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case study

Minera Alumbrera: Assessing the impact of mining activities on local communities in Argentina

Context

Minera Alumbrera (MAA) is a joint venture between Glencore, Goldcorp and Yamana, engaged in the exploration and mining of metals in northwest Argentina. One of MAA's primary sites lies in the Bajo de la Alumbrera copper, gold and molybdenum deposit, located in the Catamarca province some 2600 meters above sea level.

Commissioned in 1997, construction of the Bajo de la Alumbrera site took approximately three years and required an initial investment of US$1.3 billion. The project included necessary associated infrastructure investments in areas such as electrical wiring, roads, railway systems improvements and port facilities. More than 4'000 direct jobs were created during this construction phase.

In terms of scale, the annual concentrate production of the site is 547,000 metric tons. Through large-scale crushing, grinding and flotation process, the annual throughput averages around 140,000 tons of copper, 352,000 ounces of gold in concentrate, 45,000 ounces of doré gold and 960 tons of molybdenum concentrate.

In this region of northwest Argentina, MAA's exploration rights are held by Yacimientos Mineros de Agua de Dionisio (YMAD), an integrated company composed of representatives from the Catamarca provincial administration, the National Tucuman University, as well as the national government. YMAD agreed to form an unincorporated joint venture with Minera Alumbrera to mine the deposit, and is entitled to a 20% share in the mining profits.

With such a significant operation size and large spectrum of stakeholders, MAA saw the need to measure and monitor its impact on local communities. The Argentine Business Council for Sustainable Development (CEADS), part of the WBCSD's Global Network of business organizations across the world, guided MAA in the measurement process. CEADS regularly convenes a working group on the topic of impact assessment, with the aim of increasing the collective knowledge around methodologies and best practice in measuring the economic, social and environmental impact of business activities. With insight from CEADS, MAA decided to apply the WBCSD's Measuring Impact Framework.[1]

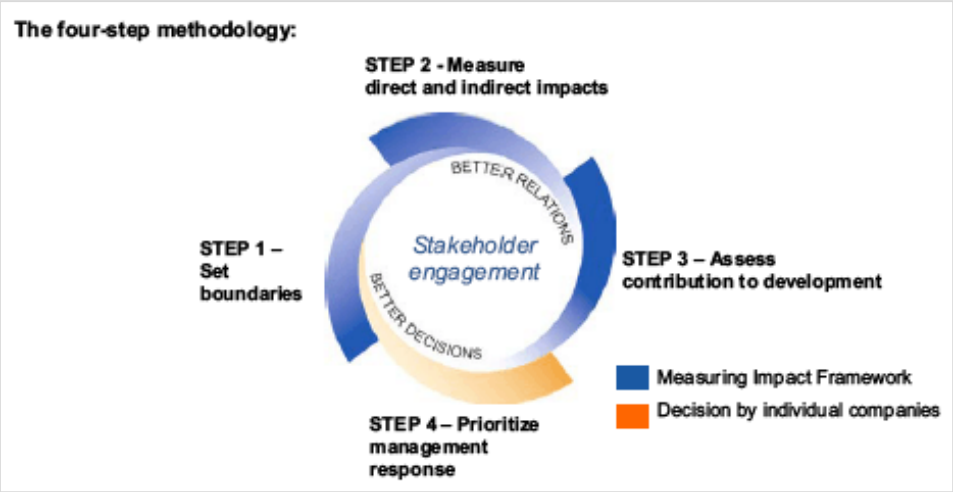
This case study explores how Minera Alumbrera applied the measurement framework and presents some of the results of the study. Initially aiming to study the impact of its CSR programs, MAA later extended measurement to the impact generated by all of its mining

[1] See http://www.wbcsd.org/impact.aspx

activities. With the aid of the framework, the company obtained a comprehensive overview of the footprint of its operations. Measurement has enabled MAA to better inform decision-making, tackle social tensions and manage its relationships with stakeholders such as local populations, NGOs, public sector partners and future investors.

