial portion of the revenues generated by the mines to the regions. In Bolivia, since 1997, a royalty has gone to the departmental level. This has benefited communities in the area of Inti Raymi, but not those in the area of Puquio Norte, as the departmental capital is relatively far away. In Peru, the “canon minero” – a type of royalty on the income tax paid to the central government – is to be returned to the region. It began at 20 percent in 1996, when the royalty was enacted, and was increased to 50 percent in 2001. Whether and in what form transfers are received by the respective departments, and how they are distributed within the departments, were not analyzed by this study. Transparency of accounts at different institutional levels remains an issue.

Land Acquisition Processes: Transparency Is Key

Land acquisition became a crucial issue in several mines. Although the prices paid were far above pre-mine market values, the negotiations often were very difficult. Two issues proved especially troublesome. The first was a perception of fairness or unfairness in the relative prices paid to different sellers, as price differences became an irritant in the process. The second was whether employment was part of the package, as employment provides a secure income and status in the new social context of the region. Moreover, local people usually had a different conception of a land acquisition contract than the mining firm and would try to reopen the contracts (often successfully) when new information came to light or circumstances changed. Contracts were never reopened on the grounds the company had originally been too generous.

TABLE 2: IMPACT ON LAND ACQUISITION

Mines (number and size)	Price range of land times previous price	Side payments (nature and amount)	Savings and investment (percentage/use)
5 large	3 to 30 times	Preferred employment, cash payments	50 to 100% saved, invested in other land and/or housing
2 medium	n.a.	None	Not relevant

Note: All figures are totals—not averages—for all the mines analyzed.

Source: Authors' calculations.

In order to overcome difficulties associated with pricing, it is important to be transparent in negotiations with landowners – or communities, in the case of common land. If different vendors perceive that others have received a better deal, not only will they try to reopen their contracts, but ill feelings will be generated. Pricing becomes a particularly difficult challenge when land is bought over time. Yanacocha in Peru paid much larger amounts for land bought in the late 1990s than in the early 1990s. The increases largely reflected changing market conditions caused by the renewed dynamism in the area – due to the mining operation itself – as well as the defeat of Sendero Luminoso (“Shining Path”), a terrorist group. This led to a great deal of bitterness on the part of early sellers, who in turn were able to bring social forces like the Catholic Church to bear on their side. In the end, the early contracts were renegotiated and a number of side payments were made, including jobs and social programs. Antamina, perhaps learning from the difficulties that Yanacocha had faced, bought almost all the land that it thought it might need at one time, paying the same amount for land of similar quality.

Side payments, such as preferred employment, are one method to avoid difficulties that arise when former landowners have spent the money they received for their land and have no other source of income. Another method that can be used in the case of the sale of community-owned lands is to keep the funds in some sort of trust. In the case of Inti Raymi in Bolivia, one community (La Joya) included a representative from the mining company as part of a three-member board of trustees to help prevent both wasteful investments and corruption.

Jobs, Jobs, Jobs: Large Mines Can Have Huge Multiplier Effects

While employment in the new operation is the main objective of the locals, indirect employment effects are often extremely important. Employment in subcontracted firms that supply mine goods and services is often equal to or much higher than direct mine employment: 14 times as high, in the case of Yanacocha. Furthermore, estimated non-mine-related employment generated through multiplier effects is often much higher than direct or indirect mine employment: about 2.5 times as high as the others combined, in the case of Inti Raymi.

TABLE 3: IMPACT ON EMPLOYMENT

Mines (number and size)	Dir. empl. (no.)	Indir. empl. (no.)	% filled by locals	Local non- mine empl.	Total mine gen. empl.
5 large	5,100	14,500	~80	18,700	3-25% of reg. empl. Small
3 medium	380	865	>30	900	

Note: All figures are totals—not averages—for all the mines analyzed.

Source: Authors' calculations.

Outsourcing is critical for both the size and the sustainability of the economic impact of mining operations. This point cannot be overemphasized, and it is perhaps the strongest result of these studies. In most cases, outsourcing has increased over time and is the key source of entrepreneurial development. Moreover, the multiplier effects of the operation are much larger if there is substantial local outsourcing. This occurs both because the monetary injection is greater and because employees of contractors usually spend more of their

money in the local economy. While all the larger mines have worked actively to develop local contractors and suppliers, the program by Escondida to assist local companies in quality control is the most noteworthy. This program has been so successful that many of Escondida's local contractors not only supply other firms in the region but are supplying mining companies in other regions of Chile.

With the exception of Puquío Norte, a medium-sized operation in Bolivia, salaries for miners and contractors are much higher than general local levels (in the cases where data exist). As noted in the discussion on employment, the local monetary injection is much greater than the salaries to the mine employees, and this amount is increased through the multiplier effects.

