



MINERA SAN CRISTÓBAL S.A.

# 2017

## SUSTAINABILITY REPORT



BUILDING A FUTURE

START INDEX



Graphic Design and Layout: Salinasanchez Comunicación S.R.L.  
Printed in Artes Gráficas Sagitario, La Paz - Bolivia  
100% Recycled paper – 100% Organic ink



**MINERA SAN CRISTÓBAL S.A.**

# 2017

**SUSTAINABILITY REPORT 2017**

---

**BUILDING A FUTURE**

---











# Content Index

## 01

MESSAGE FROM THE PRESIDENT AND VICE PRESIDENT & GENERAL MANAGER	8
---	---

## 02

ABOUT MINERA SAN CRISTÓBAL	14
Products	17
Markets	18
Supply chain	18
Operational highlights	19

## 03

ABOUT THIS REPORT	20
Material topics	22
Material topics and Boundaries: 2017	23
Verification of the sustainability report	25

## 04

CORPORATE GOVERNANCE – ORGANIZATIONAL STRUCTURE	26
Organizational structure	28
Sustainable development management	28
Business Management System of Minera San Cristóbal	29
Commitment to external initiatives	32
Memberships and associations	36

## 05

ETHICS AND INTEGRITY	38
MSC's values	40
Code of ethics and business conduct	40
Whistleblower regulation	41
Anti-Corruption/Anti-Bribery	41

## 06

HUMAN RIGHTS	42
--------------	----

## 07

STAKEHOLDER ENGAGEMENT	46
Approach	48
Stakeholders	49
Sustainability objectives	52

## 08

ECONOMIC PERFORMANCE AND CONTRIBUTIONS	56
Approach	58
Economic performance	61
Indirect economic impact	61
Local procurement and our relationship with local suppliers	61
Community investment	63

## 09

WORKFORCE	66
Characteristics of the workforce	68
Local hiring	68
Women with equal opportunities	69
Changes in human resources	70
Labor relations	71
Employee grievance mechanism	73
Training and development	73



## 10

### HEALTH AND SAFETY

Approach	76
Health and safety performance	78
Occupational health	80
Health and safety training	81
Industrial hygiene program	82
Industrial hygiene	
Monitoring program	82
Hearing conservation program	84
Respiratory protection program	84
Other programs	85
Emergency preparation and response plan	85
Hygiene, occupational safety and wellbeing mixed committee	88

## 11

### ENVIRONMENT

Approach	90
Efficient use of water	92
Waste management	93
Energy	96
Emissions	100
Investments and total expenses in environmental protection	101

## 12

### NEIGHBORING COMMUNITIES

Approach	106
Support to neighboring communities	108
Community grievance mechanisms	109
Concerns in the communities and response of <b>MSC</b> in 2017	110
Social mine closure planning	111
Development	
Projects for 2017	112

## 13

### VERIFICATION OF THE SUSTAINABILITY REPORT

120

## 14

### GRI CONTENT INDEX

124

#### WE VALUE YOUR COMMENTS ✓(102-53)

We value our stakeholders' opinions regarding our 2017 Sustainability Report. For more information, questions or comments, please contact:

Patricia Dalence R.

Superintendent of Public Relations

[patricia.dalence@minerasancristobal.com](mailto:patricia.dalence@minerasancristobal.com)

(591-2) 262-3400 ext. 2444

[www.minerasancristobal.com](http://www.minerasancristobal.com)

# 01

## **Message from the President and Vice President & General Manager** 102-14)✓)









Dear readers,

It is our great pleasure to present our third annual Sustainability Report, which has been prepared in a very significant and special context: in 2017, Minera San Cristóbal celebrated the ten-year anniversary of its first export of zinc-silver and lead-silver concentrates.

Ten years of hard work with a focus on a responsible mining operation and sustainable development, through which we promote social and economic growth of our environment and which allows us to “Build a Future” for the benefit of all Bolivians.

During this decade, Minera San Cristóbal has allied with stakeholders, integrating as a development promoting agent in its area of operational influence; and it has consolidated a high-performance team committed to its values. The work of each and everyone in this company has been crucial to bring us closer to operational excellence and, as a direct result of our work, for the second consecutive year, the Wood Mackenzie report of 2017 has ranked Bolivia as the fourth most productive country in terms of open pit zinc mines in the world.

It is important for us to highlight that Minera San Cristóbal has an integrated and holistic focus on sustainable development which cuts across all company levels. Through our Business Management System we have achieved the company results with efficient, participative and collaborative work dynamics that allow us to develop and promote best practices in the Bolivian mining sector. This system is an integral part of the organizational culture in which all employees participate towards the achievement of our vision, which is founded on three pillars: Knowledge, Commitment and Continuous Improvement.





During the current year, the financial results obtained by the company were positive. Our efficiency increased in alignment with our Strategic Plan and, in spite of rising operational costs, we produced a record 634 thousand tonnes of concentrates. Similarly, we fulfilled our tax and royalty payment obligations with the Plurinational State of Bolivia, contributing approximately 229 million US dollars and positively impacting regional and national economic development.

A very important milestone in 2017 within the framework of complying with new Mining Law 535 is the request to convert our concessions or ATEs (*Autorizaciones Transitorias Especiales* – Special Transitory Authorizations) to a single Mining Administrative Contract with the AJAM (*Autoridad Jurisdiccional Administrativa Minera* – Mining Administrative Jurisdictional Authority). Currently, this transaction is in process and the contract is expected to be signed in 2018.

In 2017, environmental management focused on the efficient use of water, the reutilization and recycling of industrial waste, dust control and the rehabilitation of areas disturbed by our mining operation.

Minera San Cristóbal performed an integral waste management program that has resulted in the reduction of waste generation by 2.9% since 2016. In 2017, energy consumption decreased by 2.4%.

In 2017, we continued our work as the main promoters of local development by partnering with communities surrounding our operation, respecting their autonomy, culture and traditions, and working continuously with the Consultative Council Los López San Cristóbal.





With the objective of improving educational services, productive socio-communal projects were designed based on the communities' potential and needs. Equipment was provided for productive training in quinoa transformation and handicrafts. Basic technical training was provided for young people in gastronomy, quinoa production, camelid breeding and craftsmanship.

It is important to mention that the Camelid Project is highly relevant thanks to the strategic alliance between the Colcha K municipality, the Government of Canada, the International Conservation Fund, the Consultative Council Los López San Cristóbal, the Camelid Producers Association and Minera San Cristóbal. The objective of this project is to improve the management and use of llamas and vicuñas with a productive chain approach, generating an income for the families involved.

Finally, it is important to highlight that one of the initiatives of Minera San Cristóbal in 2017 was to apply for membership of the International Council on Mining and Metals (ICMM), an international organization dedicated to a safe, fair and sustainable mining and metals industry. Being part of the ICMM will enable the company to:

- Reaffirm the company's commitment to the global standards in sustainable development, ethical corporate behavior, and compliance with human rights.
- Understand and share best practices of the mining industry worldwide.
- Integrate **MSC** as a company with the rest of the mining industry worldwide.

Minera San Cristóbal's challenges for the coming years will focus on strengthening the integral management of sustainable development in matters related to risk manage-





ment, improvements in Human Rights activities and on defining the strategies associated with climate change and biodiversity. With regard to production, efforts will be made to improve operational efficiency.

All Minera San Cristóbal's achievements to date are thanks to the hard work and support of its human resources. The company believes that training and continuous improvement of its employees are fundamental for success of its operations. It is important to keep our team motivated, encouraging integration of our values into their day-to-day activities.

We consider that we have a long way to go in our future, with many challenges which we accept with utmost responsibility to continue "Building a Future" hand in hand with our stakeholders. This way, we can consolidate as a world-class Bolivian mining operation, and a catalyst of local, regional and national development.

We cordially invite you to read our 2017 Sustainability Report.

Dave Assels  
Vice President and General Manager  
Minera San Cristóbal S.A.

Mitsuhiro Hirano  
President  
Minera San Cristóbal S.A.



# 02

## **About Minera San Cristóbal**







**M**inera San Cristóbal S.A. (MSC) ✓<sup>(102-1)</sup> is a Bolivian mining company, which has been a fully-owned subsidiary of the Japanese Sumitomo Corporation since 2009.

The **San Cristóbal** mine is located in the province of Nor Lítez, municipality of Colcha K in the department of Potosí <sup>(102-4)</sup>, and has administrative offices in the cities of La Paz and Potosí <sup>102-3</sup> ✓). Considered the most important mining project of Bolivia, **MSC** operates by combining use of the latest technology with permanent training of its employees, strict occupational and industrial health and safety controls, preservation of the environment and sustainable development, contributing to development of the region in which it operates, the department of Potosí and the country as a whole.

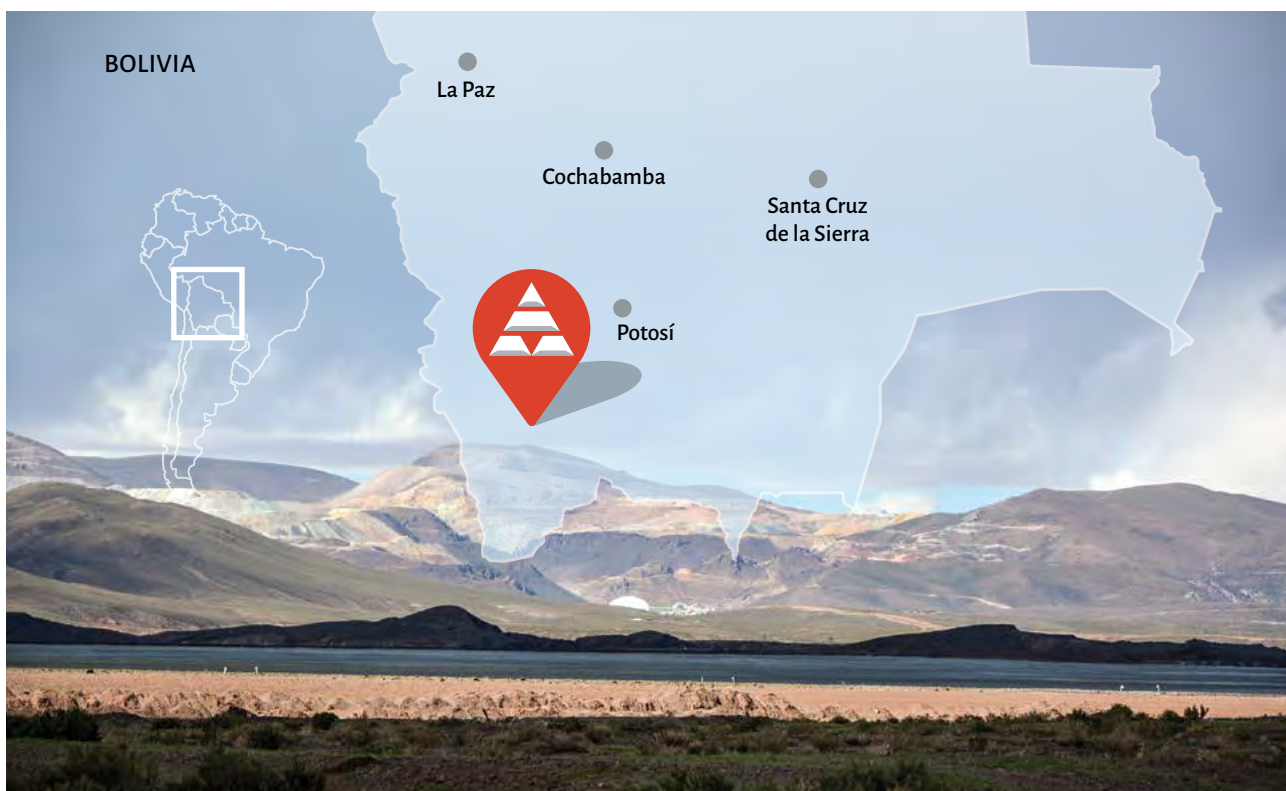
The corporate philosophy of Minera San Cristóbal is explained in its vision and mission:

#### **VISION:**

To be a world-class Bolivian mining company.

#### **MISSION:**

Develop a model mining operation through safe operations, at low cost, with innovative technology, with social commitment and respect for the environment, that creates value to the shareholders, the employees, the region in which it operates and the country.



## PRODUCTS 102-2)✓)

**San Cristóbal** is a zinc, lead and silver mine. It produces zinc-silver and lead-silver concentrates and is currently the largest open-pit mining operation in Bolivia. As a direct result of its work, the Wood Mackenzie<sup>1</sup> report of 2017 has ranked Bolivia as the fourth most productive country in terms of open pit zinc mines in the world.



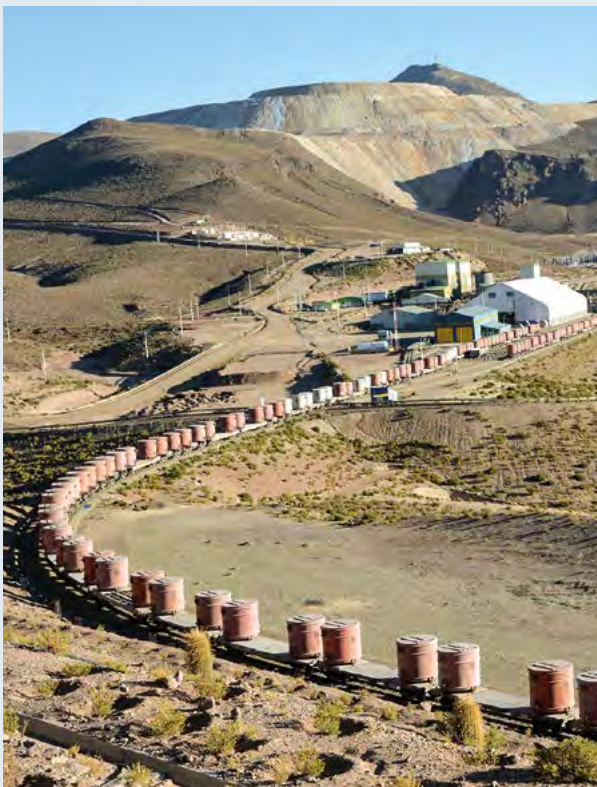
1. **Wood Mackenzie.** Global consulting group for metals, mining, energy, chemical products and renewable sources headquartered in Edinburgh (United Kingdom).





## MARKETS 102-6)✓)

The mineral concentrates of **MSC** are transported to the Chilean port of Mejillones by railway in bulk containers. From there, Summit Minerals GmbH, also a subsidiary of Sumitomo Corporation, purchases most of the concentrate production for sale to different destinations, mainly in Europe and Asia. The final clients are smelters that process the concentrate to obtain high-purity metals that are subsequently used for different purposes globally such as galvanized steel, brass and zinc-based alloys. The main areas of application of these products are construction, transport, consumer goods, electrical appliances and engineering.



## SUPPLY CHAIN ✓(102-9)

**MSC** relies on an integral network of local and international companies that provide a variety of supplies and services for the mining industry. In 2017, it had 1,108 suppliers, i.e. an increase of 8% compared to 2016. The main supplier categories are related to transportation and storage of concentrates, fuel provision, reactive chemicals, mill elements, industrial machinery spare parts, telecommunications and specialized services. It is important to highlight that about 90% of the transportation service providers are local companies.





## OPERATIONAL HIGHLIGHTS <sup>(102-7)</sup>

### REVENUES (MILLION DOLLARS)

2015	2016	2017 ✓
US\$ 441	US\$ 632	US\$ 893

### PROFIT/LOSS (MILLION DOLLARS)

2015	2016	2017 ✓
US\$ 4	US\$ (88)	US\$ 221

### WORKING CAPITAL (MILLION DOLLARS)

2015	2016	2017 ✓
US\$ 369	US\$ 234	US\$ 590

### ZINC-SILVER CONCENTRATE PRODUCTION (THOUSAND TONNES)

2015	2016	2017 ✓
397 t	502 t	514 t

### ZINC-SILVER CONCENTRATE SALES (THOUSAND TONNES)

2015	2016	2017 ✓
380 t	481 t	516 t

### LEAD-SILVER CONCENTRATE PRODUCTION (THOUSAND TONNES)

2015	2016	2017 ✓
76 t	96 t	120 t

### LEAD-SILVER CONCENTRATE SALES (THOUSAND TONNES)

2015	2016	2017 ✓
71 t	95 t	112 t



\* The data reflected in this chart are based on calendar years (January to December), whereas 2015 and 2016 were previously reported based on fiscal years. More information can be found in chapter 3 of the report.

During 2017, there were no significant changes in size, structure, property and supply chain <sup>102-10</sup>✓).



# 03

## About this Report





The main purpose of this report is to inform ✓<sub>(102-52)</sub> all stakeholders and the general public about the performance of **MSC** and how its activities focus on contributing to sustainable development of the country, based on its corporate strategy, vision, mission and values.

Unlike the two previous versions, 2015 and 2016 ✓<sub>(102-51)</sub>, and because of the consolidation of information, all data published in this sustainability report are based on calendar years, from January 1<sup>st</sup> to December 31<sup>st</sup> of 2017. ✓<sub>(102-50)</sub>. Therefore, the comparative data relative to previous periods may have varied in comparison to preceding reports, mainly with regard to financial data since these were being reported based on fiscal periods (October 1<sup>st</sup> to September 30<sup>th</sup>) ✓<sub>(102-48, 102-49)</sub>.<sup>2</sup>

This report is in accordance with the Core option ✓<sub>(102-54)</sub> of the GRI (Global Reporting Initiative Standards), and its respective supplement for the Mining and Metals Sector, and it includes 11 'Comprehensive' General Standard Disclosures. On page 124 you can find the Content Index, which shows the location of the performance indicators for material topics for 2017.

## MATERIAL TOPICS ✓<sub>(102-46)</sub>

The materiality evaluation and risk management processes of **MSC** are part of the Business Management System and are based on the methodology developed by GRI. The process to identify material topics in regards to sustainability is performed every two years and the last one was done in November 2017.

Compared to what was done in 2015, in 2017 significant improvements were made to the methodology for identifying the economic, social and environmental concerns of the stakeholders. Besides the identification of impacts, risks and

opportunities including internal corporate documentation standards and corporate governance policies, materiality for internal and external stakeholders was identified qualitatively based on the frequency and intensity/passion with which themes or issues were raised by focus groups or interviews with individuals or organizations, and ranked accordingly as low, medium and high. Among the stakeholders that participated in these meetings are:

### Internal stakeholder:

- Labor Union representatives
- Male and female employees from different areas and positions

### External stakeholders:



- Community members
- Representatives of the Vice Ministry of Planning and Development
- Representatives of the Vice Ministry of Mining Policy and Oversight
- Representatives of the Directorate General of Controlled Substances
- Representatives of the Mining Administrative Jurisdictional Authority (AJAM, in Spanish)
- Representatives of the Medium Miners Association
- Contractors of different goods and services

After these meetings, a workshop was held with the executive team (Managers and Superintendents) of the company to review and corroborate the results and analyze the impacts of the business on stakeholders and the environment in order to obtain a final matrix of material topics. Finally, this matrix was reviewed by the General Management and Directors for final approval. ✓<sub>(102-21)(102-32)</sub>.




