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## Executive Summary

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## EXECUTIVE SUMMARY

### I. PRESENTATION

The “Mining and minerals of South America in transition towards Sustainable Development” project - regional counterpart of the MMSD Global Project - (see Chart), was co-ordinated in South America by the Centro de Investigación y Planificación del Medio Ambiente (CIPMA / Environmental Research and Planning Centre),<sup>1</sup> from Santiago, Chile, and the Mining Policy Research Initiative (MPRI) of the Canadian International Development Research Centre (IDRC), in Montevideo, Uruguay.<sup>2</sup>

#### 1. Project methodology

The MMSD project reports in South America are the result of a number of research and participatory processes developed with multiple stakeholders. The project was carried out in five countries: Bolivia, Brazil, Chile, Ecuador and Peru. A regional workgroup was formed with twenty local researchers from institutions with experience in mining and sustainable development.<sup>3</sup> An Advisory Group of prominent individuals from different sectors played an important orientation role in the discussion. More than 700 participants attended 50 workshops organised in these countries, as well as interviews, informative meetings, surveys and three regional meetings. The research component presented the current state of mining regarding sustainable development, and was

1. CIPMA is a non-for-profit corporation, created since 1979, with headquarters in Santiago, Chile, dedicated to carry out and promote environment policy research. (<http://www.cipma.cl>)
2. MPRI is a Corporate Project created in 1998 by the Canadian International Development Research Centre (IDRC). It supports participatory and applied research on mining and sustainable development in Latin America and the Caribbean. (<http://www.idrc.ca/mpri>)
3. Servicios Ambientales (Environment Services) and Medmin in Bolivia, CETEM in Brazil, CIPMA in Chile, Fundación Ambiente y Sociedad (Environment and Society Foundation) and Fundación Futuro Latinoamericano (Latinamerican Future Foundation) in Ecuador, and GRADE in Peru.

#### The Global MMSD Project

*The main objective of the Global MMSD Project was to identify how the mining and minerals sector can contribute to the global transition to sustainable development.*

*MMSD was launched by the World Business Council for Sustainable Development - WBCSD, with the support of the Global Mining Initiative - GMI, originally constituted by nine large mining international companies. Initiated in April 2000, the project was designed to inform the position of the mining industry for the World Summit on Sustainable Development (Rio+10), organised by the UN in Johannesburg, South Africa, in August-September 2002.*<sup>1</sup>

*To ensure the independence of the project, a Global Assurance Group was formed, with members from different communities of interest and nationalities, recognised for their knowledge on mining development issues.*

*The International Institute for Environment and Development (IIED), with headquarters in London,<sup>2</sup> had the responsibility of co-ordinating the global project.*

*The financial resources of this project were provided by a Sponsoring Group that gathered mining companies<sup>3</sup> but also governmental agencies, international organizations, foundations, and some NGO's.*

*The Work Group operated through a world network of regional partners in Australia, South America, North America and Southern Africa. ▲*

1. The Global Mining Initiative was initially formed by the following companies: Anglo-American, BHP Billiton, Codelco, Newmont, Noranda, Phelps Dodge, Placer Dome, Rio Tinto and Western Mining Corporation.
2. Detailed information about MMSD and IIED are posted online at: <http://www.iied.org/mmsd>
3. At the moment of writing this report, 31 mining companies were sponsoring the MMSD project.

co-ordinated by CIPMA in Chile. The participatory process, under the co-ordination of MPRI, sought to identify the key issues and viewpoints of different stakeholders involved in regional mining issues. The results suggest a review of public and private activities in the sector.

A regional report and five national reports convey the regional mining situation, the perspectives of the stakeholders involved, and their viewpoints on priority issues for sustainable development<sup>4</sup>. Minutes of the workshops, held in five countries, constitute independent documents that are published on Internet ([www.mmsd-la.org](http://www.mmsd-la.org)). Suggested agendas for research and capacity building, entirely based on stakeholder input, were also produced. A Web site and periodic bulletins were used for dissemination purposes.

## 2. Conceptual approach

The MMSD Global Project work group identified eight key dilemmas that the global mining sector faces. MMSD conceives these challenges, not as obstacles for the transition towards sustainable development, but as opportunities for change:

### Eight key dilemmas

- Is the sector able to guarantee a long-term sustainability?
- Up to what point is the sector able to promote the development of national economies?
- How can the sector achieve a greater contribution to economical and social development in local communities?
- How can the sector improve its environmental performance?
- What are the basic regulations for the management, access, control and use of natural resources?
- How can we ensure that future markets and consumption models will be compatible with a sustainable world?
- How can we keep up with the information revolution and guarantee, at the same time, information access for all interest groups?
- What should be the managerial relations, functions, responsibilities and standards of performance of the key actors in contributing to a more sustainable future?

Building on these challenges, the efforts made in South America were based on regional priorities and phrased from the perspective of mineral producing countries. MMSD in South America was not based on a prior definition of Sustainable Development; on the contrary, through a broad consultation process it identified the

4. Posted on the project's Web site  
<<http://www.mmsd-la.org>>

most relevant challenges for sustainable development in South American mining countries and localities. Bibliographical research suggested an initial list of key issues, that was discussed and fine tuned by the regional work group, with the contribution of several representatives of civil society. (See Chart, pages 12-13).

The project was carried out under the following premises:

Sustainable development is not a final state, but a *process*. Its priorities and conflict resolution mechanisms vary with local and national contexts.

Sustainable development has at least four basic dimensions: social, economic, environmental, and institutional (governance).

Economic growth is fundamental, though not a sufficient condition for sustainable development. Consequently, policy and research must be developed through an integrated approach.

The project aimed at a long-term vision of national and local scope, that could inform decision-makers in government, industry and civil society of the changes required for mining to contribute to the sustainable development of mineral producing countries.

Since minerals are non-renewable resources, this project places special emphasis on the continuity of the local and regional development processes that mineral extraction can generate.

The capacity of building human and social capital that may endure, even after the eventual subsiding of mineral resources, is central to sustainable and equitable development.

## II. RESEARCH FINDINGS

Mining in South America, from its pre-Columbian origins to the present day, has a long history. It has been developed in multiple ecosystems and diverse social, cultural, economical and technological contexts. A tour of this mining history gives us clues to understanding the current situation in the countries selected for this project.

In Bolivia, where this activity had great political and economical impact, mining today is in a fragile state, but looking to be revitalised. Brazil, Chile and Peru have strong and emergent mining. While Brazil has an important diversified production, Peru and Chile have concentrated on two or three main minerals. Although yet incipient, Ecuador intends to develop its mineral resources on a larger scale, in order to use mining as a means for development.

### 1. Economic context

Excluding quarries and petroleum, the only countries in which the mining GNP exceeded 5% of the na-

tional GNP, were Peru and Chile (in 1999). Bolivia and Colombia are second in importance, with 3 to 4%, and the remaining countries had a mining GNP lower than 2% of the national GNP. In Brazil, mineral production represented 0,8% of the national GNP (\$6 billion) in 1998. In Ecuador, mining contributed 76 million dollars in 1999, barely 0,55% of the national GNP.

As a portion of the labour force, mining employment between 1997 and 1999 varied from 0,06% in Argentina to 1,3% in Bolivia. However, these estimates seem to be conservative, considering that the true impact of mining may be larger. Nevertheless, modern technologies and production procedures, adopted by large mining investments, reduce the need for local labour force.

From 1990 to 1997, Latin America experienced a mining boom, increasing world production from 26 to 48% in copper, from 35 to 42% in silver, from 24 to 32% in bauxite, from 17 to 21% in zinc, from 13 to 16% in nickel and from 9 to 12% in gold. In other materials, such as aluminium, petroleum, iron, cement, steel, and coal the region maintained its previous share in world production.

The most important minerals produced in the region in 1997, were: aluminium, bauxite, copper, gold, iron, lead, nickel, silver, tin and zinc. Assuming that half of the copper, nickel, lead, zinc, and tin concentrates was smelted and refined outside the region, the value of this production was not much more than US\$ 31 billion. This represented 21% of the value of world mineral production in 1997.

**Chart 1 • Confirmed mineral reserves (best measurements). Information in parenthesis shows the percentages of these reserves world-wide, 2000.**

|         | Bauxita<br>(*) | Mine<br>copper<br>(*) | Iron<br>mine-<br>rals<br>(*) | Mine<br>nickel<br>(*) | Silver<br>(**) | Mine<br>tin<br>(*) |
|---------|----------------|-----------------------|------------------------------|-----------------------|----------------|--------------------|
| Bolivia |                |                       |                              |                       |                | 0,9<br>(7,6)       |
| Brazil  | 4900<br>(14,2) |                       | 7000<br>(4,4)                | 6<br>(4,0)            |                | 2,5<br>(21,2)      |
| Chile   |                | 160<br>(24,4)         |                              |                       |                |                    |
| Cuba    |                |                       |                              | 23<br>(15,5)          |                |                    |
| Jamaica | 2500<br>(7,2)  |                       |                              |                       |                |                    |
| Mexico  |                |                       |                              |                       | 40<br>(9,5)    |                    |
| Peru    |                | 30<br>(4,6)           |                              |                       | 30<br>(4,6)    |                    |

(\*) Millions of tons

(\*\*) Thousand of tons

Source: USGS, 2001.