Methodology

The WBCSD methodology, composed of the four steps depicted below, was applied in order to assess MAA's economic, social and environmental impacts.



Step 1: Setting boundaries

The first step outlined by the framework involves determining an overall goal for the evaluation, and aims to set the limits of the exercise. The general goal outlined by Minera Alumbrera was for the impact assessment to supply the company with information about the consequences of mining activities in the communities involved, and to provide useful data to make business decisions relating to MAA's liaison with other stakeholders and investors.

To do so, the evaluation needed to look at both direct and indirect impacts as well as contribution to local development in terms of quantity and quality. Initially, the original idea was to restrict the impact measurement to the actions connected with a community development or social responsibility programme. The assessment was later extended to all of MAA's activities, to look at the impacts from mining operations: production and export of copper, gold and molybdenum. A cost-benefit analysis conducted later showed that this decision was justified.

MAA chose to focus the geographic scope of the measurement process on its operations in the Andalgalá, Belén and Santa María districts in western Catamarca. Insufficient land ownership titles, community farm plots and irregular settlements in urban land are prevalent in these districts, hindering legal stability and limiting infrastructure investments. Additionally, rural residents in the area have limited socio-economic opportunities due to inadequate access to properly equipped and staffed health and educational facilities. To

better understand this context, a social and economic baseline was developed using quantitative data gathered at local and provincial levels, and qualitative data gathered from the field in the form of surveys and focus groups.

Step 2: Measuring direct and indirect impacts

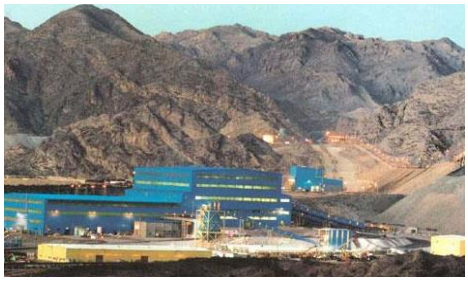
The next phase of the assessment looks at the impacts of the company; how to measure impacts as well as who and what influences them. At this point, MAA identified and developed over 20 strategic indicators, both direct and indirect, to serve as the basis for its impact analysis. In order to develop these indicators, MAA designed tools to survey primary information, and implemented methods to constantly provide feedback. The main goal of this process was to engage local stakeholders to actively participate in the measurement and assessment of impacts and contributions.

The direct impact indicators used covered a range of business activities such as: MAA's gross production value, exports, jobs created, national, provincial and municipal taxes, mining royalties, salaries paid, supplies and services purchased, gross geographic product and non-tax contributions. After gathering information in the operations offices and in the field and conducting initial analysis, other indicators were developed. For example, the ratio of MAA's tax contribution to the contribution from other economic sectors, or the rate of primary impact area residents who consider that mining contributes to local development were indicators that were included.

The indirect impact measurement looked at two different methods of jobs and indirect wealth creation: firstly by national supplies and services purchased by MAA, and secondly, by goods and services purchased locally by the mining employees with their salaries. The indicators used by MAA were indirect jobs, indirect job multipliers, indirect gross production value (GPV) and multipliers thereof.

With these indicators in place, data was then collected and analyzed from the chosen primary impact area of western Catamarca. This was done through several means:

- Distribution of two opinion surveys for residents of Andalgalá, Santa María and Belén, and the capital cities of Catamarca and Tucuman (1,400 people).



- Convening focus groups comprising young people, housewives, healthcare professionals, local MAA suppliers, farmers, artisans, teachers and students.

- Developing and circulating a survey for MAA employees, with the aim of obtaining qualitative data about the changes in quality of life as a consequence of employment with MAA, and corroborating assumptions made about the indirect impacts of workers' consumption patterns.

- Conducting in-depth interviews with relevant stakeholders from the primary impact area and in both capital cities, including representatives of religious, political, mining and anti-mining organizations, NGOs, executive and legislative authorities at the municipality and province level.