Infrastructure: Roads, Power, Schools and Hospitals

One important benefit of mining operations is infrastructure creation, as it facilitates the development of other economic opportunities (see Appendix B). The building of roads opens new areas and integrates them to the national economy. This is especially

TABLE 4. IMPACT ON SALARIES AND WAGES

Mines (number and size)	Mine salaries relative to local salaries	Mine contractor salaries relative to local salaries	Annual monetary injection	Estim. multipl. effect
5 large	250- 400%	170-200%	\$380 m	1.4-5.7
2 medium	100- 160%	n.a.		1.2-1.8

Note: All figures are totals—not averages—for all the mines analyzed.

Source: Authors' calculations.

true in remote areas where little infrastructure existed previously, such as Antamina in Peru. In the case of mines located close to existing major roads or ports (like most of the Chilean mines) the most important infrastructure expenditures were for the construction or upgrading of local roads, schools, and hospitals. Other infrastructure developments can have a major regional impact. In Puquio Norte in Bolivia, for example, the company and local community combined funds to build a gas pipeline to the mine that was larger than necessary to meet the company's needs. The extra capacity was used to provide electricity to the local rural population.

The presence of the large mines studied here resulted in significant gains in training and education – while not causing any traumatic price increases in the region. The regional benefits of training and education for mine employment were significant in all the large mines. This was not the case with the medium mines. The most interesting example occurred at Escondida, where significant emphasis was placed on training in work habits and attitudes toward work. Fears that the mining operations would result in large price increases were mostly unjustified in Escondida, Candelaria, and Inti Raymi, but there were some problems in Yanacocha, Puquio Norte, and Fachinal, primarily concerning rents and real estate values. Local taxes can be another benefit of significance to the region, if properly channeled. This has been the case with Inti Raymi in Bolivia, in recent years.

Foundations Help Create Social Capital in Mining Communities

Discussions of the social and cultural externalities of large natural resource projects usually focus on the negative impacts. These may include increases in crime and prostitution, cultural conflicts with indigenous peoples or local communities in general, the upsetting of existing social hierarchies, and the creation of envy between those who benefit from the project and those who do not. However, the studies showed that there can be positive externalities which outweigh the negative aspects. This is true especially in the areas of health, training, education, and the creation of social capital – the capacity for local governance, the cohesiveness of the community, and the communication links with and within the community (see Appendix C). However, there appear to be economies of scale in the provision of such services. The medium-scale mines tend to limit the provision of such services to their own work force.

In the absence of well-endowed local governments, foundations set up by the mining companies can play a very important role in structuring, coordinating, and funding the activities that will make such positive externalities possible. Some of the larger mines have set up “arm’s length” foundations to provide these benefits to the local communities. All the foundations place a strong emphasis on training to increase the skills necessary for sustainable community development, as well as health issues for women, particularly mothers. The Inti Raymi Foundation, for example, trains locals in the design and preparation of projects to present for funding, including organizational matters. As noted, Escondida included an entrepreneurial development program.

Most importantly, foundations are involved in creating social capital, which is likely the more important social outcome for communities. They are learning how to organize, how to negotiate with both companies and central governments, and how to take advantage of the opportunities offered by the mining operations to pull themselves up by their own bootstraps.

Foundations have the added advantage that they can seek other sources of funding, independent of the mine operation, and are therefore able to leverage the resources of the mining company. Benefits from foundations can be further leveraged when the private sector in a given region engages or is engaged by both the communities and government in a trilateral dialogue aimed at regional development. A notable example is the Productive Development Corporation of Chile's Second Region. It began as an initiative of the regional government aimed at linking the regional development strategies to large companies and universities in order to foster public-private regional development efforts.

In general, the majority of the direct economic benefits went to those directly affected by the mine, while the remaining people in the area benefited indirectly. In fact, one of the primary purposes of the foundations was to help distribute the benefits of the operation to the surrounding communities that were not directly affected by the mine operations. In this sense, the foundations achieved the redistributive results that could have been expected of taxes paid to the local and regional governments by the mining companies.

Cultural Externalities: Disturbance – but Rarely Cultural Shocks

The mines in this study also had important social and cultural impacts. The largest effects were in the two Peruvian cases, where traditional socio-economic relations among pastoral peoples were disturbed and family groups were occasionally broken. Social relationships may have also been disturbed by the large amounts of money paid for land in the cases of Inti Raymi, Yanacocha, and Antamina. Yet, in none of these cases was the social hierarchy significantly upset, although of course there was often movement among the different social levels. Even though substantial numbers of indigenous peoples were affected, given their familiarity with mining, none of the mine operations was a cultural shock to them. Of more importance was the envy created by the new economic opportunities and land payments. In particular, there was rivalry between those villages directly affected by the mine operation and those in the nearby region of the mine.

The major social problem in most of the areas was prostitution and related diseases, although alcohol abuse was also noted in some cases. However, given the integration of most of the mineworkers with local communities, these problems were not very severe. They were most noted in Cajamarca (near Yanacocha), where residents have complained of the large increase of “sex” bars, and in Fachinal, where the community is very small.