In 1999, Chile, Peru and Bolivia were considered to be the most mineral dependent countries (25% of exports or more), excluding coal and other fossil fuels. In Bolivia, mineral exports dropped to 26.3% of the total exported by the country in 1998, compared to 34% reached in the three previous years. Brazil was located in a second group, reaching 5 to 10% of the total, followed by Argentina, Mexico and Venezuela, with 1 to 5% of the total.

In Ecuador, although the percentage is small, mining exports have increased in the past years. In Colombia, gold exports have increased as well as coal production, which is the third most important foreign currency revenue.

During the decade of the 90's, the region attracted a significant amount of investment for mineral exploration. Whereas in the 80's, exploration investments were smaller than 100 million dollars, less than 10% of world investment, in 1992 it reached 241 million US\$, 16,1% of total world investment. In 1993 it had reached 330 million US\$ and in 1997 it was up to 1.170 million US\$, representing 29% of world investment.

In Argentina, Brazil, Chile, Mexico and Peru, the total mining investment, including exploration, reached 17.379 million US\$ from 1990 to 1997. Of this amount, 51% corresponded to Chile, 24% to Brazil, 12% to Peru, 10% to Argentina, and 3% to Mexico. Projected mining investments for this decade in Latin America are substantial, and governments are developing measures to ensure a return of dividends. If mining investments succeed, mining in the region should grow rapidly compared to the rest of world, as in the 1990's.

Summarising, Latin American countries are distinctly raw material producers. With significant mining investment in the 90's, the region contributed more when 20% of the world's metal production, and in some cases 80%, while the consumption of these materials barely reached 8%. These circumstances suggest that mining is essential and strategic for the development of Latin American countries.

## 2. Institutional context

In the 90's, most of Latin America had modified its mining legislation. In the 70's, Chile, a pioneer of mining legislation in the region, implemented the Foreign Investment decree (DL 600), as well as specific regulation for the mining sector in the 80's that gave important guarantees to investors. There is also important mining legislation in Uruguay and Costa Rica dating back to the 80's, and more recently Venezuela (1999), Honduras and Colombia, both in the year 2001.

All regional mining legislation establishes that the Governments have inalienable and absolute control

over mines and quarries, and considers mining development as an industry of public and social interest. No legislation excludes the State from eventual exploitation of resources, and emphasis prevails on non-discrimination towards private foreign investment. Nevertheless, there are exceptions. Colombia considers as reserved mining regions, those areas where indigenous peoples have preferential rights, while Bolivia prohibits foreigners to mine near its boarders.

The mining policies implemented by the countries analysed have been adapted to the macro-economic changes in the region. During the 70's, nationalization of production was taking place, consequently, public institutions were strengthened and so was their ability to intervene in the mining industry. In the 80's privatisation reduced State capacities and attributions; and in the 90's, the State adapted a more regulatory role over the mining industry.

One of the investigations carried out by the Colorado School of Mines in 1997, established that for model copper mines, Chile and Argentina were the countries with the lowest tax rates in the world, followed by other Latin-American countries such as Bolivia, Brazil, Mexico, and Peru. A recent report on tax policy placed Chile as one of the six most attractive regions for investment, preceded by Nevada, Alberta, Ontario, Utah and Alaska.

### 3. Environmental context

Environmental legislation and regulation during the 80's in Brazil, and in the rest of the countries during the 90's, created new institutions responsible for a series of measures that would diagnose, prevent, rehabilitate, monitor, and control the main environment impacts of mining in the region.

These include universal measures such as: environmental impact assessments; programs for impact minimisation, mitigation, elimination, monitoring, contingency and auditing; environmental quality and emission regulations; decontamination plans and restoration of damaged areas; land planning, protection of wildlife areas and national parks, environmental management and auditing systems.

Environmental command and control regulations are commonly used in the region. It is unusual to see self-regulatory systems being used, and economic based environmental incentives are not applied. Only in special cases are risk assessment procedures carried out, and neither are they prominent in the legislation of the countries analysed. There is also no life-cycle analysis, an approach commonly used by companies in developed countries to compare procedures, materials and products.

In institutional terms, in some countries the environmental authority is concentrated in one institu-

tion with controlling powers. In other countries the environmental authority controls certain instruments, but the enforcement powers are under other State agencies. Usually Mining Departments have specific environmental responsibilities, but emissions and quality standards are executed by other agencies not related to mining.

In general, environmental impact assessments – key tools in damage prevention– are carried by specialised consultants hired by mining companies, and reviewed and sanctioned by State agencies.

All five-focus countries have shown different advances in terms of mine closure and rehabilitation. During the 80's and 90's, began a process to identify and register environmental legacies of mining. It established plans and criteria for mitigation of impacts and the rehabilitation of degraded areas.

Several multi-national mining corporations that originated investments in region during the 1970's incorporated advanced technology and procedures for use in environmental management and mine closure. State and national companies are slowly adopting some of these. Today, there exists a continuum between the companies that respond to the legal demands and those that do not, either because they do not have the will or possibilities to advance in that direction.

The countries analysed have existing flaws in their environmental legislation and regulations, but are seeking to advance in the completion of these gaps, especially with regards to monitoring and control. In some countries like Brazil, the simplification of environmental regulation was identified as a priority, in order to achieve higher efficacy in the use of public and private resources.

### 4. Social context

The standard per capita income in Latin America is estimated at US\$ 3.500 (in constant US\$ of 1987). According to the IDB (Interamerican Development Bank) this estimate doesn't amount to 30% of the per capita income of developed countries. This figure is a reversal with respect to the situation 50 years earlier, when the relation was 50%.

The ECLAC (UN Economic Commission for Latin America and the Caribbean) registers that the number of poor, and the unequal distribution of income have increased considerably, making Latin America the most inequitable region in the world. 10% of the wealthiest homes receive more than 30% of the income, while 40% of the poorest homes obtain around 9 to 15%. At the end of the 90's, poverty affected 35% of the population (211 million people), and 14% were homeless (89 million people), the rural population being the most affected, in comparison with urban population.

Nevertheless, there have been important advances in human development indicators in areas such as education and health. The IDB indicates that life expectancy increased from 55 years in 1950 to 71 years in the year 2000, and infant mortality rates descended from 106 to 31 per thousand born. According to UNESCO, there were 41 million illiterate Latin-Americans in 1997 (8% of the population), of which 55% were women.

It is necessary to take into consideration other factors that help to better understand the diversity and complexity of the Latin-American social reality. For example, criminality has increased in all countries, except in Chile and Costa Rica. At the same time, civil liberties have increased and improved considerably due to democratic processes that spread through the region during the 80's and 90's.

### *Mining sectors*

All countries, except Ecuador, have a long mining history. After centuries of mining activity, Bolivia, Brazil, Chile and Peru have mining regions, where social and labour traditions are influenced by this activity.

The traditional small-scale miners in these regions are usually associated with agriculture given that mining is not a permanent activity. Both respond to cycles such as the prices of metals, or the planting seasons.

During the 80's and 90's, investments by large mining companies with advanced technology, produced a younger and better educated labour force; changing the traditional face of mining, since much of the labour force was also not originally from the mining regions.

### Government

Brazil, Chile, Ecuador and Peru have legal mechanisms for citizen participation relating to mining issues. In 1986 and 1987, Brazil established participatory mechanisms for the general public, that have to be applied by all State agencies that license mining activities. Since 1994, Chile has instituted mechanisms where the public may partake in the decisions over new projects that could generate environmental effects on the country. Public involvement takes place only in the final stages of evaluation, when the State is reviewing Environmental Impact Studies. Ecuador is one of the first countries to include the right to prior consultation for indigenous peoples in its Constitution. Specific mechanisms and regulations to ensure effective public participation throughout the different phases of mining activity are still to be defined. In 1996, Peru introduced mechanisms for public participation in decisions relating to the environmental aspects of new projects.

### **Regional report: structure and content**

*The MMSD South America Project report, in its complete version, contains eight chapters and three appendices, grouped in three sections: Section I contains the regional report subdivided in two chapters: research, and participatory process, and Section II contains the reports of the five selected countries.*

*Chapter II contains the results of the research, including basic background information on the region and a review of the evolution of economic, institutional, environmental and social matters related with mining in Latin America during the past 20 years. It concludes with the research findings and challenges that the region's mining sector faces towards sustainable development.*

*Chapter III contains the main findings emerging from the participatory process. It presents the priority issues for the three main stakeholders (governments, miners and civil society organizations) in the region, and for each country. This is followed by a reflection on the main challenges as suggested by the consultation process, concluding with suggested guidelines for policy and actions for the main stakeholders.*

*Section II presents the reports of Bolivia, Brazil, Chile, Ecuador and Peru, the five focus countries of MMSD in South America. Each national study includes a state-of-the-art on the economic, institutional, environmental and social matters regarding mining, with a separate section for artisan and small-scale mining. Each concludes with a formulation of the main findings of the project in the country and the main challenges for the contribution of mining to sustainable development.*

*Finally, Section III contains the regional research and training agendas emerging from the participatory process, a full description of the methodology applied in the participatory process, concluding with a biographic profiles of the regional MMSD advisory group. ▲*

*The complete report is available online at: <<http://www.mmsd-la.org>> and the printed publication is available from IDRC - MPRI, Avda. Brasil 2655 CP 11300, Montevideo, Uruguay; Fax: +598 (2) 708 6776; E-mail: <[mpri@idrc.org.uy](mailto:mpri@idrc.org.uy)> or CIPMA, Casilla 16362, Santiago 9, Chile; Fax: +56 (2) 3341095; E-mail: <[info@cipma.cl](mailto:info@cipma.cl)>*

An institutional effort to guarantee access to information is essential for effective and informed public involvement. This is only recently being incorporated in the focus countries, although to different degrees. In general, access to information forms part of the mechanisms to exercise citizen participation, but there

remain important gaps. These occur from the initial stages when public involvement should be made effective, through the kind of information made available to the public, to the incidence that participation actually has in the results of processes and in development decisions.