- Participant observation in the primary impact area.

At this stage of the process, MAA received full collaboration from stakeholders both within and outside the company.

Step 3: Stakeholder engagement and assessment of the contribution to development

The third step of the framework calls for stakeholder engagement to discuss and validate the results of the evaluation with focus groups. At this point, the results of the measurement process laid out in step 2 were presented to MAA's key stakeholder groups, all previously involved in the process. In line with step 4 of the WBCSD methodology, the stakeholders' feedback was taken on board by MAA.

MAA noted the presence of a wide array of indicators demonstrating that its operations provided significant economic and social contributions in the regions assessed. These were not only shown on employment levels and value added growth, both direct and indirect, but also on mining and non-mining exports at the provincial and national levels, local production of goods and services related and unrelated to mining, on the development of human capital, on financial capital, on income and taxes levels in each of the municipalities.

Find below an overview of the results, accompanied by a discussion of the stakeholders' perceptions.

<u>Economic impacts</u>

MAA's operations in the regions surveyed made significant contributions in terms of employment, salaries, royalties, social security contributions, purchase of local goods and services, tax and other contributions to the Argentinian mining industry and the local economy as a whole. In 2010, MAA's contribution to the latter totaled US$ 855.3 million.[2]

MAA's operations have generated almost 1,400 direct jobs over the period 1997-2010. By factoring in the jobs created through contracting and other secondary positions, the figure increases to 2,216 for 2011.

Employment at MAA has brought economic stability for its employees, as 92% are able to save money, with 70% investing in real estate and 85%

[2] All US$ figures in this case are based on conversion from Argentine pesos based on the exchange rate of August 1, 2012.

eligible for a loan. The communities involved in the consultation process expressed strong appreciation of MAA's impact in job creation; some 53% of respondents viewed job creation as the company's most significant positive impact.

MAA has implemented corporate policies, programs and projects intended to improve the offer of supplies and services in the towns and provinces surrounding the mining site. Goods and services purchased by MAA in the area amounted some US$ 7.6 million, roughly two thirds of spending in the province of Catamarca.

Social impacts

The operating site of Minera Alumbrera is in a predominantly arid mountainous area, with geographical barriers hindering integration for local communities. Since the beginning of operations in 1997, MAA has invested over US$ 25 million in community development and corporate social responsibility programs aimed at addressing the lack of access to basic services.

In 2010, MAA's sustainable development program expenditure totaled US$ 7.84 million, with 61% of this allocated to social investment initiatives, and the remaining 39% to health, education, environment, production and cultural projects. These projects were developed in cooperation with various local and provincial organizations.

With regard to promoting the health of its employees and the community, MAA pursues an annual vaccination program against influenza each spring, accompanied by discussions around preventive steps for employees. Additional healthcare sessions are organized year-round by site physicians to foster healthy habits and provide recommendations regarding positive health practices related to employee off-duty activities. In May 2010, the local government of Catamarca inaugurated the new "Maternity Hospital 25 de Mayo." The facility was fully equipped by the Minera Alumbrera-YMAD joint venture, which invested US$ 1.75 million in state-of-the-art medical technologies aimed at improving the quality of care available for newborns and mothers.

MAA has also made significant strides with regard to advancing access to education in Catamarca. In 2010, 108 students (half of them from Catamarca) graduated with a secondary school diploma in Economics and Organizational Management. The degree was developed by MAA jointly with the Instituto de Ciencias Empresariales, a local education center officially sanctioned by the Education Department. The program was developed specifically for MAA employees and its associated catering services contractor. The program registered 230 new students in 2011.

In November 2010, the Belén educational community, along with the municipal authorities and MAA, held so-called “Belén Digital Education” sessions as part of the Education Improvement Plan, a community initiative supported by Intel and Microsoft. The sessions were led by teachers and students eager to communicate new knowledge obtained through training courses on information and communication technologies. These courses were particularly successful and highlighted the potential for unprecedented collaboration to improve technological infrastructure needed for the community.