2. The financial statements as of September 30th of 2017 submitted to the National Tax Service (SIN, in Spanish), only correspond to the activities of Minera San Cristóbal S.A. and do not include any other entity ✓<sub>(102-45)</sub>.

## MATERIAL TOPICS AND BOUNDARIES: 2017 ✓ (103-1; 102-47)

### CONSOLIDATION OF HIGHLY IMPORTANT MATERIAL TOPICS

Material Topics	Material Sub Topics	Explanation	Coverage
 <b>ECONOMY</b>			
LOM (Life Of Mine)	Closure Plan	There is general awareness that the mine has a finite life. There is concern in the communities about economic survival once the mine closes.	Internal/External (Communities, suppliers, contractors)
	Oxides Project	Project of which the stakeholders hope it will prolong the life of mine.	
Local Economic Development	Employment	Interest in possible alternative employment after mine closure.	Internal/External (Communities, Employees, Civil Society, Media)
	Second Generation	Youth see <b>MSC</b> as a possible future source of employment.	
	Local Entrepreneurs	Creation of alternatives for local economic development: tourism, camelids, etc.	
	Economic Benefits		
Sustainable Economic Performance	Concentrate Export Logistics	Unreliable concentrate transportation.	Internal/External (Government, Customers, Employees, suppliers, contractors)
	Labor Cost and Productivity	" <b>MSC</b> is the leading mining company in Bolivia".	
Management of Controlled Substances		Improvements in diesel volume controls.	Internal (Government, Employees)
Risk Management		Improvements in integrated risk management.	Internal (Employees, Investors, Civil Society)
 <b>ENVIRONMENT</b>			
Water		Concerns related to water and the tailings deposit (Wila Khara).	Internal/External (All stakeholders)
Energy		Integration to the national interconnected system (SIN, in Spanish).	
Waste Management		Improvement of solid waste management.	
Biodiversity/ Protected areas	Llamas	Concerns regarding llama relocation.	
Life Cycle of Product		Integration of the Life Cycle perspective into <b>MSC's</b> management.	



Material Topics	Material Sub Topics	Explanation	Coverage
 HEALTH AND SAFETY			
Health and Safety (Zero Fatalities or loss-time injuries)		Complaints about unequal health care provision. Contractors comply with <b>MSC's</b> health and safety standards.	Internal/External (Employees, Communities, Union, suppliers, contractors)
 SOCIETY			
Wila Khara (tailings deposit)		The community of Culpina K has socio-environmental concerns regarding the tailings deposit of Wila Khara.	
SLO (Social License to Operate)	Community Relations	Maintaining a good relationship with the communities is an ongoing challenge. Migration of workers drawn to the communities around the mine causes cultural changes and community cohesion issues.	Internal/External (Communities, Government, Employees)
Governance	Corporate Reputation	"We would like <b>MSC</b> to continue forever, but we know it is impossible". "We are impressed by <b>MSC's</b> performance when faced with adverse market conditions".	
	Transparency	" <b>MSC</b> is much more open and transparent than other companies".	
 LABOR PRACTICES			
Organizational Culture	Labor Climate	Local community employees complain that they do not have access to the benefits granted to employees coming from outside the communities (lodging, meals, electricity, water, better medical care, transportation). Employees coming from other cities complain about the social cost of being separated from their families.	Internal (Employees, Government)
	Training and Professional Development		
	Best Practices		
	Commitment of Contract Supervisors		
Human Rights	Gender Equity/Inclusion	There should be initiatives to further improve gender equality.	

The materiality matrix is input for the “Planning and Business Review” and “Risk Management” processes which are part of the Business Management System.

The executive team, following the “Planning and Business Review” process, meets yearly as a minimum to review the strategic risks and uses this input for strategic planning. The final result of this process is the set of objectives and strategic goals of the business, which are fundamental elements for the company’s Strategic Plan. ✓<sup>(102-29)</sup> <sup>(102-30)</sup> <sup>(102-31)</sup>.

The main risks identified in 2017 were <sup>(102-15)</sup>:

- Turmoil, political or social blockades
- Labor strikes
- Non-compliance of concentrate sales due to transportation issues or port interruption
- Effects of water utilization
- State Contract
- Tax issues
- Changes in the minerals market
- Closure plan

## VERIFICATION OF THE SUSTAINABILITY REPORT ✓<sup>(102-56)</sup>

In order to offer a greater level of trust to the stakeholders and the general public in relation to the content of the Sustainability Report, consulting firm Ernst & Young<sup>3</sup> has been hired for the independent verification of the sustainability performance indicators, applicable for the 2017 reporting period. This external entity is endorsed by the Global Reporting Initiative and by the World Business Council for Sustainable Development<sup>4</sup>. It has ample experience in the sustainability report verification process in the international mining sector. The verification was performed according to the International Standard for Assurance Over Non-Financial Information (ISAE 3000) and the provisions of the Inter-

national Auditing and Assurance Standards Board (IAASB)<sup>5</sup>. The limited verification report from Ernst & Young can be found in chapter 13 of this report.



3. **Ernst & Young:** One of the largest firms in the world in audit, tax, finance, accounting, actuarial studies and advisory services.
4. **World Business Council for Sustainable Development:** Worldwide Association with more than two hundred companies that work exclusively with the business and sustainable development sector.
5. **International Auditing and Assurance Standards Board (IAASB):** Agency responsible for improving the quality and uniformity of audit activities throughout the world.



# 04

## **Corporate Government Organizational Structure**





ORGANIZATIONAL STRUCTURE

Minera San Cristóbal S.A. is a company incorporated in Bolivia ✓ (102-5) in 2000. In March 2009 it became a 100% subsidiary of the Japanese Sumitomo Corporation, whose shareholders, through financial vehicles, are Comercial Metales Blancos A.B., 99.9%; Summit Minerals GmbH, 0.05%; and SC Minerals Bolivia S.R.L., 0.05%. The shareholders are subsidiary companies of Sumitomo Corporation, a multi-sectoral business conglomerate with headquarters in Japan.

CORPORATE GOVERNANCE STRUCTURE

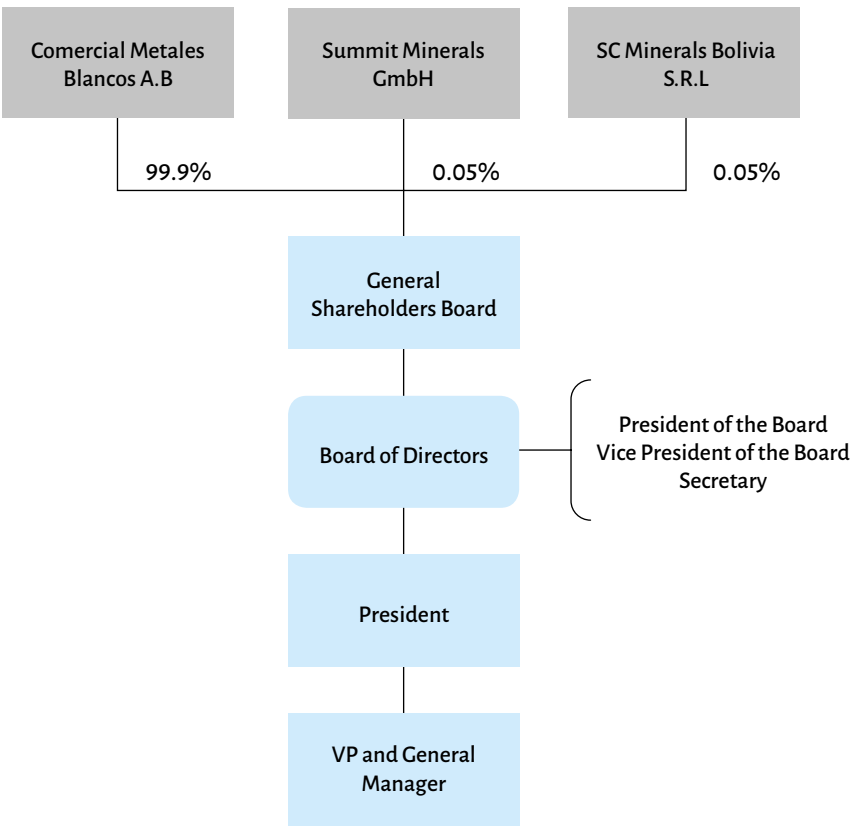
According to Bolivian legislation and MSC’s bylaws ✓ (102-18), the General Meeting of Shareholders is the maximum decision-making body of the company. This corporate government body nominates the Shareholders Advocate and

decides on fundamental matters regarding sustainable development, the company budget, new mining developments, internal control, operations and others.

The company is administrated by a Board of Directors, whose members are designated by the General Meeting of Shareholders. Sumitomo Corporation names the three designated members of the Board -President, Vice President and Secretary. The President has residence in Bolivia during his tenure.

There is an Operating Committee composed of two members designated by the Board of Directors. This Committee has powers to make high-level decisions related to MSC operations, which are later validated by the Board of Directors.

The Directors at MSC are responsible for managing economic, environmental and social topics, according to their sphere of responsibilities ✓ (102-20).



## SUSTAINABLE DEVELOPMENT MANAGEMENT

### SUSTAINABLE DEVELOPMENT AND THE LINK WITH THE BMS PROCESSES (BUSINESS MANAGEMENT SYSTEM)



**MSC** understands sustainable development within the framework of its business strategy. It takes decisions considering the stakeholders' concerns and needs. Accordingly, it keeps in mind social, economic and environmental aspects in its work.

The stakeholders of **MSC** are a central part in decision-making and a key element of the Business Management System, which is the tool ensuring its commitment to sustainable development of the business.

The company's Business Management System is based on three pillars:

- Knowledge, i.e. internal learning and feedback from the stakeholders.
- Commitment, related to the integration and application of learning to routine activities.
- Continuous improvement, targeting the implementation of actions to achieve excellence.

### BUSINESS MANAGEMENT SYSTEM OF MINERA SAN CRISTÓBAL

**MSC** has an integrated and holistic sustainable development approach, which is incorporated into all levels of the company. It is managed through the business processes and systems (BMS or Business Management System), including

tools with the ability to produce company results with efficient, participative and collaborative work dynamics that enable the development of best practices in the Bolivian mining sector.

**MSC's** BMS is an integral and successful part of its organizational culture, through which it has been able to manage its company activities with participation of all its employees, towards the achievement of its vision.

### The Management Model ✓<sup>(103-3)</sup>

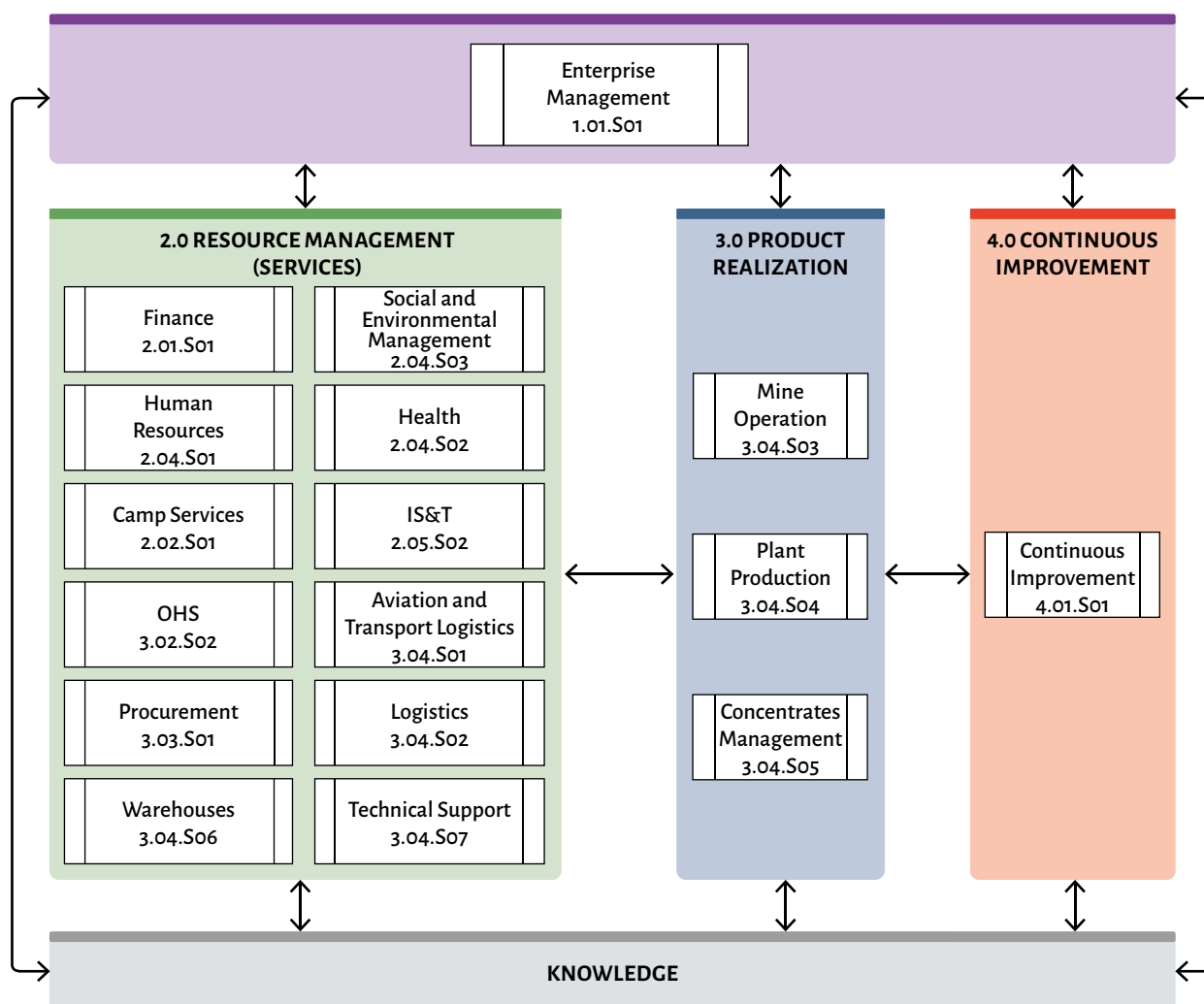
The BMS is the result of the work developed by the staff of Minera San Cristóbal and the commitment to this model ensures constant updating and improvement.

Each task within the company is documented by using representation mechanisms such as system maps and process maps. Control, follow-up and updates are the responsibility of each of its administrators, ensuring that they adequately describe the required and performed tasks and defining corporate best practices. It is operated under the Deming cycle methodology (Plan, Do, Check and Act), aimed at continuous improvement of the management model through the identification and application of opportunities.

The Management Model of **MSC** integrates the following business elements:



## ENTERPRISE MANAGEMENT



The commitment of **MSC** management is specified in its Management Policy:

**Minera San Cristóbal S.A.** develops safe activities oriented to the production of zinc-silver and lead-silver mineral concentrates for sale. And integrates Sustainable Development in the different stages of the life cycle of our mining operations.

The vision, mission and values are the basis of our Business Management System with a process and continuous improvement focus.

With the required resources and continuous management review, in compliance with legal and regulatory requirements, **MSC** is committed to:

1. Respect and protect the human rights of our employees and communities, keeping our operations free from discrimination, harassment and child or forced labor.
2. Identify, assess and ensure control of the risks with regards to the safety of our employees, contractors and visitors, in order to prevent injuries and harm to their health.

3. Protect and improve the health and quality of life of our insured workforce through comprehensive promotion, prevention and health care actions.
4. Respect the environment ensuring sound environmental management practices that identify, evaluate and manage risks, prevent contamination and mitigate impacts with a focus on climate change and biodiversity 102-11)✓).
5. Contribute to sustainable development by implementing social responsibility principles that ensure relationships of mutual respect, transparency and compliance with commitments and generate benefits for our shareholders, our employees, the communities and the country.
6. Ensure the identification and control of risks in the operations of our airplanes and international supply chain, preventing incidents, illicit activities, encouraging the timely reporting and treatment of events that affect safety and taking the necessary preventive / corrective actions.
7. Protect our information considering its value and risks, while maintaining its confidentiality, integrity and availability.
8. Deliver products and services that meet our customers' requirements.
9. Ensure the quality of our chemical assays results.
10. Promote the establishment of objectives and performance evaluation mechanisms for all our processes.
11. Ensure that no disciplinary action is taken against any employee or contractor who reports a safety problem, code of ethics violation or any act or action that may be perceived as an act of corruption.

Compliance with ISO 9001, ISO 14001, OHSAS 18001, ISO / IEC 27001, ISO / IEC 17025, NB 512001, IS-BAO, Authorized Economic Operator (OAS) standards and reporting through the sustainability report under the GRI standards; all of which contribute to integral management of the business.



**MSC** recognizes that the success of the Business Management System and the operation is dependent on the continuous efforts and participation of all personnel members and other stakeholders; that is why we promote the dissemination, understanding and compliance of this policy.





## COMMITMENT TO EXTERNAL INITIATIVES ✓<sub>(102-12)</sub>

As a result of its management practices, **MSC** has been able to obtain the following certifications, frameworks or external standards, recognized both nationally and internationally:

The Universal Declaration of Human Rights of the United Nations	Adheres to the principles contained therein and which are integrated in the Constitution of the Plurinational State of Bolivia
ISO 14001 – Environmental Management	Certification received in 2010 and maintained to date, updated in 2017
ISO 9001 – Quality Management	Certification received in 2010 and maintained to date, updated in 2017
OSHAS 18001 – Occupational Safety and Health Administration	Certification received in 2010 and maintained to date, updated in 2017
ISO / IEC 27001 - Information Security	Certification received in 2014 and maintained to date, updated in 2017
ISO / IEC 17025 – Technical Competence of its Chemical Laboratory	Accreditation received in 2008 and maintained to date, updated in 2017
NB 512001 – Healthy Workplace	Certification received in 2014 and maintained to date, updated in 2017
IS-BAO– Best Practices in Air Operations	Certification received in 2014 and maintained to date
AMO – Approved Maintenance Organization for <b>MSC</b> 's Airplanes	Certification received in 2015 and maintained to date
AEO – Authorized Economic Operator – Security in the International Supply Chain as an Exporter	Certification received in 2016 and maintained to date
AEO – Authorized Economic Operator – Security in the International Supply Chain as an Importer	Certification received in 2017 and maintained to date
National & International Labor Standards	Bolivian standards as well as the conventions of the ILO (International Labor Organization) are followed
GRI Standards - Guide for the Preparation of Sustainability Reports of the Global Reporting Initiative	Adopted as the <b>MSC</b> sustainability reporting framework

# Certificate

Standard **ISO 9001:2008**  
Certificate Registr. No. 01 100 095394

Certificate Holder: **Minera San Cristóbal S.A.**  
Calle 15 Calacoto, Torre Ketal Piso 5  
La Paz  
Bolivia  
including the locations according to annex

Scope: Exploration, exploitation, processing, transportation and export and / or sale of concentrates of zinc-silver, including support activities.

Proof has been furnished by means of an audit that the requirements of ISO 9001:2008 are met.