Environmental Externalities: Separating Fact from Fantasy

The first question often asked in the analysis of any potential mining operation is whether the benefits of the mine exceed the environmental costs. Thus, a major objective of the researchers in the Latin American studies was to analyze the environmental costs thoroughly. They did not undertake physical tests; rather, they investigated the damage caused by any environmental impact or accident. The researchers concluded that it was hard to separate fact from fantasy when it came to the environmental performance of the mining companies. While many groups in the local communities complained about pollution, none of the mines under study showed any obvious evidence of substantial environmental damage. In fact, the study found that all mines made significant efforts to minimize environmental damage. When minor incidents occurred, the companies responded quickly.

The claims of environmental damage apparently stemmed from poor communication by the companies and, in some cases, from manipulation by local politicians and communities. The companies that were targets of complaints about their environmental performance had poor communication with the neighboring communities and poorly managed public relations departments. In the earlier years of mine operation, these companies were secretive about their operations and did not bother to explain and demonstrate to the public that they were taking proper care of the environment. This miscommunication was aggravated by the poor historical record of environmental performance of the mining industries in the three countries.

In addition, local politicians and community members in general used the environment as a political tool. They would create distrust toward the company on environmental concerns in order to extract larger concessions from it on other matters.

Where Dialogue Is Not Trilateral: Negotiation and Cooperation Become Difficult

In the relationship between the mining operation and the surrounding communities, there are always at least three major players: the local (and regional) community, the central government, and the mining company. Ideally, this results in a trilateral relationship; representatives of the three main parties maintain an ongoing trilateral dialogue to facilitate the design and implementation of a local and/or regional development plan. However, the more usual case in Latin America is that the company negotiates with the central government and the local community (or government) separately. There is very little communication between the central government and the local community.

These “two-sided triangles” typified all the Latin American mines studied, with the possible exception of the case of Antamina in Peru. In most cases, the major role played by the central government was limited to previously establishing a legal and fiscal regime and environmental regulations, major infrastructure projects, and granting the mine license. In fact, all three countries have modern mining codes, and all mines must follow modern environmental laws, undertake environmental impact assessments, and undergo inspection by representatives of the central government. All three governments have

established an enabling environment favorable to investment in their countries. However, a pernicious effect of the weak communication between government and the local community (the incomplete triangle) was that it resulted in almost all fiscal revenues going to the central level, or in an inadequate dialogue among the three main stakeholders, or both. Under such circumstances, it was difficult to establish the basis of a reliable scheme to design and administer a regional development program with the full participation and ownership of the three key stakeholders.

Given that regulations were already in place, the initial concern of the companies involved land acquisition. As the mining laws of the three countries do not address local economic benefits, social and cultural issues, or the property rights of the surface land, the situation was effectively left to the initiative of the companies. In such a context, the absence of a trilateral dialogue became a serious shortcoming for the establishment of the basis for sustainable development. When mining operations were established, there was no formal relationship between the company and the local – that is, municipal – governments (except for Antamina). In general, companies dealt directly with landowners or community representatives, rather than local governments. In recent years, this arrangement has been changing; it is now more common for local governments to take the community interests.

Despite the lack of a formal relationship, by far the most important side of the “triangle” in the seven mines under study has been the link between the companies and the local communities. In all cases, there have been significant interactions, both negative

and positive, between the companies and different local community groups (municipal authorities, community-based organizations, NGOs, church, universities, and landowners). In most cases, these relationships have become much more profound over the years. This is due, in part, to a natural evolution of the relationships. It is also due to changing global perceptions of the role of mining companies with respect to their host communities, and to a better understanding by the mining companies of the values and aspirations of the local communities. For instance, in the case of land acquisition from indigenous populations, it has taken decades for mining companies to understand that the closure which they interpreted as finalizing a transaction was interpreted by the other side as the initiation of a long-term relationship. Consequently, land prices have to take into account social considerations.

As a result of the factors described above, the mines that were built most recently began with many of the community interactions that took several years to develop in other cases. Antamina, the most recent mine, has begun with an effort to build a profound relationship with the local communities. While part of this change probably stems from learning from experience, certainly a large part also has been a result of the increasing pressure on large mining companies by communities and other stakeholders, including international NGOs and the shareholders of the international mining companies. In the past, communities were often satisfied with the large number of jobs that accompanied a large mine operation. However technological progress has greatly reduced the number of jobs, and for compensation communities want other benefits.

The achievement of sustainable development by the communities is – or should be – the overarching goal of the relationship between mining companies and the communities.

Communities want support from the mine in the economic, social, cultural, and environmental areas during its operations, but they also need to address these issues once the mine closes. Accordingly, there has been a great emphasis on developing the human and social capital and physical infrastructure that will allow the community to continue to prosper *after* mine closure. In this regard, outsourcing and the related development of new skills and businesses are a crucial step in the evolution of the community.