On the other hand, the existence of such laws would be insufficient if governments are not willing to apply them in a systematic manner. Finally, there are cultural aspects that would create a process far from optimal, even in the presence of legislation and governmental will to enforce the law.

### Private sector

Many large and medium sized companies include environmental responsibility as a part of their mission. Sometimes even at the same level as maximising profit. However, behaviour varies and it is difficult to generalise.

In previous decades, large companies considered social responsibility as paternalist behaviour. In the 90's, a significant group of large and medium-sized companies incorporated social responsibility into their mission and began to dismantle mining towns, even though this sometimes obeyed economic or environmental logic.

A classification of these mining companies would include the multinationals, such as Codelco in Chile – the only large state-owned company that continued in these five countries after mining de-nationalization in Peru, of Comibol in Bolivia and of CVRD in Brazil. There are also the large and medium-sized properties of certain economic groups, such as Serrana in Brazil and Anaconda in Chile, the small mining companies, and the artisan miners, among which the *garimpeiros* of Brazil can be counted.

Large national and multinational companies have introduced environmental responsibility, and some of them have also included social responsibility in their corporate policies. Examples of these policies put into action are company foundations, social and environmental trusts as well as corporate partnerships with government agencies and other companies.

The managerial skills on the social terrain are new and some companies resist the additional load that comes only a few years after having transformed their structures to satisfy environment requirements. In many countries and companies, some specific situations are gravely lacking in social responsibility.

### Mine workers

Mine workers are organised in unions, comities, and union federations, but not all are unionised. In large and medium-large mining companies there are basically two kinds of workers: plant workers and

those working under contract who are linked to outside companies that provide different mining related services.

Outside contractors grew throughout the past decade, in some countries reaching a third of the labour force for the sector. Salaries and social benefits for contractors are less than those of plant workers. Plant workers constitute an elite sector with respect to workers in other economic activities.

Worker health and job related risks have been a strong concern of unions and governments. Silicosis, that in the past has affected a great portion of the mining population, has diminished considerably due to stricter regulations implemented by large and medium-sized companies. Pollution is another cause for concern, especially mercury and cyanide pollution from artisan and small-scale mining.

The countries studied have extensive health and job related risk legislation, but it is usually only enforced by large and medium-sized companies. Artisan and small-scale mining sectors are most vulnerable to unsafe working conditions.

### Non-Governmental Organizations

NGO's have been important actors in the facilitation of dialogue for the resolution of social and environmental conflicts. However, the recognition by companies and governments of the role played by these institutions, remains weak.

In general, NGO's consider that mining should reduce its negative impacts and contribute to local development. Whereas in Bolivia, Brazil and Peru there are several NGO's that specialise in mining related issues, in Chile NGO participation has been modest. Most criticism refers to mining activities in operation before the 1990's, along with governmental regulation and institutional actions.

### Local communities

Local communities have great diversity and participate in social activities through organizations with long-standing traditions that have seen the adoption of environmental issues –especially in the past decade–.

The National Co-ordinating Body of Communities Affected by Mining (CONACAMI) in Peru, is committed to building a sense of community development in the context of mining activity through: recognition of land and water rights, the social and environmental impacts of mining, and conflict resolution strategies.

The Bolivian Housewives Committee, created in 1961 in the Comibol mine, is now a nation-wide consulting organization that has promoted women's political rights and union participation for more than two decades.

## Indigenous peoples organizations

In America, as in the rest of the planet, the perseverance of indigenous peoples and their own expectations with regards to their right to a future as indigenous peoples, has come forth with new strength. Indigenous communities have been historically pushed towards poor and marginal territories; today those territories have shown to possess strategic biological and mineral resources for the existing development model and consumption patterns.

Even though statistics are not truly reliable in this aspect, the data from 1997 indicates the existence of 430 different indigenous peoples with close to 40 million people, 5% of the total regional population. The demographic growth rate of the indigenous population tends to be superior to national rates.

ILO Convention 169, on the right to prior consultation by tribal and indigenous peoples in independent countries about the projects and programs that may affect their ethnic integrity, has been ratified by Mexico, Bolivia, Colombia, Ecuador, Costa Rica, Paraguay, Peru, Honduras, Guatemala and Argentina with the exceptions of Brazil, Chile, Guyana and Venezuela. Even though in these countries some laws exist to protect indigenous peoples, mining legislation and the demands of the development model tend to prevail.

Only Ecuador, Colombia, Nicaragua and Venezuela have established in their legislation the right of indigenous peoples to participate in the management of natural resources in their territories, without giving them the power to veto mining projects or others.

## Local governments

Local governments have developed an active role in the various countries that have been studied. In Brazil, the regional governments and the municipalities directly collect a mining tax and conduct strong intervention concerning social and mining projects. In Chile, the government of the II Region of Antofagasta has designed a policy of sustainable development based on the creation of a "mining cluster" and claims a greater portion of the mining dues collected by the central government. In Peru, the municipalities of the mining areas have taken the first steps towards organising the Mining Municipality Association, with the objective of negotiating a better distribution of mining taxes with the government.

## 5. Small-scale mining

Small-scale mining (SSM) includes artisan mining. Each country uses different definitions to distinguish between medium and small-scale mining, and also to differentiate between artisan and small-scale mining.

Among researchers there is almost complete agreement with respect to the difficulty in describing or quantifying its dimensions accurately, although it is possible to make a distinction by way of its geographical distribution, as well as in the legislation and mining policy in each country.

Employment in SSM is also difficult to measure: in 1999, Bolivia had 43.195 people SSM, while Brazil reported 67.670, the majority of which were employed in the construction industry. Just the *garimpeiros* were estimated to be between 300 and 400 thousand people in 1993. During the Brazilian gold rush of the 80's, the *garimpeiros* reached approximately 800 thousand. In Chile there were some 9 thousand people in SSM and in Ecuador and Peru there was estimated to be between 10 and 20 thousand, respectively.

### SSM characteristics according to ECLAC

- Intensive use of labour.
- Low-level of technological development.
- Extensive range of products.
- Contributes to environmental deterioration.
- Employment alternatives for segments of the population affected by poverty.
- Poor security and hygiene conditions.
- Low costs of production.
- Encourages larger projects.
- Explorer of new deposits.
- Generates local production linkages.

In general, a low educational level is observed with respect to other mining segments and other economic activities. In the mid 90's there were approximately between 10,9 and 12,5 million people that worked or were dependent upon SSM in Latin America.

Another SSM trait is its location in isolated and single product production areas heavily dependent on mining activity. Other than being a source of employment, it has generated important social effects such as demographic explosions, focal points of violence, precarious sanitation conditions, etc.

Different authors agree that the main problem of SSM is its informality and, in many cases, the illegality of its activities. A process of legalisation would imply a parallel process of accommodation to the environmental demands and regulations. The informality limits access to credit and other financial resources, which in turn



complicates technological modernisation and perpetuates the illegality of SSM.

In general, national regulations consider SSM from an economic perspective, due to the fact that the majority of the definitions refer to levels of production or types of tax. Environmentally, the regulations in most of the countries studied do not contemplate any distinctions between large, medium and small-scale segments. In some countries, the support of the State is mentioned in carrying out environmental objectives. However, at the same time, there doesn't exist an adequate capacity to control the environmental performance of SSM.

The legislation and public policy of the countries analysed, contemplates promotional and support programs of SSM, with the objective of achieving the development and evolution of this segment. They also look to mitigate its negative social or environmental impacts.

## 6. Main Findings

The evolution and present state of the mining in Bolivia, Brazil, Chile, Ecuador and Peru has important similarities, but also reveals appreciable differences. A common element to these five countries, in the past decades, was the state-led effort in promoting mining as a social and economic lever for development. This attempt was successful in Brazil during the 1980's, in Chile during the 90's and in Peru in the latter part of the 90's. Bolivia and Ecuador, however, are yet to achieve what they set out to do in this aspect.

While Bolivia, Brazil, Chile and Peru had large mining companies in the 20th Century (state-owned for the most part), only the last three countries experienced, from the 80's onward, the arrival of large foreign mining corporations. This gave rise to what is known as "new mining", with new and more efficient technologies of exploitation and environmental management. The large national companies that already existed in these countries benefited from this process, since they were pushed to accelerate their modernisation.

The environmental impacts of mining in these five countries also have significant differences. In Bolivia, Brazil, Ecuador and Peru much of the mining activities are located near populated and agricultural areas, generating an extensive range of impacts on the environment and local communities. In Chile, on the other hand, an important part of the larger mines are located in desert or semi-desert areas, with scarce rainfall and far from populated areas. In this case the management of effluents, as well as the rehabilitation and closure of mining operations, should be comparatively easier and not as costly.