Validity: The certificate is valid from 2016-05-01 until 2018-09-14.  
First certification 2010

2016-10-04

*Houou Hauwei*  
TÜV Rheinland Cert GmbH  
Am Grauen Stein · 51105 Köln

www.tuv.com



# Annex to certificate

Standard **ISO 9001:2008**  
Certificate Registr. No. 01 100 095394

No.	Location	Scope
/01	Minera San Cristóbal S.A. - Oficina La Paz Calle 15 Calacoto, Torre Ketal Piso 5 La Paz Bolivia	Exploration, exploitation, processing, transportation and export and / or sale of concentrates of zinc-silver, including support activities.
/02	Minera San Cristóbal S.A. - Mina San Cristóbal Provincia Nor Lipez Potosí Bolivia	Exploration, exploitation, processing, transportation and export and / or sale of concentrates of zinc-silver, including support activities.

*Houou Hauwei*  
TÜV Rheinland Argentina S.A.  
San José 83 7° Piso - C1075AAA

Page 1 of 1

www.tuv.com



# Certificate

Standard **BS OHSAS 18001:2007**  
Certificate Registr. No. 01 113 060344

Certificate Holder: **Minera San Cristóbal S.A.**  
Calle 15 Calacoto, Torre Ketal, Piso 5  
La Paz, Bolivia  
including the location

**Minera San Cristóbal S.A.**  
Mina San Cristóbal, Provincia Nor Lipez  
Potosí, Bolivia

Scope: Exploration, exploitation, processing, transportation and export and / or sale of concentrates of zinc-silver, including support activities

Proof has been furnished by means of an audit that the requirements of BS OHSAS 18001:2007 are met.

Validity: The certificate is valid from 2016-10-20 until 2019-04-30.  
First certification 2010

2016-10-31

*Jo. Bl.*  
TÜV Rheinland Cert GmbH  
Am Grauen Stein · 51105 Köln

www.tuv.com



# Certificate

Standard **ISO/IEC 27001:2013**  
Certificate Registr. No. 01 153 085394

Certificate Holder: **Minera San Cristóbal S.A.**  
Oficina La Paz  
Calle 15 Calacoto  
Torre Ketal Piso 5  
La Paz  
Bolivia  
including the location according to annex

**Minera San Cristóbal S.A.**  
Mina San Cristóbal  
Provincia Nor Lipez  
Potosí  
Bolivia

Scope: Operations of Information Technologies  
in Minera San Cristóbal (MSC)  
Statement of applicability: Date 27.01.2018

Proof has been furnished by means of an audit that the requirements of ISO/IEC 27001:2013 are met.

Validity: The certificate is valid from 2017-08-07 until 2020-06-27.  
First certification 2014

2017-08-24

*Jo. Bl.*  
TÜV Rheinland Cert GmbH  
Am Grauen Stein · 51105 Köln

www.tuv.com





# Certificate

Standard **ISO 14001:2004**  
Certificate Registr. No. 01 104 087353

Certificate Holder: **Minera San Cristóbal S.A.**  
Calle 15 Calacoto, Torre Ketai, Piso 5  
La Paz, Bolivia

including the location  
**Minera San Cristóbal S.A.**  
Mina San Cristóbal, Provincia Nor Lípez  
Potosí, Bolivia

Scope: Exploration, exploitation, processing, transportation and export  
and / or sale of concentrates of zinc-silver, including support  
activities

Proof has been furnished by means of an audit  
that the requirements of ISO 14001:2004 are met.

Validity: The certificate is valid from 2018-10-20 until 2018-09-14.  
First certification 2010

2018-10-31

*Joh. B.*  
TUV Rheinland Cert GmbH  
Am Grauen Stein · 51105 Köln

www.tuv.com



EL INSTITUTO BOLIVIANO DE NORMALIZACIÓN Y CALIDAD  
CERTIFICA QUE EL SISTEMA DE GESTIÓN  
DE EMPRESA SALUDABLE DE:



**MINERA SAN CRISTÓBAL S.A.**  
Campamento Toldos - Provincia Nor Lípez  
Potosí - Bolivia

Cumple con los requisitos de la Norma:

**NB 512001:2008**

**Sistemas de Gestión de Empresa Saludable (SIGES) -  
Requisitos de Asistencia, Prevención y Promoción**

Cuyo alcance es:

"Actividades de asistencia, prevención y promoción de la salud  
dirigidas a los trabajadores y sus familias de la Empresa Minera San  
Cristóbal, la cual realiza actividades de exploración, explotación,  
beneficio, transporte y exportación y/o venta de concentrados de  
zinc-plata y plomo-plata, incluyendo actividades de soporte y apoyo  
en salud a las comunidades de San Cristóbal, Culpina K y Vía Vía."

Vigencia del Certificado: 2017-06-19 al 2020-06-18

*José Durán Guillén*  
Director Ejecutivo

*Diego Sánchez Solís*  
Presidente



www.ibnorca.org  
IBNORCA - Oficina Central: Calle 7 N° 545 Zona El Dorado, La Paz, Bolivia



ESTADO PLURINACIONAL DE BOLIVIA  
DIRECCIÓN GENERAL DE AERONÁUTICA CIVIL  
DIRECCIÓN DE SEGURIDAD OPERACIONAL

## CERTIFICADO DE ORGANIZACIÓN DE MANTENIMIENTO APROBADA

OMA N° N-005

Otorgado a:  
**"MINERA SAN CRISTÓBAL S.A."**  
Aeropuerto Internacional El Alto, Hangar N° 4.  
LA PAZ - BOLIVIA

La Dirección General de Aeronáutica Civil del Estado Plurinacional de Bolivia, de acuerdo a  
lo establecido en los Artículos, 72° y 117° de la Ley 2902, y habiéndose comprobado que la  
OMA, cumple con todos los requerimientos prescritos en la Reglamentación Aeronáutica  
Boliviana (RAB) Parte 145, para operar como Organización de Mantenimiento Aprobada, con  
las habilitaciones y limitaciones contenidas en la Lista de Capacidad Aprobada, adjunta al  
presente certificado.

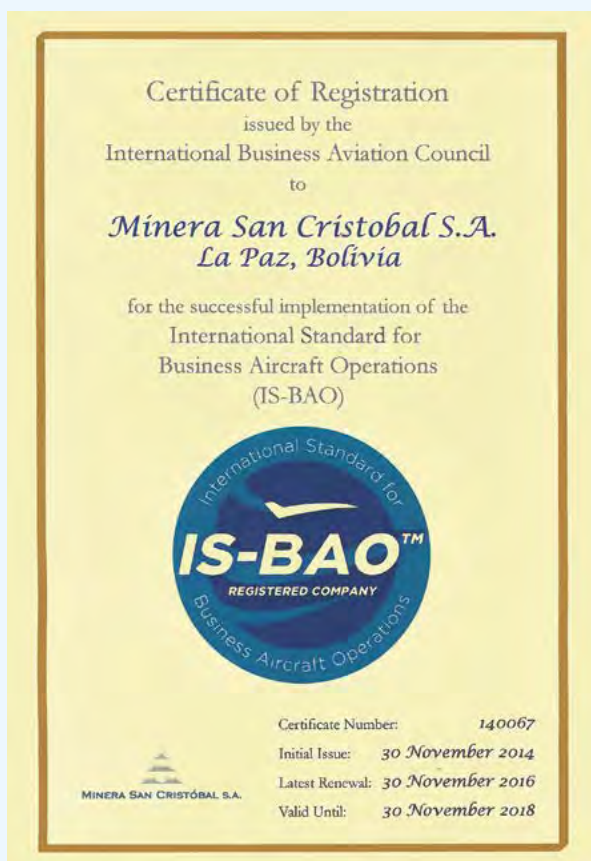
Este certificado es intransferible e inalterable, a menos que sea suspendido, revocado o  
cancelado, mantendrá una vigencia de dos (2) años a partir del **06/11/2017** hasta el  
**06/11/2019**, siempre y cuando la Organización de Mantenimiento Aprobada cumpla con las  
disposiciones de la DGAC.

*Diego Sánchez Solís*  
Director General de Aeronáutica Civil

Fecha de emisión: 06/11/2017  
Fecha de certificación inicial: 06/11/2014

CUALQUIER ALTERACIÓN A ESTE CERTIFICADO SERÁ PASIBLE A SANCIONES  
DE CONFORMIDAD CON LA LEY N° 2902

Form DGAC-800-4(01-2015)





## MEMBERSHIPS AND ASSOCIATIONS ✓<sup>(102-13)</sup>

As of December 2017, **MSC** is a member of or participates in the following company associations:

LEVEL	COMPANY OR SECTOR ASSOCIATION	POSITION
National	National Association of Miners	Member of Board
National	Confederation of Private Entrepreneurs of Bolivia	Member of Board through the Association of Miners
National	National Chamber of Exporters of Bolivia	Participant as a member of the Chamber of Exporters of La Paz
National	National Chamber of Commerce	Participant
National	National Chamber of Industries	Participant
Regional	Chamber of Exporters of La Paz	Member of Board
Regional	Federation of Entrepreneurs of Potosí	Member of Board
International	World Mining Congress	Member
International	International Council on Mining and Metals (ICMM)	Membership Pending

One of the most important initiatives that **MSC** decided to launch in 2017 was the application to become a member of the International Council on Mining and Metals (ICMM). “The ICMM is an international organization dedicated to a safe, fair and sustainable mining and metals industry. Bringing together 25 mining and metals companies and over 30 regional and commodities associations, we strengthen environmental and social performance. We serve as a catalyst for change, enhancing mining’s contribution to society”<sup>6</sup>.

The main reason why **MSC** decided to apply for membership in this organization is for recognition as a world-class

Bolivian mining company. Being part of the ICMM will enable the company to:

- Reaffirm the company’s commitment to the global standards in sustainable development, ethical corporate behavior, and compliance with human rights.
- Understand and share best practices of the mining industry worldwide.
- Integrate **MSC** as a company with the rest of the mining industry worldwide.

At the time of publication, **MSC**’s ICMM membership is under evaluation and admission is expected in 2018.

6. [www.icmm.com](http://www.icmm.com)





# 05

## **Ethics and Integrity**



## MSC's VALUES ✓(102-16)

The values governing the activities of Minera San Cristóbal are:

- **Trust** - We trust our work colleagues, no matter their level or role. We share information and new ideas in an open and sincere way to encourage innovation, creativity and continuous success.
- **Integrity** - We act appropriately and authentically, with responsibility for our decisions and acts. We fulfill our promises.
- **Teamwork** - We are one team, we value other people's work and we work in a coordinated, complementary and committed way.
- **Honesty** - We express our sincere opinion with respect.
- **Professionalism** - We fulfill our work with excellence, we do our utmost to develop our skills and we are responsible for what we do.
- **Continuous Improvement** - We accept the challenge of continuous improvement to achieve effectiveness and efficiency in our work.
- **Mutual Respect** - We tolerate and understand each other in order to achieve a healthy and productive environment.

- **Transparency** - We have nothing to hide in our actions, whilst repudiating illicit and illegal acts.
- **Commitment to Safety, the Environment and Corporate Social Responsibility** - We value people's safety and are concerned about their health. We respect our environment and are responsible towards our communities, our region and our country.

The commitment of **MSC** to these values has allowed the adoption of international standards applicable to the operations that contribute to the creation of shared value for all stakeholders.

## CODE OF ETHICS AND BUSINESS CONDUCT ✓(102-17)

The activities performed by **MSC** are in accordance with legal and ethical principles, avoiding any act of corruption in the understanding of any act that violates the laws in effect and the ethical values of the company. Therefore, a Code of Ethics and Business Conduct has been established which promotes:





- Honest and ethical conduct, including the ethical handling of actual or apparent conflicts of interest between personal and professional relationships.
- Compliance with applicable government laws, rules and regulations.
- Full, fair, accurate, timely and understandable disclosure in reports and documents which the Company files or submits.
- The prompt internal reporting of violations of the Regulation to an appropriate person or persons identified in the Regulation.
- Accountability for adherence to the Regulation.
- Conduct of the Company's business in compliance with applicable government laws, rules, and regulations.
- Ethical behavior in transactions with contractors, suppliers, customers, employees and others.
- Avoidance of situations where personal interests are, or appear to be, in conflict with the Company's interests.
- Responsibility in using and protecting the Company's assets, including property, equipment, facilities, funds and information.
- Confidentiality of nonpublic information and non-use of such information for personal gain.

The Code of Ethics and Business Conduct sets out the expectations related to the prevention of conflicts of interests ✓<sub>(102-25)</sub> which are shared with all employees in a recurrent manner and as part of their work induction. **MSC** defines a conflict of interest as those situations in which the interests or personal activities interfere or seem to interfere with the interests of the company.

## WHISTLEBLOWER REGULATION

The company's Code of Ethics and Business Conduct policy requires all directors and employees to comply with applicable legal requirements related to the submission of corporate financial statements, accounting and audit procedures, and related matters as defined in the Code.

The company has formal mechanisms to support ethical and honest work, including: a) Whistleblower Regulations, b) Mutual Respect Policy, c) **MSC** Complaint and Suggestions instruction ✓<sub>(102-17)</sub>.

These standards are shared with employees at the time of their hiring and contain instructions regarding the formal and confidential mechanisms which the employees must use to file complaints in case of non-compliance or possible non-compliance with the Code. Such non-compliance can be reported through the pertinent mechanisms or directly to the President, to any member of the executive team or the Human Resources department. ✓<sub>(102-25, 102-33)</sub>. Employees filing a complaint related to this policy shall not be discriminated against and shall not be subject to any retaliations. During 2017, **MSC** realized it was necessary to improve the anonymous grievance/complaint mechanisms and is currently working on this process.

## ANTI-CORRUPTION/ANTI-BRIBERY

**MSC** performs analyses of operational, financial and strategic risks related specifically to the sectors in which there might be incidents related to corruption and bribery, defining the actions and internal controls needed to prevent them ✓. No illegal actions were identified or reported in 2017 ✓<sub>(205-1, 205-3)</sub>.

**MSC** staff members are trained in topics related to the fight against illegal practices, reinforcing these policies with training and workshops organized periodically by the Human Resources department. ✓<sub>(205-2)</sub>.

The Company does not tolerate any act of bribery or fraud by the Board of Directors, employees, contractors, suppliers or others. Immediate and serious actions are taken against the parties responsible, regardless of their years of service or their position in the company.

# 06

## Human Rights













**M**SC adheres to the human rights principles laid down in: the Constitution of the Plurinational State of Bolivia, the Universal Declaration of Human Rights of the United Nations and the covenants of the International Labor Organization. It is committed to an honest and transparent communication with all communities in the areas of its activity and it acts with respect for cultural heritage, traditions and customs of the communities in which it operates.

The Internal Regulation and the Code of Ethics and Business Conduct of **MSC** contain provisions to ensure and promote a harmonious human relationship in all levels of the company. This is strengthened with the Mutual Respect Policy, which clearly shows that no harassment, discrimination, verbal or physical actions threatening or intimidating any other person are tolerated. In 2017 no incidents of discrimination or any other incidents related to human rights were reported through formal complaint mechanisms ✓ (406-1, 103-2).

In Bolivia, the Child and Adolescent Code is the most important legislative instrument in protecting children's rights, prohibiting minors under 18 years old to work in hazardous or unhealthy activities or activities affecting their dignity, including industrial activities such as mining. The Human Resources department makes sure that all candidates for jobs in **MSC** submit evidence of their age.

Since there is a risk of child labor related to the supply chain, the company includes legally mandatory provisions to control this hazard in the contracts of its product and service providers ✓ (408-1).

During the reporting period, **MSC** identified certain improvements to be made in the Human Rights management approach. Currently, some actions like impact assessments and revisions of all policies and internal regulations of **MSC** are being performed; the results of these analyses will be implemented in the following years.



# 07

## **Stakeholder Engagement**





## APPROACH

**MSC** defines its stakeholders as the people, the group of people or the organizations that affect or could be affected, either positively or negatively, as a consequence of its activities. The company identifies, maps and analyzes this network of stakeholders and works proactively with these groups, sharing ideas and incorporating their needs and expectations, with the objective of the operations having a positive impact in their lives.

The stakeholders have different mechanisms to make known their concerns that are related to any other aspect of the company's operations. **MSC** has implemented a formal complaints mechanism and is willing to receive requests or concerns through different channels, including email, telephone or personally. These requests are verified and validated, following them up individually or with the stakeholders within a reasonable time depending on the complexity of each case ✓<sup>(102-34)</sup>. These relationships are based on the values of mutual respect, honesty and transparency.

**MSC** maintains a relationship with the communities and organizations of its area of influence through channels that ensure a continuous interaction. The main coordination mechanisms with the different stakeholders are interviews, permanent contacts, formal and casual conversations, as well as meetings in different settings.

Additionally, the stakeholders can come to the Community Relations department offices of **MSC**, which are located in the directly impacted communities, where they can interact with our staff in regard to their needs, expectations and/or concerns. This helps measure the sensitivity and perceptions of each stakeholder.

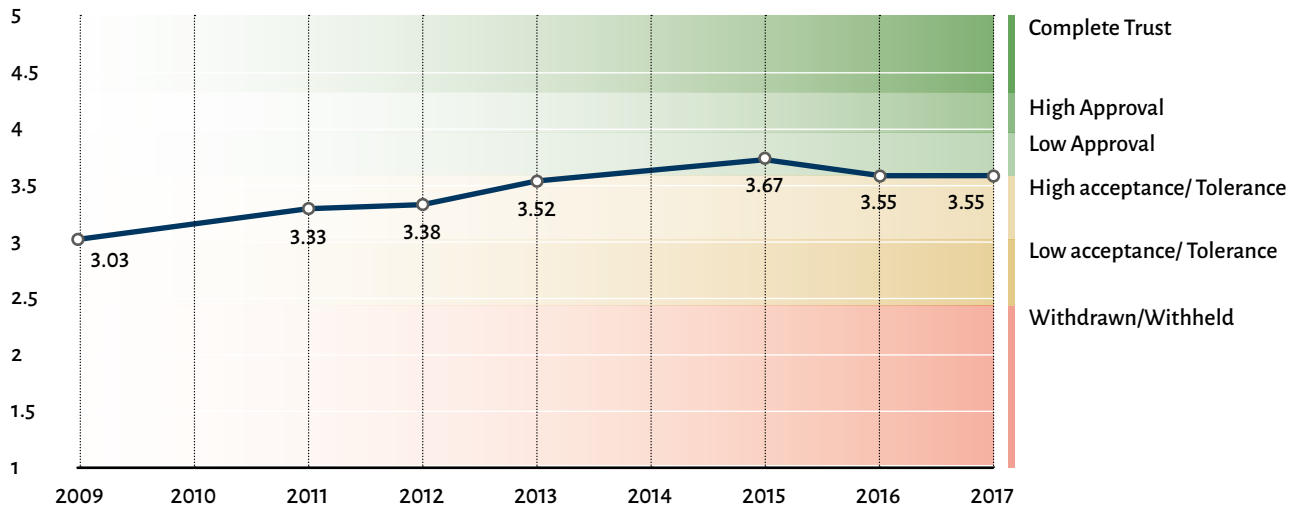
**MSC** complies with Bolivian legislation about the rights of indigenous people, as well as international treaties, guidelines and principles related to the mining activity.

**Minera San Cristóbal** is committed to wellbeing and sustainable development. It supports activities directed to strengthen and empower the communities so that they can achieve a better future, through a close collaboration with the Consultative Council Los Lípez San Cristóbal. This body is made up of directors and authorities of the communities of San Cristóbal, Culpina K, Río Grande and Vila Vila and designs and coordinates projects to promote social and economic development of the area.