FIVE CASE STUDIES: MINES IN CANADA AND SPAIN

The Canadian Experience: From Paternalism to Partnership

In Canada, the trilateral relationship between communities, companies, and central (or higher level) governments have proved to be key to the effectiveness of the efforts to achieve sustainable development. Thus the main thrust of the analysis of the Canadian cases was on the evolution of this trilateral relationship. The main result observed is that the three parties are learning from experience. The trend is strongly positive; communities are receiving more and more sustainable benefits from mining operations. The scope and size of these benefits vary greatly, however, depending on the location of the mine and the access to markets, both of which can largely shape the economic alternatives realistically available.

The overall Canadian experience presents strong evidence that mining can both promote the socio-economic well-being of communities and be environmentally benign. Mining can also lead to the development of clusters of activities centered on the mining operations. It is even capable of resulting in the creation of a “mining metropolis” with a strong manufacturing sector.

The Canadian cases also shed light on relations with aborigines. Most of the new Canadian mines are located in northern, remote areas with predominantly aboriginal peoples. The cases reveal that socio-economic agreements are crucial when dealing with aboriginal peoples. These should include employment quotas or targets, special training programs, targets for local procurement, support for local business development, support for women’s employment and training, and a supportive work environment for distinctive cultures.

The one factor common to most mining communities (however defined) in Canada is that their relationship with mining companies has evolved from paternalism to partnership, with both sides striving – with the help of governments – for sustainable community development. The active role of government in working with the local communities to facilitate this evolution has solidified the trilateral dialogue. This has been particularly important in the context of aboriginal communities, as there is usually an asymmetry in the information held by mining companies and these communities. Given the poverty of many of these communities, it will be necessary to provide public funding for NGOs or consultant services to work with aboriginal peoples confronting a new mining project.

The pattern of community development in Canada is similar to the Latin America cases, albeit more evolved. In the first years of the mining operations, local community members tend to fill the lower skilled jobs and provide unsophisticated services to the mine, especially if it is in a remote location. However, as the community matures, it is common for local residents to provide such services as vehicle repair, machine shop services, welding, sheet metal work, plumbing, and electrical work. In areas with multiple mining projects, the next step for local business is complex construction projects. Finally, in major mining areas, production of complex mine equipment that is also sold to other regions or countries has been undertaken. The Sudbury basin in Ontario is probably the best example of such a “mining metropolis.” With a population of about 250,000 persons, it features 5,000 jobs in manufacturing, as well as a number of important government services.

The development of a well-established tripartite process among communities, companies, and governments has been instrumental in laying the foundation of sustainable development in many mining communities in Canada. As noted above, many of the new mines in Canada are located in areas predominantly inhabited by aboriginal peoples. While these operations provide opportunities, they have also ushered in social problems, including the impact of the mine on traditional activities. Until the 1990s, aboriginal peoples participated very little in negotiations over mine development on or near their lands. By now, companies must negotiate impact and benefits agreements with their communities. They can and do demand,

among other things, training programs for mine work and some assurances of buying local inputs. The Diavik diamond mine in the Northwest Territories provides for substantial purchases from northern businesses and includes a policy of eventual 100 percent northern employment.

The increase in fly-in, fly-out operations coupled with employment guarantees in the impact and benefits agreements is now helping aboriginal communities. Where no semi-permanent or temporary communities are created at or around mine sites, they do not attract southern Canadians, and the transitory nature of the mining operation actually serves to strengthen aboriginal communities. Where access to mine-employment is provided through fly-in, fly-out arrangements, young males can continue to live in their original communities rather than flock to new mine sites. Moreover, traditional activities can be pursued in down periods.

In Canada, as in most mining countries, there has been a strong trend toward stricter environmental regulations and better environmental performance. In particular, there is a heavy emphasis on mine closure and rehabilitation. Companies usually have to set up environmental funds, especially when tailings must be stored in perpetuity. Comprehensive environmental reviews must be undertaken, and they must include detailed analyses social and cultural factors. In general, these reviews are functioning well. There is also a trend toward cooperative monitoring of environmental management programs, especially in aboriginal areas.

One of the Best Models: Uranium Mining in Northern Saskatchewan in Canada

The uranium mining experience in northern Saskatchewan may well approach the most sophisticated model of tripartite relationships to be found anywhere in the world. Over about a 20-year period, the situation in northern Saskatchewan evolved from one characterized by very little input from the local community, minimal direct impacts, and large negative externalities, to one with large and positive direct impacts and externalities. Over this relatively short period of time, good policies and practices have moved an industry from a situation in which it primarily generated revenues for faraway governments to one in which it is the leading force for dynamic community development. This type of development is clearly more sustainable in a regional context where new mines are replacing old mines, and the effects can take place over several generations.

After a difficult start, concerns related to the effects of uranium mining resulted in the appointment of a commission, the Bayda Commission. The recommendations it made in 1978 – together with the privatization of the industry – have provided the foundation for later developments. Northern Saskatchewan is a remote area home mostly to aboriginal peoples, who make up 87 percent of the population. Only 40,000 of Saskatchewan's 1 million inhabitants live in this area. Earlier attempts to exploit uranium here were made through a state-owned enterprise that employed mostly people from outside the region. A mining town was built, which attracted migrants from all over the region and resulted in social problems of crime,

alcoholism, and prostitution. The unsatisfactory results gave rise to opposition to uranium mining from both southerners, for environmental reasons, and aboriginals, because of a lack of economic benefits and the perceived large social, cultural, and environmental costs.