One relevant factor of differentiation is artisan mining, of gigantic proportions in Brazil. The *garimpos* occupy important areas of the country and are estimated to be in the hundreds of thousands (of people), while in Bolivia some 40 thousand are present. In Peru there are around 28 thousand, and in Ecuador and Chile 10 thousand approximately. These distinctions are important in understanding the context, magnitude, and scope of the challenges that mining faces in its transition and its contribution to the sustainable development in these five countries. Because of this, the dimension of the challenges that were identified in the different countries is not comparable, although its content may be similar.

## 7. Challenges in moving forward

The social, environmental, and institutional challenges will be approached in an integral manner, since they are intimately related. The main challenges mentioned in the national reports are:

On the **institutional level**, the need to strengthen public participation in the decision-making process concerning new mining projects, as well as in the expansion of existing operations. Participation is effective when the public has access to relevant information and when it has the adequate knowledge to understand the information provided.

In the countries studied, there were deficiencies identified in this issue. For example, in Bolivia it is necessary to create institutional mechanisms for public participation, while in the other four countries it is necessary to strengthen the overall civic and organizational knowledge of the public, so that participation in the existing mechanisms may be sufficiently well informed.

The idea then, is to define a more adequate framework for participation and access to information, as well as to achieve the political objectives of the State and of the companies, so that the participation process may be more efficient. Finally, these processes should be initiated before the start of mining projects, so that the opinion of the citizens can be taken into account before the decisions are made.

On the **regulatory level**, the challenge is to improve mining regulations in Bolivia, where mining investment has been limited in past years, and in Peru to simplify and rationalise the regulatory code on land rights (*servidumbre minera*), that has obstructed the development of mining investment. It is fit to add that in this country, disagreements exist on the criteria and guidelines for the relocation of families upon the allocation of mining rights. With regard to environmental guidelines, all target countries have insufficiencies, but are looking to solve them, without obstructing the allotment of permits,

and to strengthen the control and implementation of guidelines.

In Brazil, for example, there is agreement on simplifying the guidelines and procedures to approve mining investments. In Chile there have been proposals towards giving greater emphasis to self-regulation and to environmental regulations based on incentives, as well as to resolve state agency duplication of functions that reduces the effectiveness of environmental impact assessment systems. In Ecuador there are proposals to strengthen public and private institutions. In Peru strengthening of inspection is needed, particularly in those situations that involve work related risk of accidents.

Also on the **environmental level**, it is necessary for governments to develop guidelines that allow the environmental impact assessments to be carried out independently, as well as the restoration and rehabilitation of areas affected by mining. In Brazil there should be relief from environmental liabilities left by abandoned mines, and restoration of areas that cause great social and environmental damage. In Bolivia, the conclusions of the Environmental Action Plan need to be applied to other mining zones, aside from Oruro.

In Chile, though the inventory of environmental liabilities is being completed, the lack of geo-chemical, physical, and biological guidelines at a national scale is a recognised deficiency of the environmental impact assessment system. Likewise, it is necessary to provide sufficient water supply to new projects, integrating the environmental, social, and economic interests at the local level, and recognising indigenous community rights. In Peru, the cleaning up and rehabilitation of contaminated mining areas is needed, specifically regarding the use of soils, impacts in the biota and in the water resources. In a smaller scale, the same is required in Ecuador.

As for **mine closure**, the countries are in different stages of progress. While Chile and Peru are developing new guidelines, the five countries have failed to apply existing mechanisms, especially in those areas where inadequate closure constitutes an environmental risk or economic impairment for the alternative use of lands.

In terms of the mining use of **protected natural areas** there are several challenges. At present, Bolivia, Brazil, Ecuador and Peru, constitute focal points of conflict, while in Chile these could present themselves in the future. In the current conflicts, it is necessary to carry out the rehabilitation and compensations that would allow for the solution of these cases. Also it is essential to clearly define the social and environmental criteria nationally, regionally, and locally –including indigenous community interests involved– to determine guidelines for the use of resources in these areas.

The introduction of voluntary **corporate social policies**, particularly larger companies is recent and

has been expressed in various projects through informed involvement of local communities. These represent significant opportunities for the remainder of the mining sector, and should be made extensive to all national mining companies. In Peru there have been proposals to create external mechanisms to evaluate the social responsibility of companies, while in other countries it is considered that these initiatives should be applied voluntarily.

At the **cultural and social levels**, it is crucial to replace “company towns” with townships or cities that enable the integral development of the community. The new systems of work “shifts” should also be studied, in order to surpass the harmful effects on the quality of life of mining families. With regard to labour, there is a need to create equal employment conditions for mining company contractors.

As for the recognition of special rights of **indigenous communities**, it is essential to advance in the efficient implementation of these rights in countries where legal dispositions exist and/or have been ratified by the ILO Convention #169, as well as other rights that are not explicitly recognised.

As for **local governments**, regional governments in Chile claim greater autonomy at the decision-making level, in order to retain a greater portion of mining revenue and the creation of sustainability funds in the regional sphere. In Peru, even though the mining tax code establishes the use of mining taxes collected at the regional level, it has planned to produce clearer guidelines for better management of these funds, as well as the creation of local development funds.

To achieve a reasonable distribution and social legitimacy from the mining revenues collected by the State at the local and national levels, it is key to advance towards a sustainable development of mining communities and countries.

In SSM different situations arise, but in all countries studied, government policies are considered insufficient to solve the economic, social, environmental, and labour security problems of the sector. Primarily in Brazil it is considered essential that the government clearly define the *garimpo* from a social and economic perspective, so that they may have access to different instruments of the State, and it also requires a reduction in the demands for the establishment of *garimpos*.

Overall, it seems necessary to integrate environmental and social policies in the promotional framework of mining investment, as one of the main ways to advance towards sustainable development. In this context, the definition of roles and responsibilities of the stakeholders would only be possible through dialogue and understanding amongst themselves, forming partnerships to resolve environmental, social, and economic problems.

## KEY ISSUES IDENTIFIED IN THE REGION

**1. Policies, instruments and capabilities for public management:** What is the quality of the compliance of government authorities in their roles concerning mining: inter-agency co-ordination, jurisdiction, land-use planning, licensing of permits and patents, impact monitoring and control, transparency of decision-making processes, institutional framework of rights and responsibilities, distribution of mineral wealth and taxes.

**2. Spaces, mechanisms and capabilities of civil society to participate in decision-making regarding mining:** what is the quantity and quality of existing instances of participation in national legal frameworks? Which are the capabilities and limitations of civil society to exercise informed participation in each country?

**3. Access, use and production of relevant information on mining:** Do governments have sufficient and reliable information regarding the vulnerabilities and potentials of different mineral rich regions within each nation, in terms of the natural resources and local communities? Do they have the necessary elements for informed decision-making regarding costs and benefits (economic, social and environmental) of any mineral development? What are civil society's rights, and which the obstacles, to obtain information about mining projects and their eventual impacts?

**4. Environmental and social performance of mining:** considered here as a key issue for the mining industry and small-scale miners, its performance closely relates to the quality and opportunity of public management, and with the capability of civil society organizations to exercise informed participation. It includes: efficiency in the use of resources; cleaner production; pollution control; waste production, handling and disposal; health and safety in the work place and neighbouring communities; environmental impact evaluation, monitoring and control; social and environmental certification.

**5. Local development (social, economical, cultural, environmental and institutional):** Mining can either contribute to the sustainable development of the local communities where it operates, or create a passing boom that leaves communities socially and environmentally poorer than before. Local sustainable development implies that development persists once

mining activity decreases or ends. Is the mineral extraction project linked with social and regional development plans? Does mining contribute to the diversification of the regional economies and to the formation of "mining clusters"? Is natural capital lost through mineral extraction replaced by social and human capital? Are renewable natural resources affected beyond their recovering capacity? Do projects exist between governments, companies and local communities? What is the incidence of communities in decision-making regarding the future of their territories and livelihoods?

**6. Amount and distribution of taxes and royalties:** refers on the one hand, to the amount of income received by the state, as owner of the mineral resource, and on the other hand, to the distribution of economic benefits from mining among the national, regional and local levels. What is the royalty and tax regime in each country? Is the distribution between the nation and the localities that live with the mining impacts considered equitable? Who decides the destiny of these funds, under what criteria and mechanisms?

**7. Access, use, rights and management of natural resources (soil, water, biodiversity, minerals, etc):** this is a public management issue, directly related to the rights of various stakeholders to natural resources, environmental zoning and land-use planning. For many rural communities and indigenous peoples, territory is not just "land and property"; it includes the soil and subsoil, the air, the water and other resources, in direct relation with local identity and way of life. Do governments have sufficient, reliable and updated information about mineral rich territories and their human settlements in order to properly evaluate the quality of environmental impact assessments and environmental management plans proposed by companies? Are there appropriate compensations for the communities that have lost or reduced their access to key resources and areas of their territories? How is damage compensation calculated?

**8. Mining in Natural Protected Areas and areas rich in biodiversity:** The internationalization of investment regimes has brought mining development to remote regions of the South American geography.

Many of these areas have fragile ecosystems, and hold biological assets barely known to science. Governments are responsible for undertaking land-use planning and zoning based on knowledge of vulnerabilities and potentials of different ecosystems, and for guaranteeing the conservation of biological diversity. What regulations exist for the management and access to these areas by mining projects?