One of the tools that has been helpful in this sense, from the exploration stage to date, is the "Social License" of **MSC**, which is considered to be the acceptance of the activities of Minera San Cristóbal by the stakeholders. From its conception, the activities of the company have been aligned with the operational directives of the World Bank (OD 4.30 Involuntary Resettlement and OD 4.20 Indigenous Peoples). The Social License is monitored with the purpose of defining goals and priorities in the short and medium term in regard to the relationship with stakeholders, as input for its strategic planning. The results are shown in the chart of the next page:



## SOCIAL LICENSE



## STAKEHOLDERS

The stakeholders identified by **MSC** in 2017 are 102-44,102-43,102-42,102-40) ✓):







## Customers

The quality of products is one of the main corporate objectives focused on customer satisfaction. In this regard, **MSC** shares information about the technical characteristics of products with its clients, so that they can provide useful feedback in the process of continuous improvement.

**Topics of concern:** the quality of metal concentrates, reliability of the concentrate transportation.



## Suppliers / Contractors

Suppliers and contractors are partners that must be aligned to **MSC's** standards and values. There is coordination with them to understand their perspectives, challenges and expectations for continuous improvement and shared success.

**Topics of concern:** life of mine, sustainable economic development, health and safety.



## Shareholders

**MSC** is aligned with the corporate practices of its investors, with whom it is in constant communication about the performance of its operations.

**Topics of concern:** maximize value for its investors, have positive relationships with its stakeholders, sustainable development of the mining industry.



## Employees

The success of **MSC** depends on its labor force. It is a priority to create an integrated work environment where values and objectives are shared. The workforce is 99% Bolivian and approximately 50% comes from the communities surrounding the mining operation. The links between workers and local communities are relevant to the mining operation and operational decisions have an impact on both.

**Topics of concern:** mine life, continuity and labor stability, local economic development, sustainable economic performance, environmental protection, organizational culture, human rights.



## Media

Media play an important role in the dissemination of information and the communication of ideas and perspectives in Bolivia and the world. **MSC** recognizes the need to have a continuous relationship with them.

**Topics of concern:** lack of information and content.



## Communities

**MSC** is part of an environment where mutual respect is fundamental for coexistence with the communities. The company maintains an open relationship, sharing information about company activities and understanding the communities' points of view and their expectations. It works in close relationship with the community-based Consultative Council Los Lípez San Cristóbal to take into account the mechanisms of socioeconomic development that are not linked to mining and the communities of the influence area.

The area of direct influence of **MSC's** operations comprises four communities: San Cristóbal, Culpina K, Vila Vila and Río Grande. The indirect area of influence comprises eight communities located along the main road between Uyuni and Avaroa, and the communities located along the railway route which the company uses to transport its mineral concentrates.

**Topics of concern:** water, life in the mine, economic social development, sustainable development, health and safety, Wila Khara tailings deposit.



## Government

**MSC** interacts directly with the national government at all its levels, the departmental government of Potosí and the municipality of Colcha K and has been successful in developing a constructive relationship. Furthermore, it complies with legal provisions and national and international standards related to financial reports and others. **MSC** does not participate in political parties and gives no particular support to any political party, individual politicians, officials or government employees. (415-1)

**Topics of concern:** royalties, sustainable economic development, legal compliance, environmental protection, human rights.



## Labor Union

**MSC** respects the rights of its workers to freedom of association and collective representation. The Mixed Labor Union of Mine Workers of San Cristóbal was created in 2010 and the company is committed to interact with it in an environment of honesty, transparency and good faith. The union representatives contribute by proposing improvements in organizational performance.

**Topics of concern:** continuity and job stability, safety and health.






## Civil Society

**MSC** has strategic and operational relationships with civil society organizations (non-governmental organizations, social institutions and trade associations) at the local, departmental and national levels that share the objectives, interests and concerns related to relevant policies that influence the environment where they develop their operations.



**Topics of concern:** water, energy, socio-economic development, environmental protection.



## SUSTAINABILITY OBJECTIVES

2017 OBJECTIVES	PROGRESS BY 2017	2018 OBJECTIVES
 <b>ECONOMIC/OPERATIONAL</b>		
Be a low-cost producer by reducing costs and maximizing the value of the product, based on innovations and proper planning to optimize tonnage, the mineral grade, recovery and quality of the concentrates.	In 2017, the concentrate production unit costs increased by 0.7% and the production of concentrates fell by 2.9%.	Be a low-cost producer by reducing costs and maximizing the value of the product, based on innovations and proper planning to optimize tonnage, the mineral grade, recovery and quality of the concentrates.
Increase the mineralized reserves through ongoing efforts in explorations, drilling and optimized silver recovery.	There has been drilling work in and near the San Cristóbal pit (Jayula-Tesorera-Colón) with the purpose of exploring sulfide resources. In the area of Toldos exploration focused on oxide resources and in other areas (Montes Claros, Mulatos, Cristian and Calameña) basic exploration work was performed (mapping, sampling and geophysical work).	Increase the mineralized reserves through ongoing efforts in explorations, drilling and optimized silver recovery.

2017 OBJECTIVES	PROGRESS BY 2017	2018 OBJECTIVES
 <b>WORKFORCE</b>		
Follow-up of implementation of high-performance equipment and implementation of new equipment.	Implementation of five pieces of equipment under the high-performance equipment methodology.	An additional five training workshops will take place for high-performance equipment.
Development of the Supervisors Program, enhancing their leadership skills.	Three of the eight phases of the Supervisors Program have been completed: I. Leadership, II. Communications and feedback on performance, III. Leadership in safety approach.	Five phases of the Supervisors Program have been developed, improving their essential and soft skills and competencies to manage people.
Digitization of internal documents of Human Resources.	Through the consolidation of four processes of the HR system, some internal documents have been automated and digitized. For example the internal report in SharePoint and the change of the attendance control system.	Life/Work Balance Program (Implementation of activities to be conducted onsite and in the La Paz and Potosi offices: sports activities, cultural activities, recreational activities).
Implementation of the e-learning platform with 10 courses.	Ten courses have been implemented in the e-learning platform, among which: OHS orientation, refresher OHS induction, informative talk.	An additional 20 courses will be implemented in the e-learning platform.
Implementation of a new model for internal courses.	Mandatory internal courses have been regularized, and expiry of competencies and training has been updated.	Development of the <b>MSC</b> Organizational Culture and Climate Program.
Implementation of phases I, II and III of the <b>MSC</b> mobile app.	Phase I of the mobile app was implemented, with the aim of providing general information to <b>MSC's</b> employees and having a communication channel with employees and contractors.	Implementation of phases II and III of the <b>MSC</b> mobile app, with automation of the STOP cards, implementation of a survey mechanism to measure internal customer satisfaction, queries on employee competency and training to perform specific activities.
 <b>SOCIAL/COMMUNITIES</b>		
Maintain a relationship with different stakeholders.	Different stakeholders' perception of <b>MSC</b> has improved and led to mutual agreements.	Consolidate the relationship with different stakeholders by strengthening social capital.
Maintain a level above 3.5 in the Social License	The level of the SLO achieved in <b>MSC's</b> area of influence was 3.55, equivalent to Approval.	Maintain the SLO level achieved in <b>MSC's</b> area of influence.
Contribute to Sustainable Development of the communities in the direct area of influence.	The productive transformation process started. Certification and accreditation of the education and health service were obtained.	The products and services will be commercialized. New health centers will be certified and accredited.

2017 OBJECTIVES	PROGRESS BY 2017	2018 OBJECTIVES
 HEALTH AND SAFETY		
Promote the adoption of prevention programs to reduce the risk of incidents and to employees of MSC.	Progress of this objective in 2017 was 91%. The following prevention programs were implemented: Isolation, investigation of incidents, risk management, golden rules inspections, high work, development of supervisors, training in OHS and industrial hygiene, strengthening of contractors, and STOP. Industrial hygiene programs were complied with 100% in 2017.	The implementation of prevention programs will continue to further reduce risks and protect the health and safety of MSC's employees. Industrial hygiene programs will be further improved.
Capacity-building for OHS employees to provide services with excellence.	There have been capacity-building workshops for OHS employees, focusing on the new line of work related to customer service and services with excellence.	Branding of OHS and Personnel services and internal customer satisfaction will be focused
Enhance performance of contractors in OHS topics, using MSC's indicators as a reference.	Compliance of 96% in contractors' performance.	<p>Achieve that the contractors' performance is equal to that of MSC in OHS standards, with an impact on incident indicators.</p> <p>Maintain high quality standards in health services.</p> <p>Develop the Occupational Health Program.</p>
 ENVIRONMENT		
Ensure that water extraction from the wells remains under the recommended maximum of 39,000 m <sup>3</sup> per day.	The groundwater pumping rate from the production wells was 25,843 m <sup>3</sup> per day (66.3% of the recommended volume).	Ensure that water extraction from the wells remains under the recommended maximum of 39,000 m <sup>3</sup> per day.
Reduce waste generation and increase recycling by 2%.	Monthly solid waste generation was 100,639 kg, i.e. 2.9% less than in 2016.	Reduce solid waste generation by 2% compared to the year before.
Reduce energy consumption by 1%.	240 MWh less than in 2016 were consumed.	Reduce energy consumption by 1%.





# 08

## **Economic Performance and Contributions**







## APPROACH

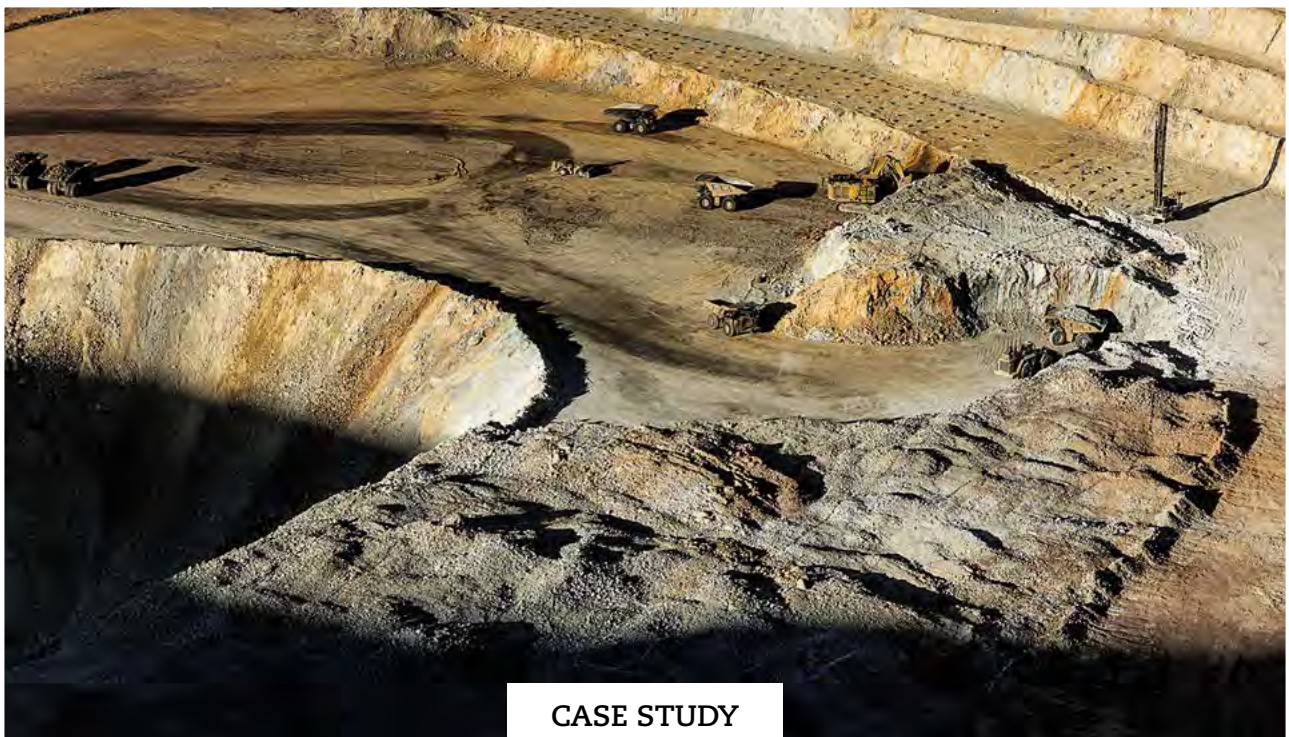
**MSC** focuses on an adequate cost-benefit ratio and financial administration in order to maximize its economic performance, with benefits for both stakeholders and shareholders. **MSC** complies with all Bolivian laws and the tax obligations arising from its operations. The company prepares its financial statements strictly in accordance with applicable technical and legal guidelines corroborated by audit opinions issued by the most prestigious firms at the national and international level. For **MSC**, the economic priorities are: achieve greater operating efficiencies, optimize costs and savings and meet the objective of continuous improvement, including an improved recovery of silver oxides.

In 2017, no fines or any other non-monetary sanctions were imposed on the company for noncompliance of laws and regulations ✓<sup>(419-1)</sup>.

Development and construction of the San Cristóbal Mine required an investment of approximately 1.8 billion dollars. Financial resources were assigned for the exploration, feasibility studies, environmental and social impact assessments, engineering projects, mine preparation, plant construction and support infrastructure. Moreover, a significant percentage of the funds was assigned to social projects, road and electrical infrastructure, as well as sustainable development activities for the benefit of the communities surrounding the mining operation.

The magnitude of the operation, the specialization and experience required for project management and the quantity of staff involved have had a positive impact on the economy of the province of Nor Lípez, one of the regions considered among the poorest of the country until before the project. Currently, the operation continues generating significant economic benefits for Potosí and the country as a whole, thanks to the employment opportunities, local procurement and the continuous payment of taxes and royalties.





## CASE STUDY

# Improvement in blasting (Fragmented Material)

The fragmented mineral material resulting from blasting generates rocks of a considerable size, the volume of which, when processed, affects productivity in the primary crusher, increasing the probability of safety incidents that may impact the health and wellbeing of employees and reducing the productivity of loading and hauling equipment. Therefore, optimization of fragmentation of the material will facilitate the plant process.

In the last few years, the Perforation and Blasting Unit has implemented actions to improve its process and in 2017 a better fragmentation of mineral was achieved.

The improvements performed in the process include:

### Design Improvements:

- Overlaps between the perforation mesh screens.
- Geometric figures of the perforation screens for blasting.
- Burden and spacing optimization based on the geological characteristics of the terrain.
- Increase of the over-perforation in rough terrain.
- Increase in blasting simulations to optimize the sequence of blasting times.
- Improvement in the explosive charge column.

- Increased of the explosive charge in the drill.
- Increase energy distribution of the drill (double charge).

### Design improvements in the explosive charge column:

- Heavy ANFO utilization in hard zones.
- Booster changes from 450 gr to 900 gr in hard zones.
- Implementation of self-inflatable bags, with the generation of an air chamber in the drills close to the slopes.
- Retention of energy, use of grinded gravel as support.

### Improvements in Field Controls:

- Drill positioning control.
- Drill depth control.
- Height control of support.
- Linear density control of the ANFO in the drill.
- Increase in frequency of analysis of fragmentation.

### Benefits Obtained

The following benefits were obtained with these improvements:

- Incident reduction.
- Greater productivity in the loading equipment at the mine.
- Greater efficiency of the grinding process.





## CASE STUDY

# Administrative adjustment of the mining sector

The Bolivian mining industry is in a continuous process of transformation. In 2017, in accordance with its Management Policy and corporate values and in order to comply with the new Mining Law 535, **MSC** was the first mining company to request that the Mining Administrative Jurisdictional Authority (AJAM, in Spanish) adjust the fifty-six (56) Specials Transitory Authorizations (ATE's, in Spanish) which the company has, **to become one Administrative Mining Contract** made up of 1,706 mining grids in the municipality of Colcha K, province of Nor L pez, department of Potos .

In order to achieve this objective, an action plan was prepared with a multidisciplinary team that addressed the challenge, prioritizing compliance of the requirements. Teamwork, perseverance and technical knowledge, with support from Senior Management, ensured compliance of the necessary information for the start, follow-up and conclusion of the request for adjustment. This is additional evidence that **MSC** is a world-class Bolivian mining company.

The new Mining Administrative Contract is expected to be signed in 2018, confirming alignment of **MSC** to the new Mining Law and its criteria and legal provisions, ensuring continuity of the company's operations.



## ECONOMIC PERFORMANCE (201-1)

The comparative data of the last three calendar years are shown below:

	2015	2016	2017 ✓
	US\$	US\$	US\$
<b>TOTAL ECONOMIC VALUE GENERATED</b>	<b>441,225,821</b>	<b>631,790,935</b>	<b>892,826,363</b>
OPERATIONAL EXPENSES (EXCLUDING SALARIES)	247,411,262	224,052,584	257,244,812
SALARIES	75,973,237	78,139,539	79,610,306
CAPITAL EXPENDITURE	13,074,079	7,225,353	10,884,184
PAYMENTS TO CAPITAL PROVIDERS	117,000,006	70,000,000	100,000,005
PAYMENTS TO GOVERNMENT	61,050,740	246,869,087	191,912,053
INVESTMENTS IN THE COMMUNITIES	815,606	921,112	1,749,471
<b>TOTAL ECONOMIC VALUE DISTRIBUTED</b>	<b>515,324,930</b>	<b>627,207,676</b>	<b>641,400,830</b>
<b>RETAINED ECONOMIC VALUE</b>	<b>(74,099,109)</b>	<b>4,583,259</b>	<b>251,425,533</b>

The information on economic performance comes from audited internal accounts.

Financial management is verified internally and externally because of its relevance for the company. Internally, random reviews are conducted twice a year to verify effectiveness of the internal controls designed to ensure integrity and accuracy of the financial information.

### INDIRECT ECONOMIC IMPACT (203-2)

From the initial stages of development and construction of the San Cristóbal mine, the company has completely financed the construction of more than 200 kilometers of roads and bridges, 172 kilometers of electric transmission lines and 65 kilometers of railways. From the start to date, these investments have ensured mobility, improved communications and a better integration of the communities in the region, the department of Potosí and the country.

Over time, **MSC** has supported studies to extract, collect and treat water; it has constructed connections for the supply of this element and installed tanks in the communities, for the benefit of hundreds of families. The company is still in charge of maintenance and continuous operation of water systems, sewage systems and landfills. Additionally, it is re-

sponsible for the sustained supply of electricity to the communities.

In 2017, the company invested approximately US\$ 856,996 in roadwork maintenance in the area around the San Cristóbal Mine and the main roads to Avaroa on the border with Chile.

### LOCAL PROCUREMENT AND OUR RELATIONSHIP WITH LOCAL SUPPLIERS (204-1)

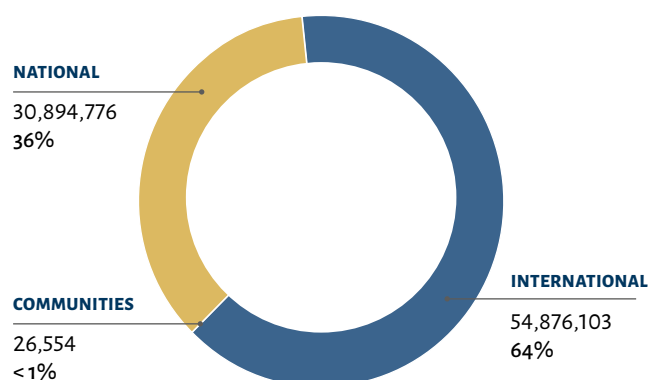
Within the framework of its commitment to the country and region where it operates, **MSC** makes efforts to benefit national and local suppliers with procurement for its operations. The company's regular practices consist of giving priority to the suppliers from local communities and developing their capacity. Contractors are required to submit certificates and relevant documents in accordance with the Supplier Qualification process through public tenders, quotations and direct invitation. This helps guide local businesses in terms of administrative and legal requirements.