To address these problems, the Bayda Commission made several recommendations. Among these: consultations should move from a bipartite to a tripartite form, incorporating local governments as well as the provincial and federal government. Socio-economic and cultural impacts should be incorporated into the decision-making process, rather than focusing solely on the environment. The northern areas should share in the fiscal revenues generated by uranium mining. More importantly, the Commission laid the foundation for uranium development in northern Saskatchewan that evolved and developed through the 1980s to include:

- 4 best efforts (rather than targets) to deliver social and economic benefits;
- 4 cooperative tripartite negotiations;
- 4 increased monitoring of environmental and occupational health and safety performances;
- 4 community-based consultation procedures; and
- 4 recognition of social spending as a legitimate royalty deduction for companies.

The movement from state-owned to privately owned corporations has also been very important with respect to the levels of investment, ability to quickly adapt to new situations, and a stronger commitment to community development by firms whose survival and prosperity depend on strong, healthy community relations. By the end of the 1980s, the state was no longer

involved directly in uranium mining. The provincial and federal state-owned companies merged to form Cameco Corporation, which in turn was quickly privatized. Cameco and other privately owned uranium mining companies moved rapidly in the 1990s to take advantage of the lessons learned during the years of state-run mining operations. They have worked with the communities and various levels of government to dramatically increase the levels of benefits to residents of northern Saskatchewan. At the same time, they have been fulfilling more and more stringent environmental regulations.

***The Almadén Mine in Spain:
A Treasure Chest but without
Sustained Development***

The Almadén mercury mine has been in operation for over 2000 years. Yet it is a typical example of a mining operation that has resulted in non-sustained development. During most of its history, the mine has operated as a state-run enterprise and was used as a treasure chest of the Spanish Crown. Twice it was used to guarantee enormous sovereign loans. Little if any of the rents went back to the local communities and little attention was paid to developing the area or to diversifying the local economy. The community never participated in the decisions that most affected it. Its members seldom had any alternatives to the mine and have seen the state as obliged to give them employment.

The very high quality of the deposit took away the need of the parastatal management to innovate and increase the productivity of the operation. The Almadén deposit is the largest, richest mercury deposit known to exist. It contained over 30 percent of the

world's known reserves of mercury and its grade has been six times the global average of mercury mines. Since management's main concern has always been to maximize production, the productivity and profitability of the operation were never made priorities.

MOVING AHEAD: LESSONS LEARNED IN DEVELOPED AND DEVELOPING COUNTRIES

The underlying studies of this report demonstrate that there often are substantial social and economic benefits to local communities from mining operations, but that these do not come automatically. Mining is an activity that will come to stay in a region "through thick and thin," and it is a powerful vehicle for transferring technologies and skills to developing countries and remote regions. Yet some regions with no history of mining and hence no work force and industry ready to take advantage of new opportunities have needed proactive interventions to jump-start the development process.

Lesson 1: Benefits have to be sustainable, and outsourcing is key.

The key issue is the sustainability of benefits (see Box 1). The most successful cases were those where the local communities (often gradually) provided many of the goods and services needed by the mining companies. In some cases, the mining companies played an active role in enhancing the quality of the goods and services their suppliers provided. Proactive policies and training with respect to mine employment, non-mine employment, and the provision of goods and services were of major importance. The skills developed in all

these cases often were transferable to other industries. Companies and communities that took a long-term view – including postclosure – were also more likely to have a clearer vision of what types of training and programs were more likely to provide sustainable benefits.

Sustainability is partially dependent on the provision of infrastructure that could be used for other activities. The case of Sudbury (Ontario) shows how in the right conditions infrastructure provision can result in a vibrant industrial community. It seems likely that infrastructure creation will be one of the largest benefits of the Antamina mining operation in Peru.

Lesson 2: Companies need a “social license” to operate, and a trilateral dialogue with open communication is key to achieving this.

The studies confirm that sustainability is closely related to local participation of the neighboring communities in the decisions affecting them. The Canadian cases point to the importance of active participation by government in such a process, and of all three main stakeholders – the community, the company, and the government – engaging in a trilateral dialogue. Such a dialogue would not only ensure direct communication among the stakeholders but also provide the opportunity for other interested parties to participate.