**9. Mining in indigenous peoples territories:** as above, the ancestral territories of indigenous and native communities, like never before are being transformed and fragmented by the expansion of economic activities, urban growth and infrastructure projects. Governments are responsible for protecting the rights of all citizens. What rights have been recognised to indigenous peoples in each country? Which countries have ratified ILO agreement 169? What are the main obstacles for the full exercise of these rights?

**10. Small-scale mining (SSM):** recognising that SSM is a reality that will not disappear, and that it has important potential for local development and poverty alleviation, it is necessary to identify the legal, political, technological social and training requirements to evolve towards more sustainable artisan and small-scale mining, as well as to disseminate guidelines and lessons that allow for a better management of this segment.

**11. Quality and quantity of mining employment:** while large-scale mining tends to reduce its demand for employment in comparatively privileged conditions, SSM is a very important source of employment, but in precarious health and safety conditions. The main concerns are: How much employment is really generated by large and medium-scale mining? What percentage of the labour force is local? Is the local labour force being trained for higher qualified jobs in the future? Do labour standards vary between mining companies and contractor companies? What are the main concerns of mine workers?

**12. Planning and management of the social and environmental impacts of mine closure:** historical experience indicates that some areas with high-level poverty in Latin America are precisely those that were mining areas. What kinds of provisions have been made in these countries to ensure that history will not be repeated? Do mine closure plans and management regulations exist? What tax instruments may be applied?

**13. Environmental and social legacies of past mining:** Who is responsible for cleaning-up, restoring or compensating social and environment damages caused by private and public mines that closed when environmental legislation did not exist? Are local communities carrying these costs, through negative effects on their health, livelihoods, and the environment? How much do we know about the impacts caused on human and ecosystem health? What is the state of knowledge regarding environmental and social liabilities and orphan mines in the region? How can the companies, that are operating in these areas, and local communities contribute with the government to mitigate the impact that these legacies cause?

**14. Scientific and technological development:** the strengthening of local scientific and technological development, initially a government responsibility, is in an increasing manner, also a responsibility of the private sector. What policies and experiences exist in the region in scientific and technological development with respect to mining? In what areas of knowledge has there been progress? What are the gaps? What are the main obstacles?

**15. Market access:** refers to fiscal and non-fiscal tax barriers and the impact over the possibilities of generating value-added to minerals. Up to what point do industrial countries determine market access? Can and should the countries of the region adopt regulations to guarantee market access for their products? What kind of initiatives can they undertake? Is there room for consensual action? Up to what point do market access conditions reinforce or weaken the contribution of mining to sustainable development?

**16. Effect of international conventions, treaties and standards:** particularly with regards to progress in the certification of mining activity, treaty application, and operational directives; to the concern of governments and industries regarding the impact that international instances may have on mining development and its contribution to national economies; to the opportunities that civil society seeks to improve the social and environmental performance of large and medium-scale mining through the application of international standards. At the same time, concern from local companies, on the high level of environmental and social standards that large companies establish, because many of them do not have the capability to undergo changes with the necessary celerity to survive in the market. ▲

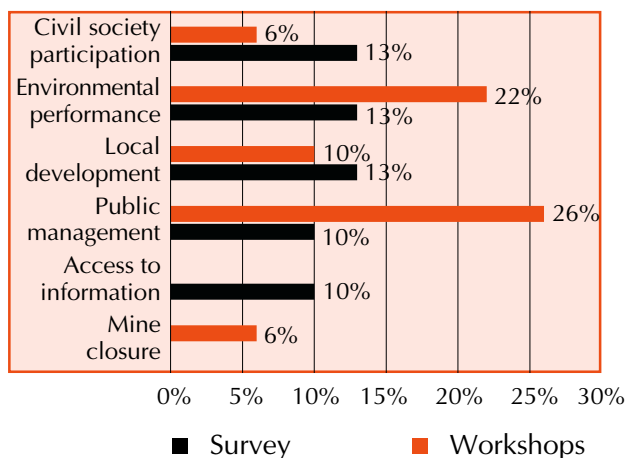
### III. FINDINGS OF THE PARTICIPATORY PROCESS

The regional summary of the participatory process condensed the key issues and priorities in which the majority of the participants of different stakeholder groups in different countries agreed on, and would therefore deserve special attention in defining the way forward for the sector. The results are formulated as policy guidelines for government, and as training and research agendas for the three main stakeholder groups.

Nevertheless, it should be pointed out that the issues selected by the groups consulted, present different degrees of documentation and development. In this sense it is not odd that the research and participatory process findings do not fully coincide. These differences indicate gaps and important areas for future research.

Conversely, the use of different mechanisms of public participation helped to establish consistent outcomes at the regional level, as can be appreciated in graphic 1, that shows the five main priority issues identified in the participatory process. It is important, however, to emphasise that there are differences among the three large groups of stakeholders, and the need to comprehend the particularities of mining in the different countries.

**Graphic 1 • Five most mentioned issues as main priorities in the survey and workshops carried out in the region**



#### 1. Stakeholder priorities

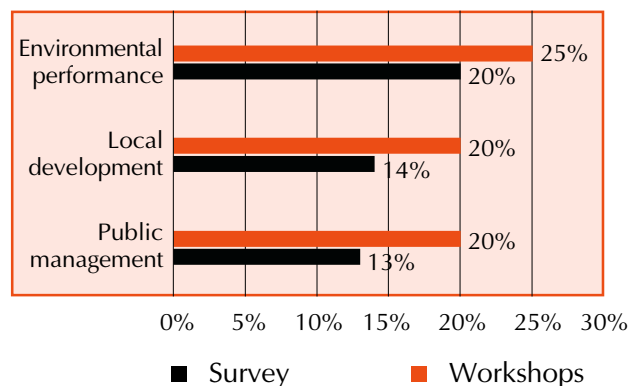
The participatory process sought to define the meaning of sustainable development in mining, from the perspectives and priority issues of three main groups of stakeholders: governments, companies, and civil society organizations.

The reading of the results by stakeholders reaffirms the consensual agreement on the main priorities of all groups in the selected countries. Nevertheless, each stakeholder group approaches the same issues from different perspectives, according to each country's history.<sup>5</sup>

#### Governments

From a regional perspective, both in the survey and the workshops, government officials agreed that environmental performance and local development issues were a priority, while at the same time, they recognised a concern regarding the capability and opportunity of government management of natural resources.

**Graphic 2 • Governments - Three most mentioned priority issues**



**National governments** – The participatory process reveals that national government agencies related to the sector are trying to overcome difficulties in the co-ordination of jurisdictions. The institutions involved in dealing with mining-related tasks have different mandates, perceptions, policies, and routines, while they all operate in national contexts where sustainable development strategies are still incipient.

There is a strong concern regarding the need to create political and legal frameworks that allow for integrated approaches to resource management. The strengthening of the capabilities of government officials through training is crucial, as is the access to adequate, complete, reliable, timely and appropriate information for the planning of development.

**Regional and local governments** – For the majority of local authorities job creation is an important benefit of mining. However, there is growing concern with regards to a more equitable distribution of income from mining, a greater local and regional participation in the

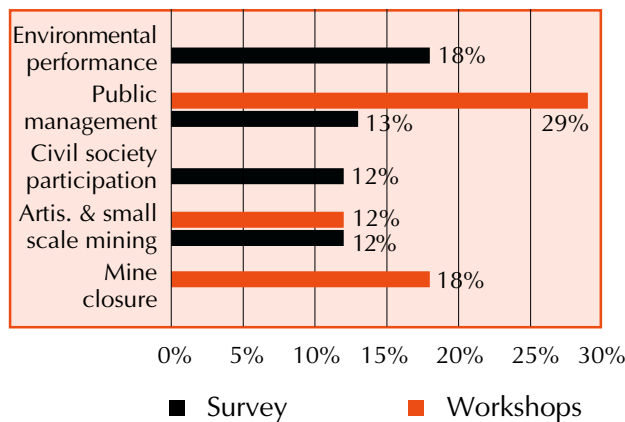
5. Specific demands on different priority issues are detailed in workshop minutes, available online at: <<http://www.mmsd-la.org>>

decision-making processes relating to mining projects, and the possibility to exercise local environmental control. There is also concern about mine closure, and the formation of mining clusters that would guarantee long-term local development. The majority of local government officials also lack the required information and training for their effective participation in the management and evaluation of mining impacts. Most lack the capability to envisage future scenarios that would account for the opportunities and limitations of local ecosystems and social formations, an important basis for building sustainable communities.

### Miners

In the survey miners gave a great deal of importance to their environmental performance and to participation, but in workshops issues relating to the inefficiency of public management prevailed. Results also point to the importance of small-scale mining and a generalised concern about mine closure issues with regard to future scenarios for the sustainable development of mining regions.

**Graphic 3 • Mining - Three most mentioned main priority topics**



**Multinational companies** – Large foreign companies with operations in the region - focus their concerns on overcoming the negative historical image of the sector, on making public their achievements in social and environmental performance, on the need for governments to ensure that improved social and economic benefits are reflected at the local level (decentralisation), on the reduction of bureaucracy and on the promotion of the self-regulation. In the most proactive companies there is interest in supporting the strengthening of local governments in the management of positive and negative impacts of mining and in facilitating improved dialogue among the different stakeholders.