Contractors are required to comply with the environmental and safety policies and regulations implemented by the company. The contracts with suppliers are subject to clauses of the Code of Ethics and Business Conduct of **MSC**.

## PROCUREMENT OF GOODS (US\$)

YEAR	COMMUNITIES	%	NATIONAL	%	INTERNATIONAL	%
2015	52,817	<1%	32,673,785	34%	63,963,935	66%
2016	28,744	<1%	30,885,721	38%	50,875,080	62%
2017 ✓	26,554	<1%	30,894,776	36%	54,876,103	64%

### PROCUREMENT OF GOODS 2017 (US\$)



Similarly, the contracts with suppliers have clauses against corruption and bribery. Monitoring and performance evaluations are conducted continuously to verify if the quality of services provided is according to the level expected by **MSC**'s management system.

In 2017, an approximate amount of US\$ 278.4 million was invested in the combined purchase of goods and services, slightly lower than the amount in 2016 (US\$ 280.6 million). Of this amount, the procurement of goods accounted for around US\$ 85.8 million, US\$ 30.9 million (36%) of which was from

national and local sources. Because the volumes and specifications required for certain supplies for operations are not produced in the local market, most of these are purchased in the international market, especially diesel, explosives, chemicals, reagents, parts of mills, pumps and motors.

In 2017, an amount of US\$ 192.6 million was invested in the procurement of services (transportation, electricity, supply, maintenance, specialized contractors, etc.). The percentage of national procurement relative to international procurement is very different in the case of services. In fact, while the services procured abroad make up 45% of total hires, the rest of the services are procured within the country. Regarding the geographical composition of **MSC** service providers, 5% of all services (US\$ 10.4 million) were procured in the communities of the company's area of influence (Culpina K, San Cristóbal, Río Grande and Vila Vila) and 50% of the total services (US\$ 96.1 million) from the rest of the country. This means that 55% of the services are purchased from national suppliers, including local communities.

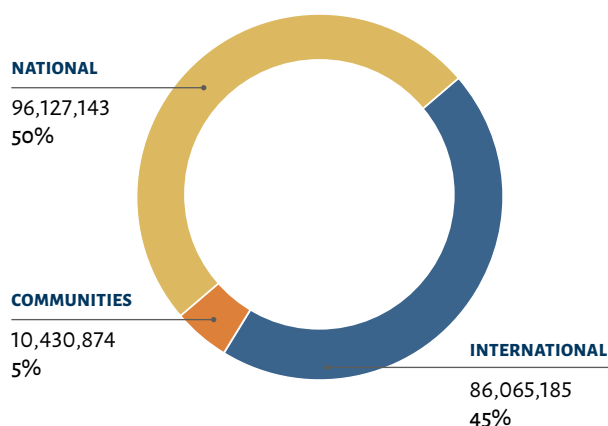
Beyond the economic benefits for contractors of goods and services in the region, **MSC** continues promoting employment for local providers, assisting them with proper registration, formalization and continuous improvement of their performance.

## PROCUREMENT OF SERVICES (US\$)

YEAR	COMMUNITIES	%	NATIONAL	%	INTERNATIONAL	%
2015	8,498,324	4%	113,682,770	60%	68,855,974	36%
2016	8,286,995	4%	108,624,528	55%	81,915,186	41%
2017 ✓	10,430,874	5%	96,127,143	50%	86,065,185	45%



## PROCUREMENT OF SERVICES 2017 (US\$)



## COMMUNITY INVESTMENT <sup>(2013-1)</sup>

Minera San Cristóbal performs its operations with a social vision. Social responsibility is a serious commitment for the company and guides its conduct for the aid of communities and their sustainable development initiatives, aimed at wellbeing of the regional population.

In the communities of San Cristóbal, Culpina K, Vila Vila and Río Grande, **MSC** acts as a facilitator to improve the living conditions of the inhabitants and it develops self-sustaining and independent ventures, parallel to mining activities, with a view to achieving a better future and a destiny forged by self-empowerment. The Superintendence of Community Relations of **MSC** receives and coordinates proposals and projects for community development in cooperation with the Consultative Council Los López San Cristóbal, which is composed of leaders and authorities from these communities.

Together, **MSC** and the Consultative Council Los López San Cristóbal perform the following activities:

- Manage the strategic alliances with organizations and social actors, generating a favorable environment for a mutual benefit relationship at the service of local development.
- Provide technical assistance to social organizations and community institutions for an organizational management that is independent and effective.

- Support sustainable development initiatives with local authorities, so that they can support their concerns and complaints at official levels.
- Give support to social organizations and productive micro companies in building strategic alliances in order to achieve the region's sustainable development.

It accepts and works with community investment programs focused on:

1. Improving educational and health services.
2. Optimizing agricultural activities and opportunities in the tourism sector.
3. Promoting micro and small companies.
4. Supporting culture and local cultural revitalization.

**MSC** has carried out mitigation works with families affected by impacts caused by mining operations through the construction of drinking fountains, water tanks, irrigation systems and it has continued to support livestock care in the area of operations.





It has provided support in different initiatives to improve infrastructure of the communities (improved public offices, squares, schools).

In health, it supported improvement of the second-level hospital infrastructure and the accreditation of health centers with the purpose of the population from the communities having better care.

In education, **MSC** supported the implementation of community-based socio-productive projects, training entrepreneurs of the tourism, quinoa and camelids sectors within an alternative education program of the Ministry of Education of the Plurinational State of Bolivia.

Productive development continued with the implementation of infrastructure in the camelid projects, construction of the llama meat derivatives plant, the vicuña wool collection plant and training for camelid livestock entrepreneurs. A market study for quinoa has been conducted. In tourism, it supported gastronomy, hostel and handicraft projects.

**MSC COMMUNITY INVESTMENT**  
(EXPRESSED IN US\$)  
(UP TO DECEMBER 31<sup>ST</sup>, 2017)

	2016	2017
 <b>PROJECT/ACTIVITY</b>		
Technical assistance for organizations and institutions of the communities	83,347	100,468
Response to requests from communities and organizations (support for events organized by communities, improvement of public offices, support for improvement of the potable water system, waste management)	79,164	242,119
Support for vulnerable groups (improvements in the homes of the elderly and support with a food package)	80,710	26,215
Works to mitigate the impact generated by mining operations (construction of watering places, water tanks, livestock care sheds in the operations area, improvement of roads around the area of operations)	147,346	252,670
Improvement of basic services in communities in the impact area (maintenance and improvement of the potable water system, maintenance and improvement of the electric power system)	970,794	334,551
 <b>EDUCATION</b>		
Support with community student scholarships for higher education. Support for alternative education with training in the tourism, camelid and quinoa sectors. Support for higher technical education in tourism for young people from the communities	32,384	42,146
Training for teachers from schools in San Cristóbal in community-based socio-productive education	5,760	
 <b>HEALTH</b>		
Health care for the elderly at home, free health care for the general population, dental diagnostic campaigns in schools and support for health fairs in the communities	13,474	13,457
Promotion of the health network, improvement of the second-level hospital infrastructure and support for the accreditation of health centers	19,188	13,523
Psychological support with specialists for children and young people from schools and the population of the communities	25,969	22,418
 <b>PRODUCTIVE DEVELOPMENT</b>		
Preparation and execution of productive projects (tourism, camelids and quinoa) for production, transformation and commercialization	361,602	1,028,743
Support for social organizations in the communities for organizational strengthening through strategic alliances with economic support entities, state agencies, the Consultative Council Los López San Cristóbal and entrepreneurs of the communities	72,719	204,664
<b>GRAND TOTAL</b>	<b>1,892,456*</b>	<b>2,280,973*</b>

\* The difference between these values and the ones in line "Investments in the communities" in the table of the chapter on "economic performance", is due to the fact that the costs of some activities were appropriated to different cost centers.



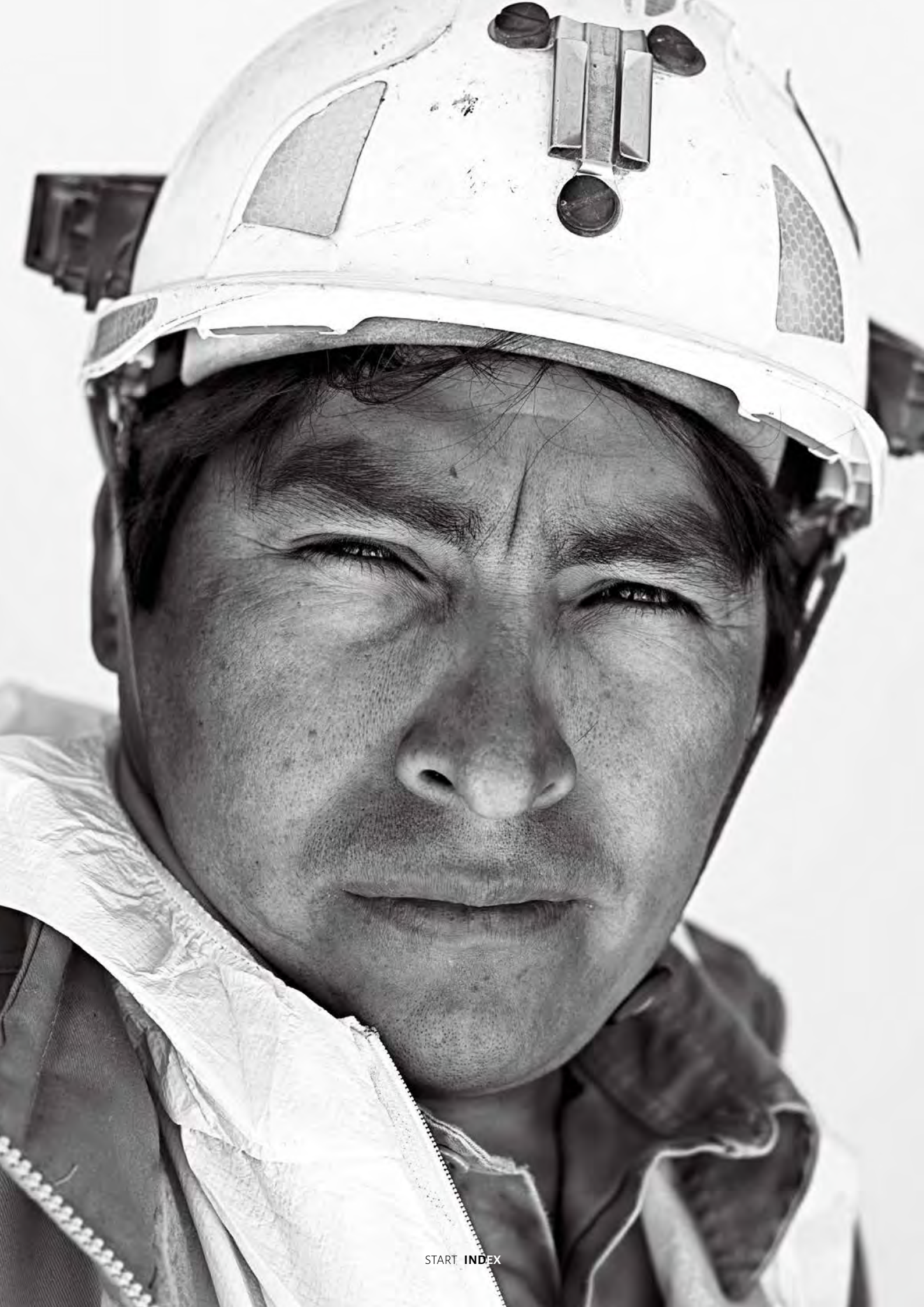
Within the framework of its social management policy, during 2017 it continued strengthening community organizations through strategic alliances with economic support organizations, government agencies, community

entrepreneurs and the Consultative Council Los López San Cristóbal, aimed at ensuring sustainability of the social, human and productive projects.



# 09

## Workforce



**M**SC considers that its workforce is its most important asset, which is why it implements training and development programs to achieve improvements in the quality of life of the employees.



Besides contributing to quality employment creation in Bolivia, **MSC** seeks to offer the best possible labor conditions to its employees, with a competitive remuneration, constant training, professional development opportunities, labor safety, occupational health, and a warm environment characterized by values, ethical principles and equal opportunities.

The Human Resources department interacts regularly with different stakeholders, including the Labor Union, Contractors, the Ministry of Labor, the Ministry of Health and the Migration Office, among others. This requires up-to-date information on laws and regulations in force and a fluid communication with the above-mentioned institutions.

#### MSC EMPLOYEES BY GENDER (102-8)

	2015	2016	2017 ✓
WOMEN	193	191	185
MEN	1,268	1,252	1,237

	
Men	Women
87%	13%

## WORKFORCE CHARACTERISTICS

As of December 31st, 2017, **Minera San Cristóbal** had 1,422 employees, including camp staff in Potosí and people working in the administrative offices in the cities of Potosí and La Paz. The total workforce in 2017, including contractors, was 2,440 individuals. **MSC** estimates that for each direct job in the mining industry, three indirect jobs are generated; approximately 5,000 indirect jobs were created in the same period.

2015		
Employees	Contractors	Total
1,461	1,152	2,613

2016		
Employees	Contractors	Total
1,443	999	2,442

2017		
Employees	Contractors	Total
1,422	1,018	2,440

The total in contractors represents a monthly average of contractors on site, which is calculated based on the quantity of people that have entered the mine through a contract.

Of the total workforce, 835 workers or 59% are covered under the collective bargaining agreement with **MSC's** labor union ✓(102-41).

Although the men/women ratio remained the same in 2017, there is a reduction of 1.5% in the total number of employees compared to 2016. The reasons for these reductions are mainly the employee's own decision or retirement. The workload of these positions was redistributed according to the company's principle of optimization and labor efficiency.

## LOCAL HIRING

**MSC** considers different recruitment alternatives to guarantee the ideal resource is hired for each position. For operational positions, it gives priority to the selection and evaluation of local staff, that is to say, from the communities in the area of direct influence. If it does not find qualified staff in local communities, it broadens its search to a regional level and later to a national level.

99% of the workforce is Bolivian, 48% comes from the local communities of San Cristóbal, Culpina K and Vila Vila, 15% comes from Potosí, and 36% comes from the remainder of the country.



## MSC EMPLOYEES BASED ON THEIR PLACE OF RESIDENCE

	2015	2016	2017
Communities	49%	49%	48%
Potosí	14%	14%	15%
Other Cities	36%	36%	36%
Other Countries	1%	1%	1%

Expatriate staff is composed of people assigned by the owner company (Sumitomo) for control and apprenticeship positions and also by personnel hired for positions where a high specialization and knowledge is required due to the complexity of the operations

**MSC's** executive level is composed of Directors, Managers and Superintendents. Within its workforce, one Superintendent is from the local communities and therefore accounts for 1.9% of the executive level ✓ (202-2, 102-8).

## WOMEN WITH EQUAL OPPORTUNITIES

**MSC** does not yet have formal policies or procedures related to gender equality in hiring personnel; however, it complies

with regulations in effect aimed at equal opportunities for men and women, with equal pay for equal work or work with a similar level of complexity and responsibility. The differences that may exist are mainly related to the seniority of the employees because salary increases defined by the government can generate gaps between cases.

**MSC** has a predefined salary scale approved by the General Manager, which gives the salary guidelines for the different levels and positions regardless of gender. In 2017, the salary of female employees reached 94% of the salary of male employees. In executive positions, women receive 69% of the salary of their male counterparts; meanwhile, in supervision positions the ratio is of 105% compared to men. (405-2).

The differences in these percentages are explained by the sublevels in each level, in which there are no women because these positions are of no interest to women or because women do not meet the professional competency requirements. In spite of this, there are women in **MSC** who ventured into operational tasks that were traditionally considered exclusive of men at different organizational levels and in different operational areas.

## MSC EMPLOYEES BASED ON THEIR PLACE OF RESIDENCE 405-1)✓)

### PERCENTAGE OF MSC EMPLOYEES BY PLACE OF RESIDENCE

Place of Residence	2015				2016				2017			
	Executive	Supervisor	Employee	Worker	Executive	Supervisor	Employee	Worker	Executive	Supervisor	Employee	Worker
Community	0.07%	3.00%	8.00%	46.00%	0.07%	0.50%	8.39%	39.78%	0.07%	0.49%	9.35%	38.33%
Other Cities	3.00%	7.00%	15.00%	12.00%	2.56%	4.57%	17.05%	11.50%	2.81%	4.92%	16.74%	11.67%
Potosí	0.21%	0.51%	2.00%	2.00%	0.28%	0.69%	4.50%	8.73%	0.21%	0.77%	4.50%	8.86%
Out of Country	0.07%	0.14%	1.00%	0.00%	0.69%	0.14%	0.55%	0.00%	0.63%	0.21%	0.42%	0.00%
Total	3.35%	10.65%	26.00%	60.00%	3.60%	5.90%	30.49%	60.01%	3.73%	6.40%	31.01%	58.86%
GRAND TOTAL	100%				100%				100%			

NUMBER OF **MSC** EMPLOYEES BY PLACE OF RESIDENCE, BY GENDER (2017)

Level	Gender	Community	Out of Country	Other Cities	Potosí	Total
EXECUTIVE	FEMALE			3		3
	MALE	1	9	37	3	50
EMPLOYEE	FEMALE	23	1	72	14	110
	MALE	110	5	166	50	331
SUPERVISOR	FEMALE			6		6
	MALE	7	3	64	11	85
WORKER	FEMALE	63			3	66
	MALE	482		166	123	771
GRAND TOTAL		686	18	514	204	1,422

## CHANGES IN HUMAN RESOURCES

In 2017, **MSC** hired 20 men and 6 women. The annual employee turnover rate was 3% ✓<sub>(401-1)</sub>; The factors explain-

ing this turnover were mainly personal reasons (job or city change, starting their own business, etc.)

EMPLOYEE HIRES 2017

Sex	Community	Foreigners	Other Cities	Potosí	Total	%
WOMEN			4	2	6	3.24%
MEN	7	5	6	2	20	1.62%
TOTAL	7	5	10	4	26	1.83%

EMPLOYEE REDUCTIONS 2017 ✓

Sex	Community	Foreigners	Other Cities	Potosí	Total	%
WOMEN	3	1	2	2	8	4.32%
MEN	16	6	10	3	35	2.83%
TOTAL	19	7	12	5	43	3.02%

In 2017, the retention rate, after maternity or paternity leaves, was 100% <sub>401-3</sub> ✓), meaning that all 14 women who benefited from maternity leave and all 38 men who benefited from paternity leave, returned to work after their leave.

According to laws in effect and benefits awarded by **MSC**, women receive 45 days of maternity leave before birth and 45 days after birth. Men have 4 days of paternity leave during or around the day of birth.