Lastly, MAA also invested US$ 764,000 in the construction of the new Famayfil Sports Center, erected in Belén in late 2010. This work is part of an agreement between MAA and the Catamarca government aimed at constructing and upgrading health, educational and recreational facilities in various towns of Catamarca in order to increase social development and improve quality of life in the region.

The creation of focus groups enabled MAA to capture the community needs and understand how to respond to social tensions and mistrust. The focus groups in 2009 and 2010 concluded that despite the existing investments made, priority needed to be focused on generating long term sustainability. A common concern was that the benefits of these investments could continue to be reaped after MAA had finished operating in the region. Further demands were made to assist farmers, help boost tourism and trade through infrastructure projects to create economic opportunities beyond mining.

Environmental impacts[3]

MAA’s Environmental Management Program includes efforts in the domain of re-vegetation and conservation of biodiversity. For instance, in 2011 MAA re-habilitated 100 hectares of land with jatropha, a plant which bears fruit used to make biodiesel. The lifetime of the plant can reach up to fifty years, and it takes just one year to produce the fruit from which seed oil used in biodiesel is extracted. With low water requirements, these plants can grow on marginal land unfit for other crops. At the onset of the project, MAA committed to purchasing seedlings for selected producers, training land owners, and providing technical support throughout all stages of production for a contract period of two years with the possibility of renewal.

In 2010, Minera Alumbrera initiated a study designed to measure greenhouse gas (GHG) emissions in its value chain, using the methodological guidance developed by the Climate Leaders program of the US Environmental Protection Agency. Direct GHG emissions from sources that are owned or controlled by MAA amounted to 1.66 kton of CO2. To accompany the study on GHG emissions, MAA initiated a study on the potential use of alternative energy sources to power its activities. As of 2011, MAA operated 25 towers equipped with three solar panels each.

Step 4: Prioritizing management response

The final stage of the WBCSD measurement framework enables the company to reflect on scaling up its positive impacts and to think about what could be done differently. Upon

[3] More information about environmental impact can be find in 2011 Sustainability Report: http://www.alumbrera.com.ar/download/articulos/Informe-Sostenibilidad-2011.pdf

completing the previous stages and compiling the preliminary report, a workshop for senior managers was organized to discuss the results and recommendations of the technical team.

Following social unrest in 2011, the use of the step 4 of the framework was restructured in order to concentrate on working with focus groups. These were strengthened in order to build trust between the company and communities. The axis of the evaluation was re-centered to minimize risks and obtain a holistic picture of all operations.

Specific actions were established to enhance the positive impacts of operations and consequently improve the perceptions of local stakeholders of areas where the full impacts of operations were not visible. MAA reviewed and implemented the Guidelines for Community Development (CDP) and Corporate Social Investment (CSI) Project Identification, Implementation and M&E. They then selected a pilot-scale CSI and/or CDP to test the guidelines, implemented the actions set and developed the final report.

Stage 4 has been progressing as planned. Furthermore, the Monitoring and Evaluation Guide has been revised according to the action plan compiled as management response.

Looking ahead

The major challenges encountered in the application of the MI Framework consisted in developing complementary tools in each step of the process in an efficient and cost-effective way and in harmony with stakeholder demands. However, Minera Alumbrera found that responding to these challenges was facilitated by the flexibility of the step by step process of the framework. They highlighted this important strength of the methodology as it enables a company that already had its own methods or previous assessments to adapt and incorporate them into the new framework.

The data provided by the assessment proved to be useful resources to help MAA make business decisions relating to their relationships with stakeholders (local community, NGOs, public sector, etc.) and to adapt and/or adjust decisions about the operation of the mining project. It was especially important for MAA to diagnose social challenges in order to tackle them and provide solutions. The process also created a group dynamic within the company, by encouraging collaboration and involving senior management.

The lessons learned from the stakeholder engagement process and the tools that were tested for this assessment, represent an important added value and these participation mechanisms can be used in business projects and tasks to come.