**National companies** – There is much diversity within this sector that comprises for example, a stakeholder like

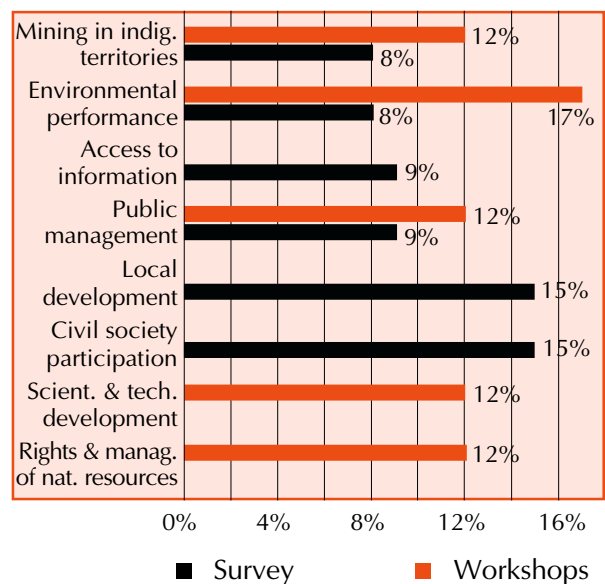
Codelco in Chile, and the mining co-operatives of Bolivia or Ecuador. Although some lack the necessary resources, they have the will to undertake the profound changes that sustainable development implies. Others have access to resources, but only recently understand that sustainable development is an irreversible process, that may exclude them from the business if it is not seriously addressed.

**Small scale and artisan miner organizations** – This is also a very diverse sector, as much in its forms of organization, labour and use of technology, as in the metals and minerals that it exploits. In the participatory process there was a clear consensus on the need to formalise the activity and identify its particular social, technological, political, legal, and training requirements in order that it evolve towards more sustainable policies and practices.

### Civil society organizations

The CSO's concurred in the need to emphasise the environmental performance issue, mining in indigenous territories, local development and public management, conceding great importance to access to information and participation that emerge as crosscutting issues throughout the workshops. The issue of resource use and rights was also emphasised, along with management of natural resources, and finally technological and scientific development.

**Graphic 4 • Civil Society – The three most mentioned priority issues**



The only different issue mentioned by the civil society sector, with equal significance to that of the demand for improved public management, is access to information. Reiterated in many of the workshops, this was inti-

mately connected with the request for improved informed participation in the region.

**Mine Worker's Unions** – Issues such as environmental and workforce well-being, reduction of work-related accidents, greater training opportunities, and stable employment for local communities continue to maintain their importance with this sector. However, demands for participation through dialogue with the companies and authorities are gaining importance, together with retrenchment of displaced workers, greater equality in the working conditions between plant workers and contractors, and the implementation of international labour conventions (especially ILO ones). The responsibilities and roles played by unions are changing, as is reflected in their growing concern for local development. Unions are re-thinking their role in the face of sustainable development and the changes taking place in the industry.

**Indigenous Peoples and Communities** – The main requirement this stakeholder refers to is the recognition and effective exercise of collective rights. This means the participation in the decisions that affect them, non-discrimination, the recognition of their territory and its ancestral uses, and the need to apply ILO Convention #169. There also exists concern for the recognition of their legitimate representation in negotiations, as well as the protection of the environment, pollution prevention and control and the respect for natural protected areas.

**Local communities of mining regions** – In most cases, the main concern of local communities relates to informed participation in the decision making process that leads up to the execution of any given project, including the elaboration and follow-up of environmental impact assessments, the pollution of natural resources and the non-compliance with environmental legislation. There is interest in improved relations with companies, and ensuring that mining contributes to local sustainable development: that it contracts local workers, promotes economic diversification, and that communities participate in the benefits of minerals development.

This stakeholder did not have specific mechanisms for communicating its concerns with regard to mining until a few years ago, when the National Committee of Communities Affected by Mining (CONACAMI) emerged in Peru, with its local co-ordination groups, whose influence has extended to Bolivia, Chile and Ecuador. These organizations have similarity with those of indigenous communities and the tendency is for them to assert themselves as indigenous peoples, at least in the Peruvian case.

CONACAMI demands the creation of consultation mechanisms to determine the social feasibility of mining projects and incidence in determining the closure of high-risk operations. It has also proposed no-go areas, specifically around water sources, important areas of agricultural production, areas rich in biodiversity and other natural protected areas. CONACAMI proposes that civil society should offer a social certification to com-

panies that comply with international standards and that the benefits originating from mining are used to compensate communities in a manner proportionate to the volume of production.

**Non-governmental organizations** – For most NGO's the main issues at stake are environmental performance, the contribution of mining to local development, access to information, and improved participation of civil society in the decision-making process regarding mining projects.

**Consultants and academics** – There is a great deal of accumulated knowledge and a variety of viewpoints in this group. The process reveals the importance of connecting research with the solution of problems and fundamental issues identified by the various social actors.

## 2. Different priorities in different countries

The results of the survey show interesting coincidences in all five-focus countries on issues such as environmental performance of mining, local development, informed participation, and public management. However, as may be appreciated in the national reports, the issues have their own relative weight in each country, in accordance with the particular history of mining in each country.

In **Bolivia**, besides the priority issues identified by the survey (employment, local development and environmental performance), great importance was given to small scale mining, mining in indigenous territories, in natural protected areas, and in areas of rich biodiversity. The quality of public management was also an issue of concern.

The importance of *local development* can be explained through the Bolivian experience of mine closure (E.g. Potosí, once the richest producer of silver, is one of the poorest municipalities of Bolivia today) and by the growing call of local communities for greater participation in the benefits generated by mining. Likewise, society now demands a greater social responsibility from the industry. Added to these expectations, and including the results of the research, a fundamental challenge for the Bolivian mining sector is the formation of human or social capital stemming from mineral development.

In **Brazil**, to the priorities indicated in the survey and in the workshops (local development, environmental performance, participation of civil society and public management), the concern that industry and government have regarding the negative image of the activity, was emphasised, together with the problems generated by the mining of construction materials in urban areas.

The main problems indicated in the *public management* issue include the lack of integration and co-ordination among the different government agencies; the very limited public participation due to lack of information,

that itself has effects on the enforcement of monitoring and control; inefficient control stemming from technical and personnel failures in responsible government agencies; difficulty in the application of the environmental norms because of jurisdictional conflicts, bureaucracy and sluggishness in the process of legalisation, that makes for high indicators of informality.

In **Chile**, environmental performance and local development, that had been important in the survey, were of special interest in the workshops, and were supplemented by formulations on public management and rights and access to resources. Many of the social actors involved consider that the action of the Chilean State has been insufficient. Added to what is perceived by some as lack of a clear mining policy and to the centralism of the public administration, institutional arrangements in Chile are seen to hinder the representation of the social, cultural, and geographical diversity of the country. The majority of social actors confront public and government related issues with a heavy paternalistic tone.

Another topic of importance in Chile relates to underground water rights, which have been conceded primarily to mining companies and not to local indigenous communities for alternative production and livelihood activities. At the same time, the government is concerned about the overlapping of regulations regarding natural protected areas.

In **Ecuador**, the first priority was environmental performance, in both the workshops and in the survey. Mining in indigenous territories and the participation of civil society, with high importance in the survey, captured the interest of a majority of those present in the workshops, followed by the issue of local development and public management.

As for *public management*, the main concern of various actors was the lack of policies and implementation of a legal framework for mining and its relation to environmental management and to the effective exercise of the collective rights of indigenous, afro-Ecuadorian peoples and local communities, as recognised in the Constitution.

In addition, there is concern with private and public institutions and their inadequate implementation of guidelines and environmental management instruments, and the need to implement decentralisation processes. The role that should be performed by local governments in the challenges of emerging decentralisation is still in the defining stages and is hindered by overlapping functions carried out by the different authorities.

In **Peru**, besides the priority issues identified by the survey (local development, environmental performance and civil society participation), there was strong interest in the legislation and management of natural resources, the planning and management of social and environmental impacts of mine closure, mining in natural protected areas and in areas of rich biodiversity, followed by the instruments and capabilities for public management of natural resources.

The ability of Peruvian mining to enable local development processes was the most important issue for all social actors involved, not only because of the mining tax known as *canon minero* and its use in the development of the mining regions, but also because of what is regarded as the increasing social responsibility of large companies. The absence of the government was emphasised, along with its failure to play its role in local development. Institutional weaknesses were detected in the lack of clear policies and the need to guarantee trans-sector management and jurisdictional co-ordination.

### Summarising

Taking into account the findings of the research and the opinions of a large portion of participants the most important challenges in the region are:

- Improve the social and environmental performance of mining.
- Develop more efficient and transparent tools and capabilities for public management of Natural Resources and land use planning, taking into account diversity.
- A more direct and equitable contribution of mining to local sustainable development is required.
- Transparent and democratic processes, involving the informed participation of all stakeholders throughout the decision making process, is a crucial cross cutting issue in the region.
- Sustainable management of artisan and small-scale mining, given its social importance and potential to contribute to local development and poverty reduction.

The issue of rights to access, use and management of natural resources was also an important topic, together with the concerns of the indigenous and rural communities, issues regarding natural protected areas, and the need for informed land use planning. These issues were all formulated in an integrated manner and repeatedly appeared in connection with the demand for a strengthening of public participation, in connection with the adequate, complete, reliable and appropriate disclosure of information of mining projects.

### 3. Reflecting on the challenges

The findings of the participatory process reveal the existing tension at the regional level between short-term national urgencies, driven by macro-economic considerations and the creation of jobs, and the long-term vision that sustainable development entails. The difference resides in the transaction costs that different groups



in society are willing to bear in exchange for economic development, and in the relative weight given to the parameters with which society evaluates the results of this development.