It is important to highlight the positive workplace factors which the Company believes contribute to staff retention at **MSC**:

- **MSC** is a company that awards competitive salaries in the country.
- The benefits package it awards to its employees (full time, temporary or under contract) has performance bonuses, rotational work schedules to spend more time with the family and a delegated health insurance, among others ✓<sub>(401-2)</sub>.



- **MSC** applies high health and safety standards for the protection of its employees.
- Alternative income sources outside of **MSC** are limited to agriculture or other activities that are not profitable at the moment in relation to the employees' salary.

As a result of the above-mentioned factors, **MSC** has a low employee turnover rate, which has positive implications for general performance of the company, e.g. the retention of knowledge and experience in technical positions and a better culture in matters of safety, health and environment.

## LABOR RELATIONS

**MSC** supports the right of free association and collective bargaining. It maintains a good relationship with the Mixed Labor Union of Mine Workers of San Cristóbal, created in 2010 (407-1). The approach in relation to labor relations revolves around a regular interaction with the labor union leaders, a dialogue of mutual respect on the needs of the workers and joint solution of the problems that may arise. The central

characteristics of the negotiation processes are based on the values of **MSC** and are intended to provide solutions that benefit both parties.

Executive and administrative level employees do not participate in the union structure.

The collective agreement is renegotiated every year and includes general matters, such as salary increases, safety and health issues, among others ✓<sup>(403-4)</sup>. In 2017, the following specific matters were included:

- Salary Increase Agreement.
- Categorization Program: **MSC** already developed an internal program for Employee Promotion.
- Carnival Ch'alla (traditional Bolivian custom): Guidelines were established for the organization, including the admission of wives and husbands and the non-consumption of alcohol in the interior of the mine, offices and other facilities.
- Roadwork maintenance: an annual program is defined and workers performing tasks in this activity will be gi-



ven leave to attend meetings with regional authorities as appropriate.

- Work stability: The concerns about the life of mine and work stability were addressed.
- Education and training: **MSC** continues awarding scholarships to the employees' children, within the framework of established agreements. The request to support a university facility was rejected. Some courses will be taught in the training center of San Cristóbal.
- Health: The company complies with medical prescriptions in accordance with medical protocols and the National List of Essential Medication (LINAME, in Spanish). Some products are provided with no need for them to be on the list. There are standards for delivery and the

company is the only valid interlocutor with the health centers. The request to finance hospital equipment was rejected.

- Sports: within the company's reasonable possibilities, it will give support according to the budget in each case.
- Heavy machinery for construction of a soccer field: the company will cover 60% of the cost for preparation of the land, once the technical information is made available by the employees.
- Compliance of agreements and dismissal committee as agreed previously.

In 2017, there were no significant strikes or lockouts resulting in the closure of operations at Minera San Cristóbal ✓(MM4).



## EMPLOYEE GRIEVANCE MECHANISM

**MSC** has an open-door communications policy. It encourages its employees to directly share any problem or concern regarding their workplace with their direct supervisors. If the concern involves supervisors, they can take it to the level of a Superintendent or Director, so it would be solved according to the instruction manual for complaints and personal suggestions, which is part of the company's Business Management System. It is important to highlight that, during 2017, no complaints related to labor practices were received through these mechanisms ✓<sup>(103-2)</sup>.

## TRAINING AND DEVELOPMENT

**MSC** considers that training and continuous improvement of its staff are fundamental elements for the success of its operations. The performance reviews, feedback and salary increases are an integral part of its effort of promoting a better workplace environment for the development of human talent.

Within its Business Management System, **MSC** has a process for the annual performance assessment that includes superintendents, supervisors, employees and operational staff (workers); in 2017, 98% of the universe subject to this process was effectively assessed, of which 177 were women and 1,190 were men ✓<sup>(404-3)</sup>.

In 2017, **MSC** invested approximately US\$ 680,000 in training for its employees, which is equivalent to 71,717 man/



hours. This figure does not include the additional hours and courses through the San Cristóbal Training Center ✓<sup>(404-1)</sup>.

	2015	2016	2017
Investment in training	US\$ 0.80 million	US\$ 0.60 million	US\$ 0.68 million
Man/hours	----	74,146	71,717

**MSC** offers two main trainings, in health and safety, specifically related to employee functions and performance. The following chart presents the man/hours in training.

### 2017 TRAINING ✓

CATEGORY	TOTAL TRAINING HOURS FOR MEN	TOTAL TRAINING HOURS FOR WOMEN	AVERAGE HOURS FOR MEN	AVERAGE HOURS FOR WOMEN	COMBINED AVERAGE TRAINING HOURS
Employees	55,496.00	6,129.00	50.36	34.82	48.22
Executives	3,214.00	69.00	64.28	23.00	61.94
Supervision Positions	5,759.00	1,050.00	67.75	175.00	74.82
Contractors	21,290.50	2,204.50	12.15	11.42	12.07





## CASE STUDY

# Repair of major components in heavy machinery, taking advantage of employee skills

The key to success in the modern mining industry depends on the skills of human resources and the way in which they are integrated with the technological quality of the equipment used, the highest cost of which is not in procurement but in maintenance optimization. Maintenance processes in the mining industry normally account for 30% of the total cost of an operation.

In the process of heavy machinery maintenance in **MSC**, the average cost for simply replacing major components accounts for 48%. Between 2016 and 2017, the maintenance area worked on in-house repair of major components, in order to comply with the *Program for replacement of major components*, reducing the purchase of new components and stocks.

For this purpose, a Repair Shop has been implemented and equipped to repair mainly the power train compo-

nents (motors, transmissions, torque converters, differentials, final drives and brake packages) and a *shop for manufacturing and recovery through welding*, equipped for works in hoppers, buckets and structural parts. This is based on a complete training program that includes the evaluation of subcomponents, considering metrology techniques and nondestructive testing (END, in Spanish), to validate reutilization, reduce repair costs and prolong the component's life.

A group of mechanics with the best skills to be in charge of this activity within the maintenance process was given a training and development opportunity. In two years of applying this practice, 231 components have been repaired, obtaining savings of approximately US\$ 4.5 million compared to the cost of repair of these components in external shops. The current cost of repairing these components accounts for 23.6%.





# 10

## Health and Safety







**P**revention and protection of the health and safety of workers in **MSC** are top priorities. Minera San Cristóbal is committed to maintaining a safe work environment with zero incidents, training its workers and contractors to strengthen their knowledge, skills and competencies in industrial safety practices with the aim of creating awareness and responsibility for both themselves and the environment in their work area. **MSC** complies with all legal regulations in effect and with international standards related to workplace safety.

## APPROACH

**MSC** maintains regular contacts with a variety of internal and external stakeholders in regard to health and safety, including employees, workers, their families, contractors, the union health commission, community members, health sector authorities at the regional and national level, and other stakeholders.

**MSC** works on issues related to health and safety such as: quality of medical care for its employees, with a holistic approach to health care in the community, the accreditation of all health services, audits within the framework of the certification, prevention of labor incidents, internal and external emergency care, monitoring, detection, analysis and control of contaminants related to industrial hygiene. The company holds regular meetings with staff to coordinate and implement improvements related to health and safety and conducts risk assessments in order to develop a culture of prevention and a focus on safe work.

The priority in terms of health and safety and industrial hygiene is to provide technical and operational assistance to

all areas. One of the main objectives is to establish a safety culture that encourages safe behaviors and processes. This objective is completely aligned to the management system, policies, standards, and legal and regulatory requirements of the company and the country.

The Management Policy is officially disseminated through the website of the company, the mobile application, internal bulletins, posters, pocket credentials, the document information system and also through mandatory internal training.

## HEALTH AND SAFETY PERFORMANCE

The health and safety prevention and performance program is based on the OHSAS 18001 standard, which includes topics such as isolation, work at heights, hot work (welding), confined space work, excavations, hoisting, risk management, incident investigation and industrial hygiene programs. All these elements are backed by the initiative called “**MSC** Golden Rules”, which summarize the safety measures to be observed by the employees and contractors in a didactic guideline.

Every day, work teams have safety meetings at the start of each shift in order to review, record and communicate all control measures, standards and manuals that must be implemented during their activities in order to reduce the risk of incidents.

**MSC** monitors and follows up performance in terms of occupational health at an employee and worker level. During 2017, no occupational illness was registered.

## SAFETY PERFORMANCE (403-2)

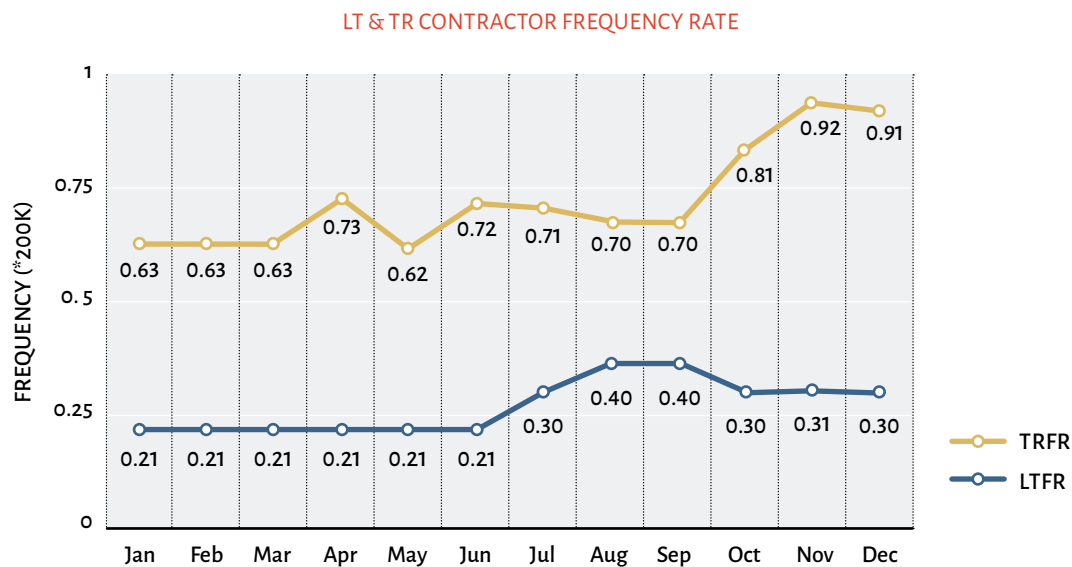
OSHA STANDARD – FREQUENCY INDEX (INJURY RATE)	2015	2016	2017✓
Employees	0.41	0.33	0.29
Contractors	1.11	0.74	0.91
Fatalities	1	0	1
Absenteeism Rate of Employees (related to OHS incidents)	2.04 annual	1.87 annual	1.95 annual

- **The frequency index (IF) of MSC** in 2017 indicates that **0.17 incidents with medical leave** were registered for every **200,000 man/hours with exposure to risk** (21 days of work approx.). According to the hours worked at **MSC**, every 62 days an accident with medical leave was recorded.
- **The frequency index (IF) for contractors** in the same lapse displayed **0.30 incidents with medical leave** for every **200,000 man/hours with exposure to risk** (37 days of work approx.). According to the hours worked by contractors, every 73 days an accident with medical leave was recorded.

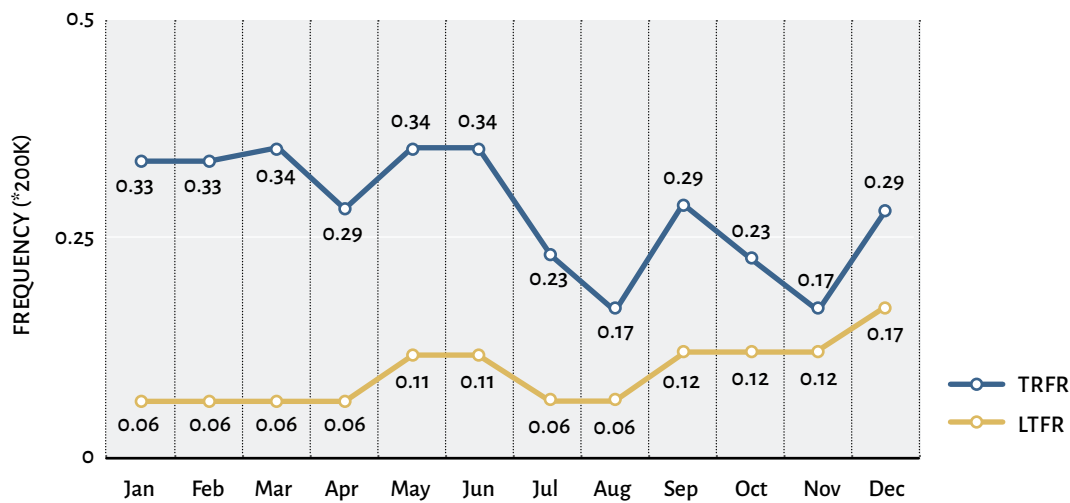
It is with deep regret that during the month of August, a fatal incident was recorded, involving an employee of Min-

era San Cristóbal who was not at work and a bus hired for transportation of staff (Contractor). Although the Company had implemented several controls in the camp area such as pre-established parking areas, speed limits of 20 km/h, signage, defensive driving training, satellite tracking and speed control, these were not enough to avoid the incident. As a result of the inquiry, additional corrective actions were taken such as restructuring of the parking area, restriction of traffic “only for buses”, changes to parking procedures, limited pedestrian access on certain roads, elimination of tinted windows, and enabling of a pedestrian’s walkway on the road. All these focused on reducing risk and generating a safe environment for pedestrians, passengers and buses.

#### LOST TIME FREQUENCY RATE (LTFR) – TOTAL RECORDABLE FREQUENCY RATE (TRFR) FOR MSC AND CONTRACTORS (12 CONSECUTIVE MONTHS)



### LT AND TR FREQUENCY RATE FOR MSC



## OCCUPATIONAL HEALTH

**MSC** has an Occupational Health Program with the objective of developing strategies for prevention and promotion of health in the workplace, with the following lines of action:

- Health supervision of the worker**, aimed at determining and monitoring the level of aptitude of the worker from the moment of hiring, considering at all times the relationship between the worker's health status and its alignment to the functions to be developed in his work, in order to achieve the highest possible level of physical and mental well-being.  
Accordingly, 100% of the workers that come to work for the first time at **MSC** are subject to pre-employment exams and an additional annual health control which is a comprehensive assessment by an occupational doctor, including the risks to which he or she is exposed. In 2017, 1,388 periodic health controls were performed, reaching a coverage of 97.61%
- Problem prevention and control of employee health**, aimed to give a timely response to the main actual or possible health problems of employees, considering the occupational risks to which they are exposed, as well as their own bio-psychosocial conditions

To this end, the company has a set of programs for health control, prevention, promotion and monitoring, among which the Programs for the Prevention and Control of Musculoskeletal Disorders, Cardiovascular Risk and Erythrocytosis, towards the reduction of the high prevalence thereof (403-3) ✓.

The program for Prevention and Control of Musculoskeletal Disorders has been implemented since the end of 2016 in the Mine Maintenance Area, applying a methodology to work from the prevention of new cases to the care and rehabilitation of workers with this type of health problems. This is combined with educational activities aimed at generating attitudes and safe self-care practices.

On the other hand, the program for prevention and control of cardiovascular risk and erythrocytosis fundamentally guides people at risk to develop healthy lifestyles, applying specific treatment measures as needed. In addition, information on prevention and health self-care is disseminated.

The success of all programs is based on the development of processes for personalized follow-up and periodic evaluation of the impact of the measures applied.





#### CARDIOVASCULAR RISK (CR) PREVENTION AND NUTRITION PROGRAM

- CR not adequate for age in **MSC** Employees: 47.99% (670)
- Employees with CR not adequate for age who joined the program: 25.67% (172 of 670)



#### MUSCULOSKELETAL DISORDERS (MDs) PREVENTION AND CONTROL PROGRAM

- Employees with MDs: 22.97% (319)
- Employees with MDs who joined the program: 58.65% (187 of 319)



#### ERYTHROCYTOSIS PREVENTION AND CONTROL PROGRAM

- Employees with erythrocytosis: 45.97% (638)
- Employees with erythrocytosis who joined the program: 32.76% (209 of 638)



#### FEMALE EMPLOYEE INTEGRAL HEALTH PROGRAM

- Female employees with gynecological control (includes PAP, mammography and bone densitometry): 58.38% (108)



#### HEARING CONSERVATION PROGRAM

- Employees with occupational noise exposure: 31% (428)
- Audiometry coverage due to occupational noise: 97.43% (417)
- Zero cases of hearing loss due to occupational noise.
- Audiometry control for verifying vehicle driving aptitude, work at heights or confined space work: 741



#### VISION CONSERVATION PROGRAM

- Employees with ophthalmological control: 88.62% (1,255 employees).
- Provision of safety corrective glasses: 399



#### IMMUNIZATION PROGRAM

- Vaccination applied to employees according to risk group: 92.31%. (1251)
- Employees vaccinated against the seasonal flu or influenzas: 83.68% (1134)



#### LEAD CONTROL PROGRAM

- Evaluation of lead in the blood in employees: 97.61% (1,388)
- Zero cases of lead poisoning.



#### PROSTATE CANCER PREVENTION AND CONTROL PROGRAM

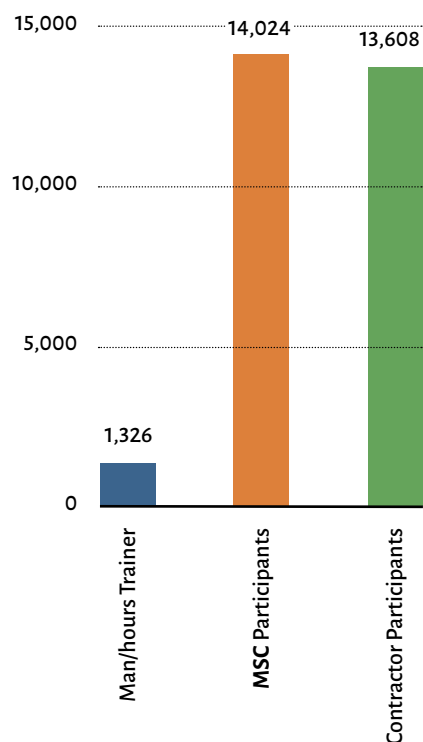
- PSA test in employees of 40 or more years old: 82.11% (582)

**Worker Health Promotion**, aimed at promoting healthy lifestyles for the employee based on self-care and care of the environment to improve their health status. For this purpose, there is a matrix of information and health education content that is shared through health programs, health points and **MSC** health services. This material is accompanied by measures to assess knowledge, attitudes and practices, which allow measuring the impact on the change of attitudes among employees with respect to the adoption of healthy lifestyles.

## HEALTH AND SAFETY TRAINING

In line with its commitment to employee health and safety and its solid intention of providing a workplace free of accidents and injuries, **MSC** provides a series of training courses related to health, safety and industrial hygiene, which required 1,326 man/hours of facilitators or trainers, dedicated to teaching 586 courses throughout 2017.

### TRAINING HOURS AND PARTICIPANTS



The training plan in regard to safety accumulated a total of 27,632 man/hours, for both **MSC** staff and contractors, and was distributed in the following subjects:

- Isolation.
- Hazardous substances.
- Risk identification and evaluation.
- Incident investigation.
- Work permits (heights, confined spaces, excavations and hot work (welding)).
- Defensive driving.
- Risk analysis at work (ART, in Spanish) / Previous Work Verification (VPT, in Spanish).
- Issuer / Carrier of work permits.