Almadén’s failure to bring about sustainable development is largely due to the lack of private sector and community participation in the context of the operation of the parastatal company. Adequate design and implementation of a program to diversify an area’s economy demand participation and

**BOX 1:
THE KEY ELEMENTS OF SUSTAINABILITY**

- 4 Non-renewable resource development should not threaten the environment and the renewable resources upon which future generations depend.
- 4 Mineral wealth should be maintained from one generation to the next.
- 4 Sustainable mining balances economic growth and protection of the environment through sensible trade-offs that consider all costs and benefits in the decision-making process.
- 4 It is critical to recognize that mining will affect the social structure and culture of local people and to consider these impacts as part of the decision-making process.
- 4 It also must be recognized that the building of local capacities does not happen overnight. Thus, the process should begin as early as possible.
- 4 Reducing, reusing, and recycling resources should be encouraged, while avoiding the waste of the resource base by inefficient mining techniques.
- 4 Policy and taxation decisions should consider the economic health of the mining industry.

Source: Conservation Strategy Committee to the Saskatchewan Round Table on Environment and Economy, Regina, 1986.

ownership by all three major stakeholders. A key result of the studies is that a *legal* license is no longer good enough. Companies must obtain a *social* license. This depends on consultation, participation, and, increasingly, a strong trilateral dialogue.

A company that is about to enter a new country or a new region must ensure that it knows the country and communities, as well as the social dynamics, and politics of the host region. In this regard, baseline studies should be undertaken to gain a good understanding of the local

situation. These should be followed by close supervision of the evolution of key social indicators to monitor the progress of the community. The relationship that the company is about to establish should be guided by a long-term vision, even if – as in the case of the junior companies – the firm does not intend to stay. A commitment by the company to the development of the region is important; the earlier the company is perceived and understood as a member of local society, the better. The company must be clear that the responsibility it is about to assume in the local communities is part of its corporate ethics and that its assistance will strengthen local governance and capability to formulate projects.

The importance of good communication between the company and the communities cannot be overemphasized. Companies should begin early, be open, and give lots of information. It is essential to have a clear mission statement and clear human resource and environmental policies. There should be a group in the company dedicated to these tasks.

Lesson 3: A successful community development processes will build social capital – but it needs management and funding.

The implementation of a successful development strategy for the communities demands an adequate institutional design for its management and funding, and the organized participation of the community. An important consideration for a company that is about to undertake an initiative related to local economic development concerns the instruments to be used for the channeling of funds and implementation of the project. Some companies have chosen to set up a

“foundation” as an independent institution and assign it such responsibility. However, such foundations are in fact controlled by the mining company, and the degree of local participation is independent of the presence of a foundation or of a company. A more recent alternative is the establishment of an informal “Governance Board” that represents the main stakeholders and that acts on the basis of consensus of the main stakeholders.

The funds assigned by a company to finance a community development program should constitute only the seed capital of a broader financial strategy funded through other means. The company’s contribution should be a minority share, made under a reimbursable credit-scheme, to be repaid once the productive projects are in operation, and positioned such that at least part of the amount invested can be recovered. Funds should not be lent at below-market rates; the scheme should simply make available to the community financial instruments that the market does not offer.

Local communities are generally at a profound disadvantage when negotiating with large mining companies. It often takes considerable effort and several years before they can be considered to be true partners. In the interim, higher level governments should fund NGOs or other institutions to provide advice and training to the local community members. Over the longer term, foundations or similar institutions – funded both by companies and governments – have become a very common way of providing social services and, more importantly, of building up human and social capital in communities. In many respects, these have become partial substitutes for governments. It also seems likely that there are

economies of scale in the delivery of such services. The medium-scale mines in the sample provided relatively much smaller amounts. A regional approach, by which various mining operations would pool their resources for such activities and government would add its own transfers to those resources, may be necessary in such cases.

A strong lesson from the Andean studies is the need for a concerted local economic development plan to be available as early as possible.¹ Institutional and organizational weaknesses of the local populations constitute one of the key bottlenecks to local economic development, and capacity building takes time; thus the need for an early start. A concerted process involving the participation of the local population (and not just the local leaders) should bring about a reasonable action plan where the company can express its priorities – a very different process and outcome from unilaterally deciding what is good for the community. The company should start working on such a plan at the earliest possible stage. Preferably during the exploration stage, an information and consultation strategy should be implemented quickly.

Central Governments Need to Become More Involved

It is clear from the studies that central government needs to become more involved in community development work in the Andean countries. Its role in the

¹The Andean countries have preferred not to include community development provisions in their national mining legislation, as it bureaucratizes a process that they believe needs to be left flexible, given the unique considerations of each mining operation and the local communities in the area. By contrast, some countries, such as the Philippines and (potentially) Indonesia, are opting to move in this direction. Companies are generally against such provisions, as it presents them with legal obligations, even when the mine is not profitable.

trilateral dialogue with the local communities and the mining companies is essential. Only the participation of central government will ensure the adequate coordination of local plans with the national programs, thus multiplying their beneficial impact (see Box 2).