In this section, the regional report analyses key regional challenges in the relation between mining and sustainable development, in an attempt to address some of the dilemmas proposed by MMSD global.<sup>6</sup> However, it is important to keep in mind that the most important topic for all the social actors of the region continues to be the social and environmental performance of the activity.

- **Which should be the responsibilities, roles, tasks, and performance levels of the key actors in a sustainable future?**

Considering that mining plays an important role in the national economies of most of the countries where MMSD was carried out in South America, it is necessary to develop an integrated vision of sustainable development: one that can ensure that minerals development contributes towards the improvement of the quality of life and to the economic and social development of mining regions. A vision of sustainable national development involves the implementation of public strategies that link the social, environmental and economic dimensions of development with the different production sectors, while taking into account the potentials and limitations of the natural and social capital that each nation has available.

Though it is clear that different degrees of governance and institutional capability exist in these countries, all stakeholders agree that the institutional strengthening of the public sector is a pre-requisite for sustainable development, even before discussing the particularities of the mining itself.

Looking beyond the specific roles and responsibilities of governments, there are calls for fairer, better-balanced and more equitable international relations as a condition for a feasible and effective transition toward sustainable development.

- **Which are the rules for management, control, access and use of natural resources?**

The definition and clear application of rules and regulations is an important challenge in the region and is recognised as a crucial role of governments. In many developing countries, the internationalization of investment regimes and globalisation brought a quick expansion of mining to remote regions which have been marginalized from national processes, and are characterised by a weak presence of the State.

6. Detailed information about MMSD and IIED are posted online at: <<http://www.iied.org/mmsd>>

Mining companies argue that governments need to clearly establish the rules of access to resources in order to avoid the costs of bringing operations to a standstill because of conflicts, and the damaging public, national and international image that it conveys. The challenge is to evolve toward greater public participation in resource management systems that incorporate diversity as important criteria.

The ideal process involves building consensus on the national, regional and local levels around long-term land-use planning, based on reliable and sufficient information and on the social and biophysical potentials and limitations of each area.

- **What role does the production, access and use of the information play in this context?**

The availability of geological, biophysical and social base line information for classification and land use planning is still in its developing stages in these countries. The majority of the social actors consulted insisted upon the need for updated and reliable knowledge baselines, of public access, with comprehensive information on the economic, social, environmental, and governance characteristics, and the potentials and limitations of mineral rich regions, in order to implement better decision-making processes.

- **How can mining activities improve their contribution towards the construction of sustainable communities?**

In spite of recognising the fact that this is a responsibility of governments, all stakeholders involved in this project have coincided in conveying an active role in the promotion of local development to the private sector. Many actors suggest that mining development needs to create human and social capital to enrich the regional and national development processes, beyond the useful life of the projects.

The challenge consists in connecting the aspirations of the local communities with a transparent and efficient public management, as well as with a responsible social and environmental company policy. Therefore, it is necessary that local and regional planning be designed in an integral manner and with a long-term perspective, based on the knowledge of regional limitations and potentials, and with a view to mine closure.

In conclusion, the perspective of sustainable development should actively involve civil society, in co-ordination with government agencies and the private sector. Institutional innovations such as local participatory planning, foundations for local development, mechanisms for re-distribution of mining incomes, participatory systems for monitoring and impact assessment, among others, would be equally or more important for

the competitiveness of a mining project and a country, than the access to cheap sources of energy or cleaner production technologies.

## 4. Ways forward

The regional report presents a summary of suggested guidelines for public policies and instruments, company policies and civil society roles to advance toward a more equitable and sustainable development. The guidelines, along with the agendas for training and research included in the additional documentation, are the most important results of the MMSD consultation process project in the region. A summary of salient points for each of the three main stakeholders is offered below.

### Governments

The guidelines suggested for the public sector demand a greater co-ordination of national sustainable development strategies through the institutional strengthening of government and its legislation, the establishment of natural resource management mechanisms, of an updated information and knowledge base, as well as the implementation of local and intercultural management instruments. Governments are called upon to exercise leadership in the search for instruments to improve growth with equity and guarantee democratic processes that recognise diversity as a value of sustainable development. This should be translated into more transparent decision-making and accountability mechanisms.

To ensure that government actions, in agreement with national traditions, have an integrated management of risks and benefits of mining, the recommendation is to incorporate, if already not included, the following aspects:

- Mechanisms to ensure the informed participation of all stakeholders involved in the decisions that relate to mining activities.
- Integrated social and environmental assessment, contemplating the environmental, social, cultural and health-related aspects, with greater participation of governments, workers and local communities in the follow-up of mining activities.
- Development and access to the information and knowledge base, so that natural resource management may be better informed and planned, and could allow for the follow-up of any changes occurred.
- Legal instruments and public policy that would help in the development of an efficient and vigorous national sector of small and medium-sized companies.
- Procedures for the planning of mine closure, including its linkage with local development planning and the establishment of financial guarantees.

- Assessment of environmental legacies, and development of strategies for their management.
- Implementation of mechanisms for more equitable decision-making and better distribution of mining income between the local and national levels, accompanied by efficient mechanisms for the management of such income.
- Improved mechanisms for the identification and evaluation of social and cultural impacts on local communities, as well as improved compensation and mitigation measures.
- Clear and agreed upon rules to regulate the extent of mining in indigenous territories, especially, the recognition of collective rights, as well as the development of intercultural protocols to address cross-cultural negotiation and dialogue.
- Clear and agreed upon rules that regulate the extent of mining in natural protected areas.
- Articulation of informed and long-term public policy to improve the social, environmental, economic and technical performance of artisan and small-scale mining.

All these challenges require that governments have access to sufficient resources and capabilities to fully assume public responsibilities. Beyond what may be accomplished in the form of governance and citizenship on the national level, international support is necessary for a feasible and effective transition toward sustainable development. The governments of industrialised countries and multi-lateral agencies are also called upon to guarantee greater fairness and transparency in financial, monetary and commercial systems.

### The Private Sector

It is a duty of the private sector to strictly comply with the norms and guidelines given by the State. But its contribution in the transition towards sustainable development also requires a leading role of companies in the strengthening of governance, particularly at the local level. The guidelines for private sector policy include:

- Building confidence and credibility in the contribution of industry towards sustainable development through principles of transparency, accountability and governance of the private sector, and responsible social and environmental management.
- Sharing of knowledge and information about localities with authorities, workers and local communities to better harmonise the life cycle of mining operations with local development plans.
- Supporting the creation of partnerships with governments, workers and communities to articulate plans for local sustainable development, while planning for closure from the outset of mining operations.

- Encourage the involvement of communities, workers and local governments in the assessment and control of environmental and social impacts, particularly in issues of local concern.
- Development of a social policy that gives priority to opportunities for local communities, in accordance with local culture and development alternatives.
- Progress towards the elaboration and subscription to voluntary codes and initiatives.

#### Relating to workers

- Training and retrenchment of displaced workers in the case of mine closure.
- Creation of more direct communication channels with workers.
- Guarantee of equal working conditions for plant workers and contractors that perform similar functions.
- Development of strategies and goal sets for work-related accident reduction.
- To advance in the implementation of international labour agreements, particularly those established by the ILO.
- To develop personnel training programs related to environmental, safety and community issues.

#### Civil Society Organizations

The main challenge for civil society organizations, when assuming participation rights, is the building of citizenship and creating responsible organizations willing to engage with governments and companies in the construction of the future. In this direction recommendations include:

- To gain access and use of reliable and complete information on minerals and other resources, with the objective of participating in an informed manner in the decision-making process.
- On the local level, it is civil society's task to participate in reaching agreements with government and companies on the identification of sustainable development alternatives, taking advantage of mineral wealth, in accordance with local potentials and vulnerabilities, and depending on local cultural values.
- Generate and support leadership on issues of particular concern.
- Constitute and identify a legitimate and responsible representation of the community and its organizations in the decision-making process.
- Promote participation processes for the assessment, planning, monitoring and control of the different risks and benefits generated by mining activity.

## IV. Country proposals

The national reports of the MMSD project summarised the main conclusions of the participation and research process as challenges to be used for reference in the future of local mining. Furthermore, the results of this process have already had repercussions, serving as a foundation to different national and regional initiatives (see table). A summary of these proposals is offered as follows:

### 1. Bolivia

Due to the current crisis in this sector, it is fundamental to respond initially to the question stated during the consultation process, on the role that could be played by mining in the future development of Bolivia, and how this sector can help in the transition towards sustainable development.

Although the importance of mining is not in question –particularly in the traditional mining regions of the west– its relative importance as a source of foreign currency, royalties, and taxes, tends to be displaced by the development potential of natural gas.

On the other hand, the importance of everything social related to small-scale mining requires concrete actions to maximise its benefits and minimise the negative social and environmental impacts. This topic should be a priority in the actions of the public sector at all levels.

There is a proposal to carry out an investigation on the future of mining development in the country that takes into consideration the findings of the MMSD project and can serve as input towards the formulation of public policies. This investigation will be centred on six topics: local development, mining and protected areas and areas of rich biodiversity; use and management rights over resources; social and environmental performance of mining activities; strengthening of public management; and the future of small-scale mining.