Providing training about these subjects ensures the improvement of personal competencies for both own staff and contractors, which directly influences incident reduction.

In 2017, the training of health personnel focused on basic life support and advanced cardiovascular life support (BLS and ACLS) with international certification. In addition, training in quality management of health services was carried out and an international certification was obtained in reading X-ray plates for the evaluation of pneumoconiosis according to criteria of the International Labor Organization (ILO). On the other hand, the training program for employees in 2017 included: first aid, cardiopulmonary resuscitation (CPR) and case management for cyanide and lead poisoning.

## INDUSTRIAL HYGIENE PROGRAM

To avoid any damages to health, for many years **MSC** has implemented an Industrial Hygiene (IH) program, which is the preventive discipline that studies the work conditions, identifying, evaluating and controlling contaminants of a labor origin.

A key aspect of this program at **MSC** is the training of personnel, supported by the procurement of equipment for the Industrial Hygiene laboratory with all items and supplies necessary to do a professional job. In 2017, the training of Occupational Health and Safety (OHS) personnel continued in collaboration with a foreign expert in topics such as hearing conservation, respiratory protection, monitoring of physical

and chemical agents, hazardous materials, radiological protection, thermal stress, ventilation, international standards and regulations in occupational health and hygiene, and other subjects for the evaluation of dangerous exposures in the work environment.

## INDUSTRIAL HYGIENE MONITORING PROGRAM

In 2017, the industrial hygiene monitoring program included the annual control of the occupational risk agents identified in the 2016 evaluation, expanding it to other agents recognized in the mining activity. A total of 613 individual samples and 112 environmental samples (work area) were taken to assess the potential for exposure to various chemical and physical agents. Up to 57 different chemical agents in gases and 1,564 physical agents corresponding to lighting measurements were recognized.

Exposure to occupational agents including breathable dust, silica, lead, arsenic, diesel particle material, metallic fumes, different types of gases (acids, perchlorates, ammonia, cyanide, volatile organic compounds, mercaptans), noise and light was evaluated as well.

It is important to note that Bolivian law does not define specific enforceable limits in terms of occupational exposure in most cases. However, **MSC** has taken a proactive approach in developing its own occupational exposure limits as a guide to controlling exposures and ensuring a safe workplace for all. These values were defined considering criteria specified by organizations such as the United States Mining Safety and Health Agency (MSHA), the United States Occupational Safety and Health Agency (OSHA), the National Institute for Occupational Safety and Health of the United States (NIOSH), the American Conference of Governmental Industrial Hygienists (ACGIH) and other acceptable international standards.

Through the collection of data by sampling, the industrial hygiene monitoring program allows to verify the effectiveness of operational controls, offer a more efficient management approach in terms of occupational medical evaluations and reduce the risk to the company by offering an effective protection in health and safety for all workers.



In summary, industrial hygiene sampling activities result in an enormous improvement in **MSC's** ability to adequately protect all workers through adequate and quantified exposure controls, such as process design, or the use and

effectiveness of personal protective equipment (PPE). This program is substantially based on management of the auditory conservation program and the respiratory protection program.

#### NUMBER OF PERSONAL SAMPLES BY AGENT

AGENTS	MINE		PLANT		SUPPORT AREAS	
	2016	2017	2016	2017	2016	2017
Noise	37	79	90	116	27	60
Breathable Dust	19	24	38	44	19	22
Breathable Silica	19	24	38	44	19	22
Lead	14	24	43	58	1	19
Metallic Fumes	N/A	2	N/A	1	N/A	1
Arsenic	N/A	17	N/A	30	N/A	N/A
Gases	N/A	N/A	9	13	N/A	N/A
DPM (Diesel Particle Material)	N/A	8	N/A	N/A	N/A	5



## HEARING CONSERVATION PROGRAM

The hearing conservation program promotes a safe working environment for personnel who are exposed to noise levels above the occupational exposure limits established by **MSC**, preventing hearing loss induced by occupational noise. In 2017, this program included the following elements:

- Measurement of occupational noise levels using sound level meters and dosimeters.
- Evaluation of personal and environmental noise exposure.
- Administrative controls and personal protection equipment for noise.
- Training and education for workers in use, protection and final disposal.
- Annual audiometry tests for exposed employees (occupational health area).
- Personal communication of results through individual letters and presentation of results to areas.

- Delivery of noise maps to different areas for better signage.

## RESPIRATORY PROTECTION PROGRAM

The general objective of this program is to protect staff exposed to levels of chemical agents above the occupational exposure limits established by **MSC** such as particles, gases, vapors, fumes, etc.; preventing respiratory diseases. The program in 2017 included:

- Respirator selection.
- Training about the respiratory dangers, limitations of use and maintenance.
- Protocols for use, cleaning, disinfection, storage, inspection, repair and disposal.
- Adjustment tests to evaluate the selection and a proper seal for the respirator.



## OTHER PROGRAMS

### Medical care and emergency programs

During 2017, the following improvements were made in the quality of care in the health services of the local network:

- Improve the accreditation levels of health centers in Toldos, San Cristóbal, Culpina K and Vila Vila. It is important to note that only 8 centers in the department of Potosí have this accreditation, 4 of which are associated to **MSC**. Accreditation corresponds to the level of compliance of government quality standards for health centers
- Obtain an operational license for the X-Ray room for the medical unit of Toldos, from the Bolivian Institute of Nuclear Technology (IBTEN, in Spanish).
- Consolidate the organization and operation of technical committees in biosecurity and epidemiological surveillance, accreditation and quality management, safe maternity and evaluation of the medical file and therapeutic medicines.
- Obtain levels of satisfaction above 83% among health service users.

### Health prevention and promotion program

In 2017, the following programs were executed in the communities of San Cristóbal, Culpina K and Vila Vila:

- Healthy child control program, aimed at 24 children under 5 attending the San Cristóbal day-care center, applying measurements of growth and development monitoring, timely identification of prevalent diseases and development of preventive measures such as information and education for self-care of health.
- School health program, which consists of the development of health promotion activities for children at primary level through: medical and dental controls, educational talks to parents and technical orientation to teachers. In 2017, 829 children were evaluated.
- Care program for the elderly, which has the objective of promoting their right to health based on a bio-social fo-

cus, seeking protection and care for their health through medical and social care. In 2017, coverage was 145 elderly or 97% of the entire population within this age group.

- Safe and healthy maternity program, carrying out the follow-up of 109 pregnant women during 2017, through prenatal check-ups, delivery and newborn care, as well as puerperal care. This program reaches out to employees, beneficiaries and the population of the three communities in the area of operations of **MSC**.

## EMERGENCY PREPARATION AND RESPONSE

Emergency events are managed according to the Emergency Management Plan, which describes the possible scenarios identified through the risk analysis of **MSC** operations; the plan includes: preparation, training and response of the Emergency Response Unit and its support teams.

Through the continuous improvement of programs and processes, primary activities in emergency management have been established. As a result of application of the three main components of planning, preparation and response, the following activities are provided:

- Training
- Simulation drills
- Inspections and functional testing
- Projects and new facilities
- Emergency response.

### Training

Staff members receive standardized training in the codes of the National Fire Protection Association (NFPA) and the Society of Fire Protection Engineers (SFPE), applied to **MSC** procedures to optimize its asset management.

During 2017, the training schedule workload was as follows:

- NFPA: 108 Hours / Participant
- SFPE: 100 Hours / Participant
- Permanent Staff: 640 Hours / Participant

## Simulation drills

The emergency scenarios identified in the Emergency Management Plan are tested annually according to a program that includes three classes: operational, non-operational and desk tests; nine exercises executed in this period allow technical and practical evaluations of the methods, criteria and materials used in emergency events. The scenarios tested were: rescue from ramp, evacuation, fire, radiological emergency, earthquakes, explosions, aircraft emergencies and hazardous materials.

## Inspections and functional tests

All **MSC**'s active and passive emergency systems are inspected according to a pre-established frequency. These tasks, along with functional tests, deliver operational indexes used to plan maintenance and/or replacement as required.

## Projects and new installations

Following national and international standards, an instruction manual on the selection and disposal of portable fire extinguishers was developed, optimizing resources in terms

of both physical relocation and maintenance criteria. Thanks to this project, 236 fire extinguishers were recovered from different areas of the company and could be used in areas where they are needed or could be kept as backups.

In 2017 the implementation of fire alarm and detection systems was concluded, covering all critical buildings of the operation and allowing constant monitoring of these environments.

## Emergency response

According to the records of the last five years, the Emergency Response Unit has attended 172 events, most of which were vehicle incidents outside the camp. The support for this type of incidents is based on a commitment with the communities.

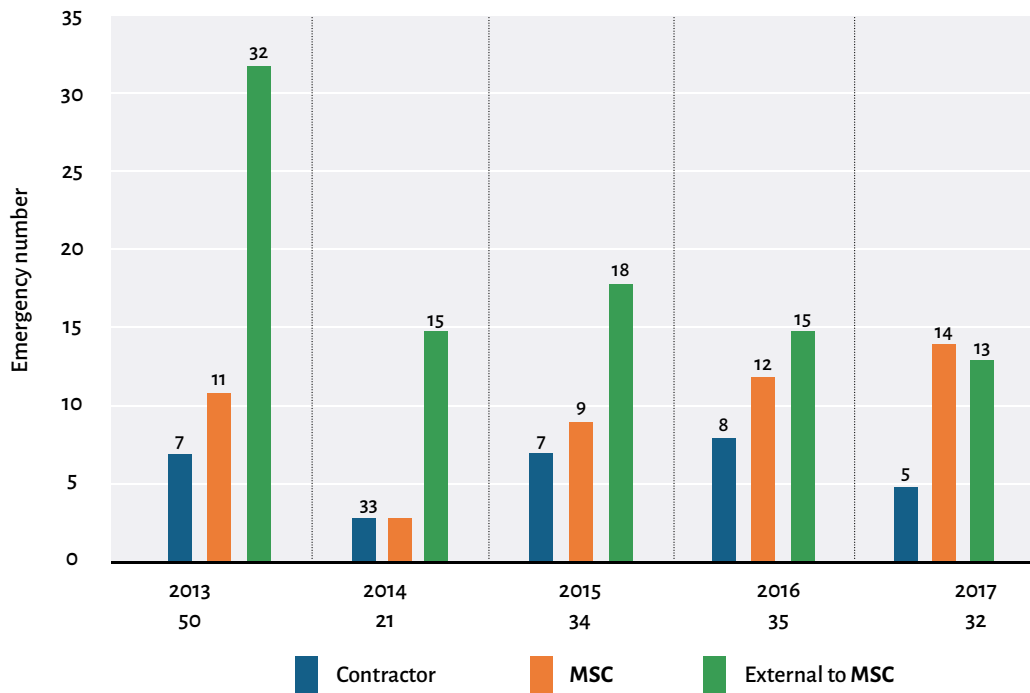
For the management of emergencies related to injuries in **MSC** employees, there is a medical emergency system that includes the training of personnel in first aid, the installation of automatic defibrillators in critical sectors of the area of operations and the medical unit of Toldos. The latter, as a high-level service for the solution of medical



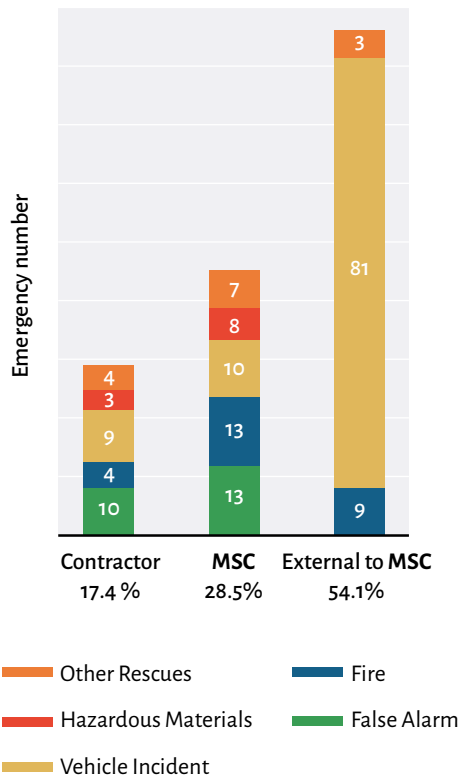


## ATTENDED EMERGENCIES

Total = 172



## TYPE OF EMERGENCY



emergencies, has special equipment, qualified medical staff, and medicines and supplies to treat both minor and critical injuries.

Three ambulances are available to transport critical patients at all times. In specific cases, it is possible to access air transport from and to the operation for transportation of critical patients under the structure known as MEDIVAC (medical evacuation).

In special cases, the emergency management system can also cover contractors, employee relatives and people living in the three host communities.

## HYGIENE, OCCUPATIONAL SAFETY AND WELLBEING MIXED COMMITTEE

Given its dimension and the number of existing staff, **MSC** has the legal obligation to set up the *Hygiene, Occupational Safety and Wellbeing Committee*, the functions and responsibilities of which can be found in Ministerial Resolution No. 495/04 and in the General Law of Hygiene, Occupational

Safety and Wellbeing (16998). Nevertheless, **MSC** goes beyond compliance of the requisites and obligations of the existing legislation, encouraging continuous participation and the promotion of safe work and care of its personnel at all hierarchical levels.

This Mixed Committee is made up equally of employer and employee representatives and is directed by a secretary general and voting members. In 2017, the Committee had 56 members, representing the full workforce ✓<sup>(403-1)</sup>.

In view of the existence of work shifts and in order to ensure representation of each of them in the committee, in 2017 it was decided that each shift be represented by a member and a deputy.

The main functions and responsibilities of the Mixed Committee are:

- Comply with and ensure that the company complies with the General Law of Hygiene, Occupational Safety and Wellbeing, laws in effect with regard to Safety, as well as the technical provisions of the Mixed Committee.
- Permanently inform about the work environment conditions, the operation and maintenance of machinery,

equipment and personal protection implements and others in relation to Hygiene, Occupational Health and Wellbeing in the workplace.

- Know and analyze the causes of accidents in the workplace and professional illnesses that occur in the company, proposing possible technical solutions.
- Control and evaluate documentary records and reports of complaints of accidents and occupational illnesses.
- Ensure that all workers receive adequate instructions and orientation in the field of Hygiene and Occupational Safety, encouraging dissemination and training activities in order to keep the workers' interest.
- Submit the quarterly reports of the meetings to the Directorate General of Industrial Safety, which will indicate the degree of compliance or noncompliance of the legal provisions or agreements as may have been reached.
- At the end of the year, the Mixed Committee must prepare a final report of the performed activities, as well as the risk and professional illnesses prevention measures adopted in the company.

At the end of the year, all members of the Committee received an acknowledgment for the responsibility assumed and for their commitment to safety according to the action plans in each commission.





# 11

## Environment



## APPROACH

**MSC's** environmental management is based on compliance with regulations in effect, the care and protection of natural resources, the application of environmental best practices and the commitment to surrounding communities. This management is based on the identification and evaluation of risks, the mitigation and remediation of negative impacts, and the application of standards and protocols for monitoring environmental factors, building credibility and trust amongst environmental authorities and other stakeholders.

In 2017, the environmental best practices focused on: efficient use of water, reutilization and recycling of industrial waste, dust control and rehabilitation of areas disrupted by mining operations.

## EFFICIENT USE OF WATER (303-1, 303-2)

The industrial water used in the mineral processing plant comes from a well field that uses the subterranean aquifer of Jaukihua, located 10 kilometers southwest from the mine. In the baseline study, this water body was characterized as saline and not apt for human consumption or irrigation. Subsequent studies verified and confirmed that Jaukihua is a non-confined salt water aquifer and has a storage capacity

of  $3.66 \times 10^8 \text{ m}^3$ , which is sufficient for production during the life cycle of the mine operation ✓.

The Jaukihua aquifer is not part of and does not border on national or international protected areas and because it is a deep groundwater source, it is not related to ecosystems or surface water sources. The results of the monitoring of fauna and flora during the years of operation show that the conservation of local biodiversity and of endemic or protected species does not depend on this aquifer.

In view of the quality of the groundwater stored in the aquifer, it is an insignificant source for other activities in surrounding communities. Nevertheless, in spite of its poor quality, **MSC** adheres to a rational use policy and responsible management of this resource.

To minimize the impact on this water source, efficiency of the waste water recovery system has been improved in the mine and the tailings deposit. In addition, water reutilization circuits in the mineral processing plant have been optimized as well.

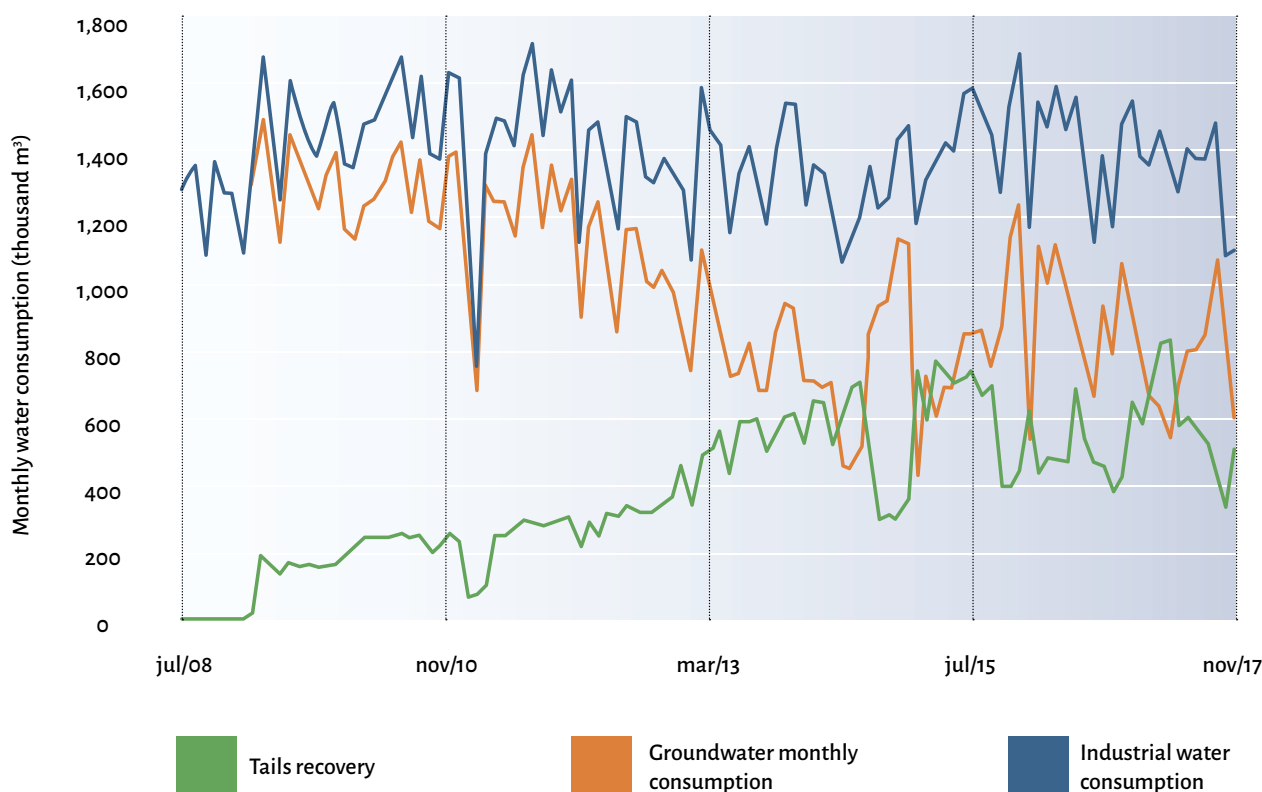
### GROUNDWATER USED

WELL FIELDS	2015	2016	2017 ✓
Total water extracted in million m <sup>3</sup>	9.97	11.40	9.43





PLANT WATER CONSUMPTION (2008 – 2017) (303-3)



Historical data show the water extracted from well fields (groundwater), the water recirculated from the tailings deposit (tailings water), and the total consumption of water (industrial water).