The Emphasis Is Shifting: From Limiting the Negative Effects to Increasing the Positives

While the samples revealed few negative social and cultural effects, two issues caused significant social problems in the Latin American case studies: land acquisition, and the cultural clash between (usually domestic) immigrants and residents of the area. Land purchases that are lacking in transparency and fairness are likely to cause long-term damage to company-community relations. Antamina learned from the Yanacocha experience and agreed to a transparent process of land acquisition, where uniform prices were agreed for land of the same quality. Also, given the attachment of aboriginal communities to their ancestral land, the cases make clear that companies must realize that completing the acquisition of the land is not the end of the relationship. It only means that the agenda of the former owners changes: from land to jobs, markets for local products, or similar concerns.

Clashes between immigrant workers and residents of the area are a consequence of the mine's need for qualified workers who cannot be recruited among the locals. While the ability of mining companies to generate jobs (especially those that could be filled by locals) is limited, the mining company can implement a recruitment policy that gives priority to local hires and

assist the potential local candidates with training programs. Companies can generate additional employment by agreeing to obtain goods and services from local providers.

As the focus of the study was on modern mining operations, most of the mines were using up-to-date environmental practices. Yet there were a few negative environmental effects. In the older mines that were included (Sudbury in Canada and Almadén in Spain) there was an environmental legacy from the past, although much had been done to improve the situation. Nevertheless, the communities and other stakeholders often used the environment as a political tool in order to extract concessions from the mining companies. At times, the mining companies partially brought the problems down upon themselves due to poor communication and public relations

BOX 2. **THE ROLE OF CENTRAL GOVERNMENTS**

To help generate positive impacts for local communities from large mines and distribute those benefits better, central governments should:

- 4 Redistribute some of the tax revenue from mining to local governments – and ensure compliance with redistributions mandated by law. Often, this will need to be accompanied by capacity building at local levels.
- 4 Promote social responsibility among the mining companies toward the communities. Initially, this could be accomplished by playing the role of go-between that shows both the company and the community the fundamental nature and legitimate aspirations of each side.
- 4 Play a proactive role in community development programs, either directly or indirectly through the use of NGOs, community-based organizations, or religious organizations.

strategies. In the case of Canada, it has taken many years of experience and learning to eliminate or mitigate negative effects on aboriginal peoples.

In sum, there were not many negatives in the accounting ledger, but in some cases there were also not many positives. Accordingly, the communities were not always very accepting of the mining operations. This was particularly true of the smaller medium-scale mines. Yet it is important to point out that, while the past agenda has been on reducing the minuses, the new agenda is on increasing the positives.

No One Size Fits All, and Communities Have the Last Word

Although there are some rules that apply to all mining operations – such as the importance of tripartite negotiations and transparency – each mine has its own historical, social, cultural, and geographical characteristics that preclude the use of a one-size-fits-all prescription. For example, not every mining city has the potential to become a mining metropolis; it is important to be in an area with many operations and not too far off the beaten track. Training programs and other community initiatives are also more likely to have long-term success if a regional approach is taken. This, in turn, is feasible only when a succession of mines is being developed. Similarly, while the infrastructure that a large mining operation brings to a region can be its most important contribution to the local community, in remote regions with little possibility of significant industrial development because of climatic or geographic conditions, fly-in, fly-out mining may be the preferred choice.



FURTHER READING

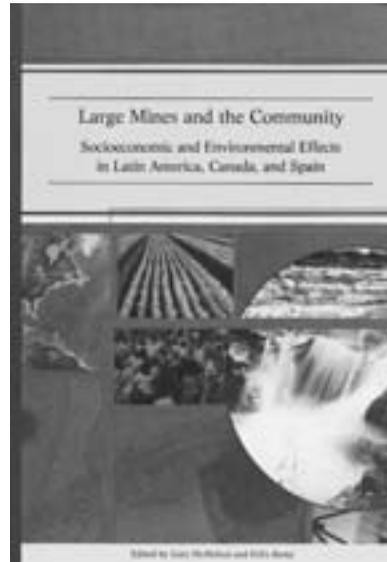
Large Mines and the Community – Socioeconomic and Environmental Effects in Latin America, Canada and Spain.

Edited by Gary McMahon and Felix Remy.

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Available online through:

http://www.idrc.ca/books/focus/949_mining/949/f949c011keyobs.htm?



APPENDIX A

MINES EXAMINED IN THE SAMPLE

Mine	Country	Size of mine	Mineral	
Developing countries/ Latin America	Antamina	Peru	Large	Copper
	Candelaria	Chile	Large	Copper
	Escondida	Chile	Large	Copper
	Fachinal	Chile	Medium	Gold
	Inti Raymi	Bolivia	Large	Gold
	Puquio Norte	Bolivia	Medium	Gold
	Yanacocha	Peru	Large	Gold
Developed countries	Almadén	Spain	Large	Mercury
	Diavik, Northwest Territories	Canada	Large	Diamonds
	Northern Saskatchewan	Canada	Large	Uranium
	Sudbury, Ontario	Canada	Large	Nickel
	Sussex, New Brunswick	Canada	Medium	Potash