### 2. Brazil

1. It is urgent to create instruments to make viable the full participation of communities in the decision-making processes related to mining projects that promote community training as well as access to information.
2. It is necessary improve existing legislation, as well as existing government structures. It is urgent to optimise the legislation of mining projects, by means of simplifying procedures and reducing licensing agencies.

3. There should be efficient control to develop a more equitable and competitive environment among companies. This requires the training of government officials.
4. Mining should be integrated into the Economic-Ecological Zoning (Land use planning), into watershed management committees, the directive plans on the metropolitan and municipal regions, as well as into other instruments and bodies from which it is absent.
5. In general, Brazilian indigenous peoples are not against mining in their lands; however, they are unanimous in affirming that, when this happens, they want to participate in all decision-making processes from the initial stages up to closure.
6. The creation and dissemination of new technologies should respond to the greater challenges of the mining sector: reducing energy waste and material use; minimising of environmental impact and optimising social well being.
7. The application of rule OHS 18000 (Occupational Health and Safety) will contribute to transform the current negative situation in health and work safety matters, and will help Brazil to reach the level of the Mining Regulation Norms (NRM-22).
8. Mining should revolutionise its relation with society and practice an open doors policy. The government should create permanent bodies for participation, and the civil society should train and organise to contribute towards this process.
9. It is necessary to create primary data and indicators, create or perfect existing data banks, making them broad and indiscriminately accessible to all those interested in the mining sector. At the moment, this process is deficient.
10. In small-scale mining, both for construction aggregates, and the *garimpos*, the main challenges are: legalisation, simplification in the procedures of mining titles and environmental license, the creation of technical support programs and instruments, as well as a precise geological survey.
11. Of utmost importance is the elaboration of standards that guarantee the restoration exploited areas. This includes licensing procedures and mine closure planning, considering different interests and expectations.
12. The creation of independent institutional mechanisms that may originate certifying facility for the corporate mining sector, with sustainability criteria (social, economic, environmental, educational and cultural) is necessary.

### 3. Chile

As for the definition of sustainable development, the results obtained by the process carried out in Chile are very relevant, above all by the topics identified as sig-

### Outcomes

*The MMSD South America Project has already produced tangible and non-tangible outcomes, in terms of activities related to mining in the region, such as:*

- *Initiatives:*
  - *The creation of a Latin American workgroup on artisan and small-scale mining (IDRC-UNESCO).*
  - *Evaluation of abandoned mines and environmental risk areas in Brazil.*
  - *Round table on Industrial Leadership in Peru.*
  - *Research on the image of the mining industry (IBRAM, Brazil).*
  - *Contribution to the definition of the national positions of Brazil, Bolivia, and Ecuador, to the World Summit on Sustainable Development.*
- *Consolidation and extension of existing networks at the national, regional and global level.*
- *Better understanding of the issues and perspectives of different communities of interest in various countries.*
- *A qualitative leap in the regional and national dialogue; generation of greater expectations. ▲*

nificant and the recommendations, that translated into concrete tasks for all social actors. Here are some general criteria on the concept of sustainable development in Chilean mining:

1. The wealth contributed by mining to society should be distributed under transparent and fair criteria among local communities, the region and the central government.
2. Concrete instruments and policies of local and/or regional scope should exist, that should project economic activity in mining regions and solve eventual environmental, social, and economical problems after closing tasks end. Two research initiatives have come to light in mining regions: sustainability funds and production linkages (“mining clusters”).
3. Substantial advancements towards political, institutional and economic decentralisation are required in the country. This includes the “regionalization” of environmental regulation, as well as that of land planning instruments under the perspective of the sustainability of existing urban localities after mining.

4. The institutional arrangements relating to sustainability and mining should enjoy a greater inter-institutional co-ordination, to lessen and avoid excessive bureaucracy.
5. Independent research is necessary for decision-making on the issues of health and the family impact of job shifts.
6. There should be development and improvement of the instruments of action of the government with respect to SSM, looking towards the formalising of the sector, the technical and financial support of the activity, the flexibility and assistance in the observation of environmental regulations, and the incentives to perform alliances with large companies.
7. The existing sensitive topics with indigenous peoples should be addressed before greater conflicts arise, and its treatment should contemplate the active participation of all the actors involved.
8. It is necessary to encourage regional research and education (basic, average, technical and upper) in matters of mining and sustainable development.
9. Honest and transparent communication between all involved should be encouraged and improved through various ways: i) methodical efforts for mutual knowledge; ii) appropriate access to appropriate and truthful information; and iii) alternative conflict resolution and prevention and other participation processes.
10. Clear participation policies of regional and/or national scope are necessary. They include specific managerial instruments that need to be compatible with each other and should orient and regulate mining activity with regards to access, management and protection of natural resources such as water, soil, and biodiversity.

And finally, the discussion and analysis of the actors of the proposals identified in this project require the creation of a body of permanent dialog on sustainable development in Chilean mining.

#### 4. Ecuador

The promotion of local development is framed in efforts to improve the exercise of citizenship, the environmental control of mining activities, the application of impact prevention and mitigation technical measures, as well as the promotion of necessary “*concertación*” processes (of consensual agreement) for economic and social development and, hence improve the current governance conditions in the country.

The current forms of production should be improved through the incorporation of technologies that can increase productivity, minimise waste and reduce or avoid negative environmental impact.

The majority of the key actors share the need to seek long-lasting agreements with indigenous and community organizations in order to make mining activity feasible in their territories. Consensual agreement is of interest to all social actors involved –particularly mining companies– and it is an obligation of the State given it deals with collective rights consecrated in the Constitution.

It is indispensable to improve knowledge about mining, non-metallic in particular, and to optimise information systems that can allow access to knowledge of the activity in all its complexity and amplitude.

The organization of small-scale miners is necessary in order to strengthen the formalisation process initiated in the past few years. The approach is converting small-scale miners into responsible actors that may receive sustainable technical and financial assistance.

There is a favourable situation for mining to contribute sustainable development of the country. Nevertheless, bottlenecks persist. Among them, institutional weakness of the environmental mining authority, legal gaps around collective rights and mineral exploitation, and a lack of information at multiple levels on the scope and perspectives on Ecuadorian mining.

#### 5. Peru

In the Peruvian case, the priorities are the relation between mining and local development, and the environmental performance of mining. The instruments and capabilities of public management, as well as civil society participation, would be crosscutting elements that would sustain any policy recommendation.

The comparative analysis of the research and workshops shows five elements that could integrate a program of applied research and public policy: social certification of companies (auditing), development funds, strategic development plans, labour training and basic infrastructure.

For the management of environmental impacts five topics of applied research and public policy were identified: monitoring with communities and local governments, damage valuation and compensation, environmental certificates, independence of consultants (incentive structures), along with education and appropriate and timely information mechanisms.

Finally, the integration of environmental and social policies in a framework for the encouragement of mining investment would be key to initiating the path towards the sustainability of the sector. Informed citizen participation within a trusting and transparent relationship, guaranteeing the independence of all actors involved, is also a necessary condition to initiate in this path.

## V. CONCLUSIONS

One of the main findings of the participatory process undertaken by the MMSD project in South America indicates that different stakeholders groups concur in the need to establish what could be called a new “social contract” for mining in the region. That is, if we admit “mining is essential and strategic for the development of our countries”, an agreement on the *how* and *where* it can be carried out.

Mining can contribute to the sustainable development of countries and regions as long as it evolves within a context of economic growth, of social equity, respect for cultural diversity, responsible environmental management, and that transparent and participatory mechanisms operate in the decision-making processes.

In simple terms, the renewal of this social pact requires that different stakeholder groups assume their roles in a responsible, transparent and, proactive way, by getting involved and committing themselves to dialogue through processes that may gradually respond to the requirements imposed by this great challenge.

There are no pre-conceived solutions to overcome the obstacles identified, nor are there recipes to address these challenges. However, the MMSD project has produced a qualitative leap in the regional discussion around the contribution of mining to sustainable development. The answers will be given by the different stakeholder groups, in new instances that build on the results achieved, as well as by existing initiatives. ■

### Social licence to operate

*“The mining and minerals industry faces some of the most difficult challenges of any industrial sector - and is currently distrusted by many of the peoples it deals with day to day. It has been failing to convince some of its constituents and stakeholders that it has the “social licence to operate” in many parts of the world, based on the many expectations of its potential contributions:*

- *Countries expect the minerals development will be an engine of sustained economic growth.*
- *Local communities expect that the industry will provide employment, infrastructure, and other benefits that counter the risks and impacts they experience and will leave them better off than when the project started.*
- *The industry’s employees expect healthier and safer working conditions, a better community life, and consideration when their employment ends.*
- *Local citizens and human right campaigners expect companies to respect and support basic rights, even when they are operating where government does not.*
- *Environmental organizations expect a much higher standard of performance and that the industry will avoid ecologically and culturally sensitive areas.*
- *Investors expect higher returns and have shown considerable concern about the industry’s financial results.*
- *Consumers expect safe products produced in a manner that meets acceptable environmental and social standards. (...)*

*Success in sustainable development will require improved capacity and performance by all in the sector - industry at all stages from exploration to processing, government, international organizations, non-governmental organizations (NGOs), academia, civil society, communities, labour, lenders, insurers, and consumers. All will need to learn to pursue their own objectives in ways that move society as a whole forward.” ▲*

Source: Executive Summary of the Global MMSD Project Final Report.