APPENDIX B

IMPACT OF MINES IN THE SAMPLE ON INFRASTRUCTURE AND LOCAL TAXES

Mines	Roads and ports	Power	Hospitals, schools, and other	Local taxes
LARGE-SCALE MINES				
Inti Raymi	Minor roads	Generating station for mine; not suitable for rural areas	High-quality local schools in rural and urban areas; high-quality rural health center	10% of department budget (1998)
Yanacocha	Built and upgraded local roads; assisted in maintenance of road to coast	None	High-quality school; rural water and sanitation projects	\$7 million/year (1993-97) ^a
Antamina (planning stage)	Major upgrading of road to coast and Lima (in progress); secondary roads upgraded	None	Technical and secondary schools (built by community with land payments)	\$16.6 million/year once in production
Escondida	Port of Coloso (only for company use); road to mine; local roads in port area	High-voltage power line	International school; water tanks	\$2.2 million (1997)
Candelaria	Port at Punta Padrones (only for company use); 22 km of road	-	Sports complex; creation of primary and secondary school	-
Diavik (projection)	-	-	-	\$1.2 million/year
Northern Saskatchewan	Significant road expansion, including a connected network	High-voltage power lines with local access	Recreational facilities; health care facilities; water and sewage	1995 \$42.4 million (1985-96)
Almadén	Worse than national standards	At national standards	High school; university; hospitals; sports complex; all much higher than national standards	Negligible
MEDIUM-SCALE MINES				
Puquío Norte	Insignificant	Electricity for rural areas	None	Negligible (paid to Santa Cruz department)
Fachinal	Road improvements (25 km)	-	-	-
Sussex	-	-	-	\$6 million/year to provincial government ^b

a This is the approximate regional contribution to regional taxes based on the legal percentage of taxes that are supposed to go to the regions. It is not certain that they are actually redistributed.

b This amount includes only royalty payments. An unknown amount of corporate income tax would also be paid.

APPENDIX C

IMPACT OF MINES IN THE SAMPLE ON SOCIAL PROGRAMS

Mines	Foundation	Health	Education	Training	Other
LARGE-SCALE MINES					
Inti Raymi	Yes	Several	Several	Mine, agriculture, business and community management; weaving; small business development	Social capital development
Yanacocha	Yes	Several	Large number of programs	Agriculture	Forestation; food security program; social capital development
Antamina (planning stage)	No	-	-	Agriculture; small business development	-
Escondida	Yes	Cancer research; upgrade children's hospital; out-patient hospice	School upgrading; scholarships; international school	Technical mine training; microenterprise development; labor market insertion; apprenticeship program; quality training for local suppliers	-
Candelaria	No	Various small projects	Funding for primary and secondary school; funding for technical school; scholarships	Technical mine training; training in modern industrial practices; training for local suppliers	Funds "Environmental Brigades" in local schools
Diavik	No	-	-	Support for business development	Socioeconomic monitoring agreement
Northern Saskatchewan	No	Several community health drug and alcohol treatment healing lodges	Scholarships; awards; training program; northern college	Multi-party training program (\$7 million from 1993-98, 50% of funding from industry); skills training; work placements	Regional development programs by government and industry; community involved in environmental monitoring committees and community economic development committees
Almadén	No	Specific care for mercury-related diseases	Elementary school with national standards	Artisanal jobs	-
MEDIUM-SCALE MINES					
Puquío Norte	No	None	Improvement of local school	None	-
Fachinal	No	-	-	Technical mine training for locals	-
Sussex	No	-	-	-	-

THE WORLD BANK GROUP'S MINING DEPARTMENT

SERVICES TO GOVERNMENTS

Sovereign lending and advice for the design and implementation of policy and regulatory frameworks and interventions that help:

- 4 Support private sector development and attract national and foreign investment for environmentally and socially sustainable mining.
- 4 Equip government agencies to manage fiscal revenues from mining.
- 4 Create economically, environmentally, and socially sustainable mine closure programs.
- 4 Encourage local and regional economic development in the context of mining.
- 4 Equip government agencies to restructure and privatize mining operations.
- 4 Equip administrations to better administer/monitor and enforce environmental and social laws and regulations.
- 4 Encourage coal extraction strategies that minimize global warming effects.

SERVICES TO THE PRIVATE SECTOR

Support and financing for environmentally and socially sustainable private sector investment in developing countries' mining sectors through:

- 4 Equity investment in and loans to mining companies, including loans syndicated from commercial banks under IFC's syndications loan umbrella.
- 4 Various risk insurance instruments (IBRD, MIGA).
- 4 Advice and investment in support of privatization.
- 4 Partnerships to disseminate and apply best practices (Business Partners for Development: www.bpdweb.org)

IFC has 29 mining projects in its portfolio for a total of \$669 million (FY2001).

SERVICES TO CIVIL SOCIETY

Support the dialogue with mining companies and government by:

- 4 Facilitating access to information on projects, policies, and best practices.
- 4 Arranging conferences and other formal and informal meetings.
- 4 Supporting partnerships with mining firms and civil society organizations that integrate civil society in mining activities.

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