During 2017, **MSC** used a total of 9.43 million m<sup>3</sup> of groundwater coming from the well fields, 17% less than the 11.06 million m<sup>3</sup> reported in 2016. The average rate of water consumption per treated tonne was 0.48.

In the same year, an average of 19,435 m<sup>3</sup> / day of water was recovered from the recirculation system of the tailings deposit, which reduced the groundwater extraction rate. A total of 7,093,781 m<sup>3</sup> was recovered, which accounts for 43% of the water utilized in the production process. These data show a reduced extraction, which contributes to the aquifer's sustainability and lowers the operational costs (303-3).

According to its zero-discharge commitment, **MSC** does not discharge waste water outside its area of operation. The

waste water from the camp and the dining room is treated through a biological process until the quality is adequate for reuse in the irrigation of roads, thus reducing the dispersion of dust in the air.

## WASTE MANAGEMENT

### Tailings (MM<sub>3</sub>)

The tailings deposit is located in the micro-basin of Wila Khara, 9 km southwest from the concentration plant and 4 km northeast from the Culpina K community. This basin is endorheic (closed) and the subjacent geological formations have a very low permeability, which minimizes infiltrations and groundwater pollution risks.

The tailings are taken to the deposit through a piping and pump system that empties the tailings into the lower side of an old lagoon. The shape of the deposit and the extended disposition of the tailings do not require the construction of

a structural dam to contain the tailings. Regardless, earth berms have been built around the deposit to delimit the spill area and ensure its stability. In 2017, 18,443,856 t of tailings were stored ✓

#### STORED TAILINGS IN MILLION TONNES

2015	2016	2017
17.9	17.9	18.4

### Waste rock (sterile storage piles) in mine

During 2017, in the mine area about 36,712,521 t of waste rock were generated ✓ and disposed of in storage dumps or piles.

To prevent the eventual generation of acid rock drainage, the mine uses a drainage system that catches, stores and evacuates infiltration water and rainwater, avoiding contact thereof with the accumulations of waste rock (storage dumps).

In 2017, there have been works for maintenance and improvement of the dams built in the riverbed downstream from the mine, which store drainage and runoff waters (rain) and channel them to the concentration plant.

No water from the industrial or recovery process in the mine area is discharged into natural surface courses or surrounding soils <sup>306-1</sup>✓).

### Septic sludge

As a by-product of treatment of the waste water from camps, offices and dining rooms, approximately 114 m<sup>3</sup>/year of septic sludge was generated, which was disposed of in an Industrial Sanitary Landfill (ISL).

#### SEPTIC SLUDGE IN m<sup>3</sup>/YEAR

2015	2016	2017
120	120	114



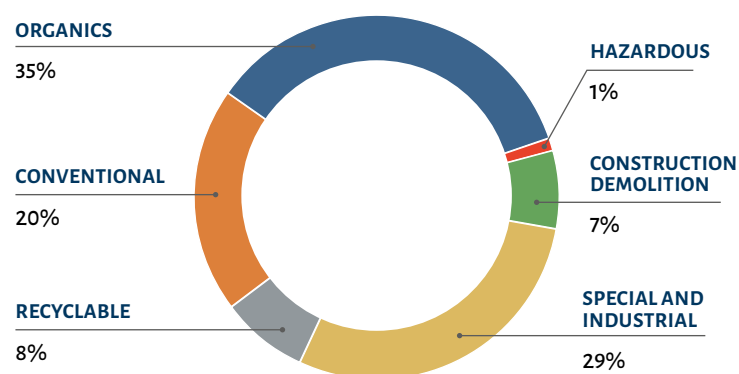
### Solid waste <sup>(306-2)</sup>

MSC's waste management comprises the steps of classification at source (separation by type of waste), collection and transport, temporary storage and final disposal.

Depending on the type of waste, final disposal can be:

- Recyclable waste (PET bottles, cardboard, tires, junk, etc.). Transfer to independent recycling companies that have an environmental license for management and treatment.
- Reusable waste (wood, plastics, used oil). Transfer to companies or people that have a specific environmental license for management and treatment.
- Conventional or Organic waste. Storage in pits within the sanitary landfill and subsequent burial.
- Hazardous hospital waste. On-site incineration in an oven for this purpose.

### PERCENTAGE PER TYPE OF RESIDUE



### WASTE BY CATEGORY

Type of Waste	2015	2016	2017✓	Final Destination
<b>HAZARDOUS WASTE</b>				
Waste contaminated with lubricants, waste contaminated with chemicals, waste from medical services / hospitals, Containers with hazardous waste	98,589 kg	8,522 kg	10,374 kg	Temporary storage and on-site incineration
Used oil	573,000 l	435,000 l	437,000 l	Transferred to authorized recyclers
<b>NON-HAZARDOUS WASTE</b>				
Conventional Waste	260,136 kg	270,700 kg	245,105 kg	Encapsulated in cells
Organic waste from kitchen and camp	522,342 kg	493,130 kg	421,269 kg	Encapsulated in cells
Recyclables: paper, cardboard, wood, glass, PET bottles, cans, residue	82,696 kg	85,800 kg	92,701 kg	Transferred to authorized recyclers
Industrial: used steel coating, metal pieces, spare parts, rubber	56,468 kg	313,930 Kg	350,984 Kg	Transferred to authorized recyclers
Construction waste	333,357 kg	71,600 Kg	86,594 Kg	Encapsulated in cells



## ENERGY <sup>(302-1)</sup>

100% of the power which **MSC** uses in its facilities is acquired from the national interconnected system; of the total energy consumption, electricity represents 53%, diesel 46% and gasoline the remaining 1%.

FUEL CONSUMPTION				ENERGY EQUIVALENT (TJ)		
	2015	2016	2017 ✓	2015	2016	2017 ✓
SCOPE 1						
Gasoline	780,007 l	718,339 l	733,234 l	27 TJ	24 TJ	24,5 TJ
Diesel	41,992,177 l	31,551,444 l	31,868,562 l	1,722 TJ	1,146 TJ	1,157 TJ
EXPLOSIVES						
Ammonium Nitrate	14,620 t	9,893 t	10,454 t			
Ammonium Nitrate Emulsion	663 t	197 t	472 t			
SCOPE 2						
Purchased electricity	359,508 MWh	367,280 MWh	367,041 MWh	1,294 TJ	1,322 TJ	1,321 TJ
Total				3,043 TJ	2,492 TJ	2,503 TJ

In 2017, the average electric intensity was 0.59 MWh per tonne of processed concentrate (2,124 MJ/t). The total energy intensity for 2017 was 0.00401 TJoules per tonne of concentrate which is lower than the year before (0.00412 TJoules/t) ✓ <sup>(302-3, 302-4)</sup>.

	2015	2016	2017
Energy intensity per tonne of processed concentrate	0.72 MWh	0.61 MWh	0.59 MWh

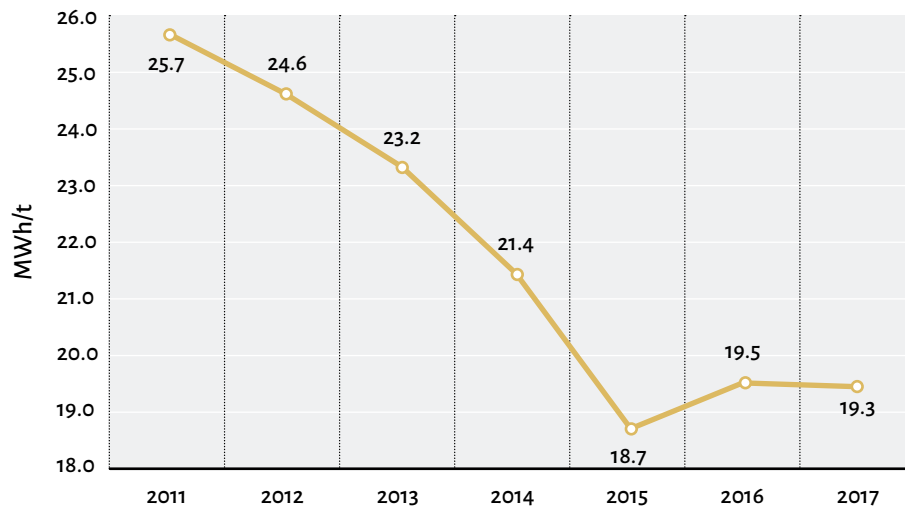
For the conversion of power from MWh to TJ, the unit converter of the International Energy Agency (IEA) is used; and

to convert the liters of fuel (gasoline and diesel) the EcoUr-bano online energy calculator is used.

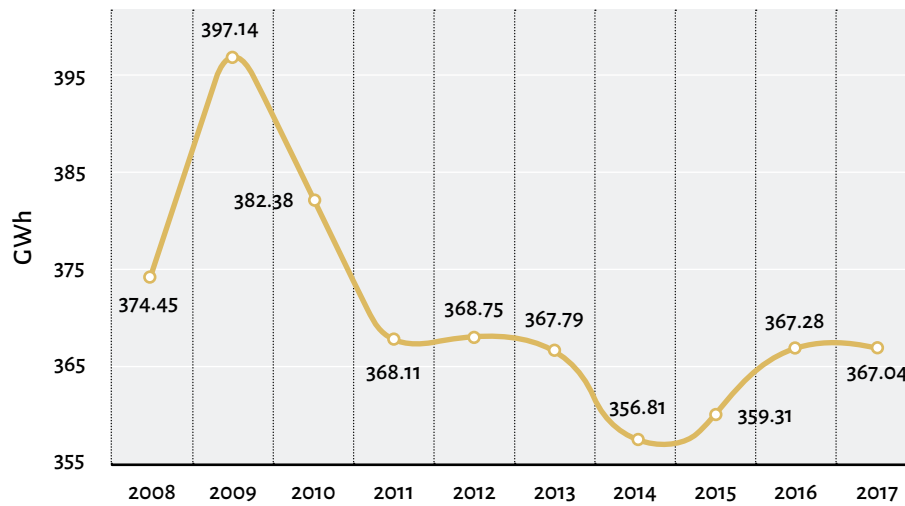
It is important to mention that due to the lack of renewable energy sources in the country and the large energy demand of **MSC's** productive process, to date, the company does not use alternative sources. Nonetheless, once the photovoltaic solar plant in Uyuni starts operating, it will proceed to combine the energy provision sources.

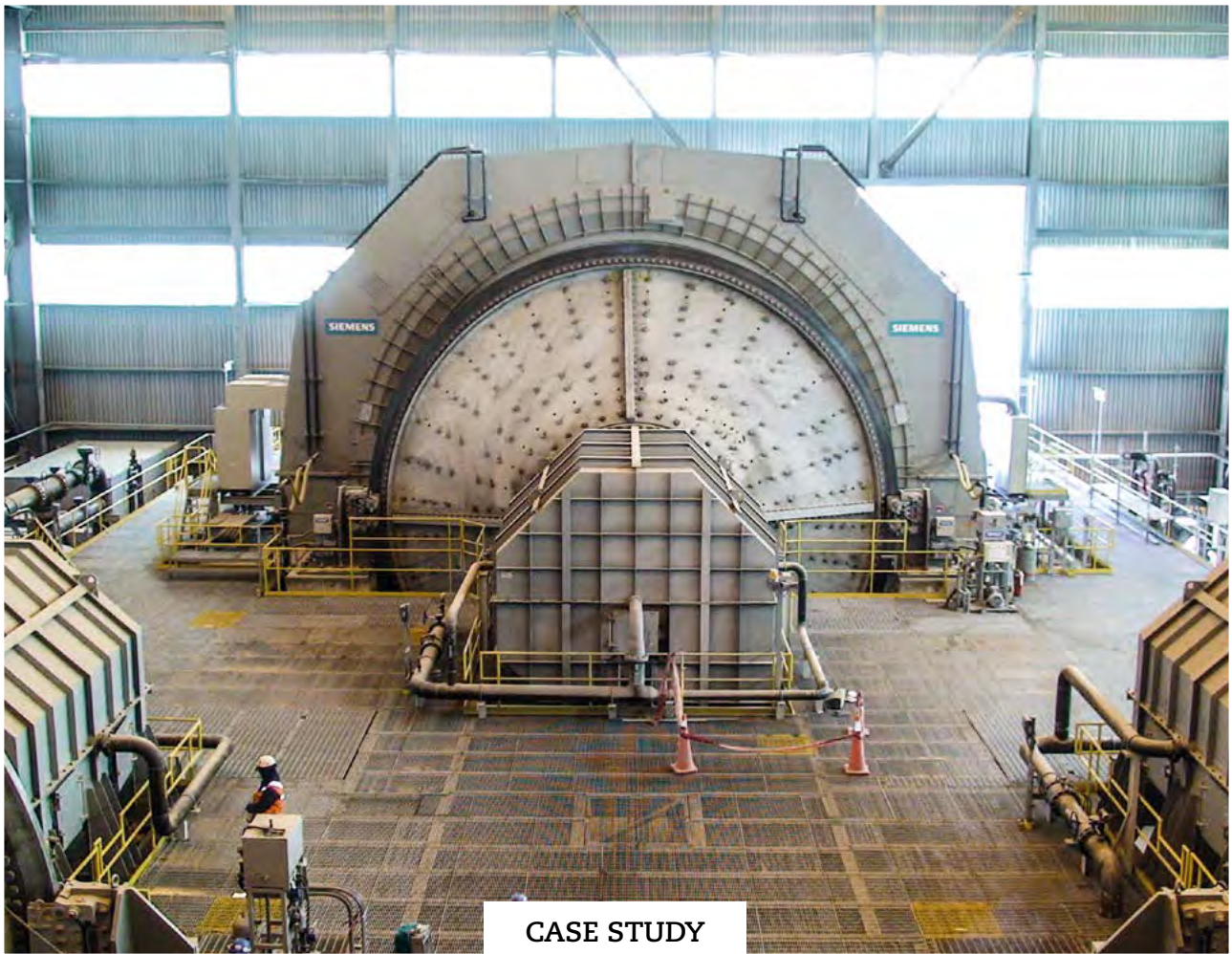
The graphs show that, although the reduction of energy consumption compared to 2016 is almost imperceptible, the consumption rate per tonne of produced concentrate decreased since an additional 35,706 tonnes of minerals were processed in 2017 <sup>(302-4)</sup>.

AVERAGE UNITARY ENERGY CONSUMPTION (MWh/t)



ANNUAL ENERGY CONSUMPTION (GWh)





## Control of ball load through sound in SAG mill

Although this project was conceived from a technical perspective, it also has a positive impact on sustainable development, since it makes a major contribution to energy efficiency and the control of greenhouse gas emissions and in consequence to the protection of the environment.

With the expectation of increasing throughput, SAG (Semi-Autonomous Grinding) mills are traditionally operated at their maximum capacity in terms of energy consumption. Following studies and analyses by the plant area, **MSC** changed its approach by breaking through the paradigm of “less energy = high production”, controlling the mill by sound and an optimal *ball charge level*, which helps maximize efficiency, increase treatment and reduce energy consumption.

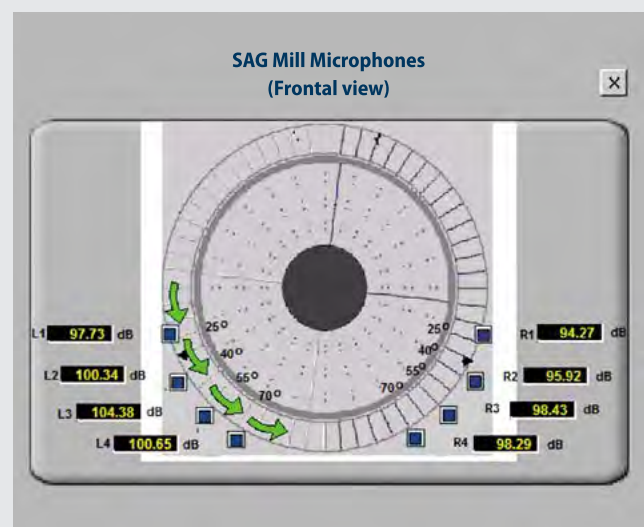


Fig.1. SAG Mill Sound Control



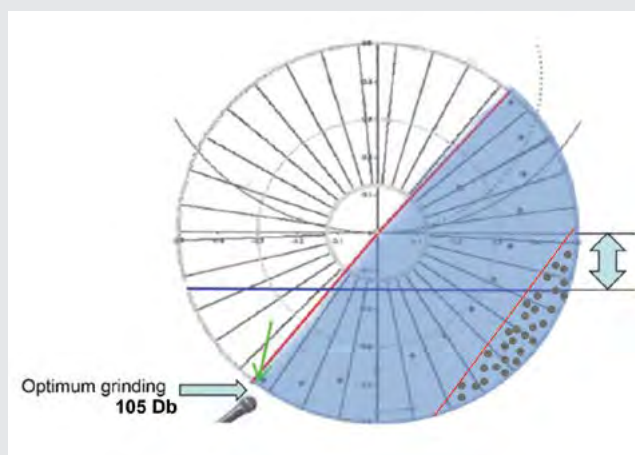


Fig.2. Low ball to rock ratio 8.28% and high total charge level 30%

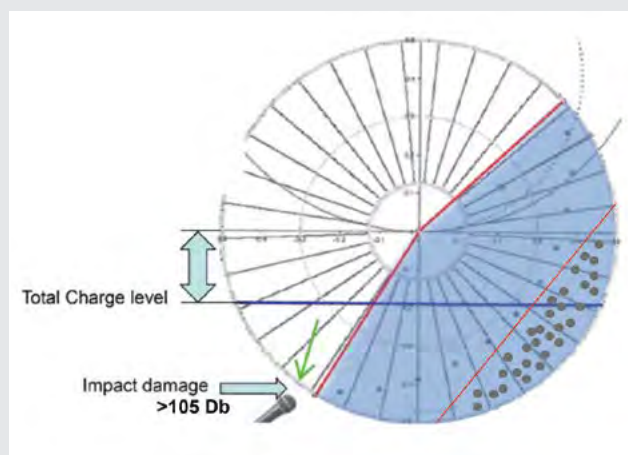


Fig.3. High ball to rock ratio 12.32% and low total charge level 25%

In view of the importance of the *ball charge level* for optimum grinding and low energy consumption, emphasis was put on the mechanic interaction in the mill using microphones and bearing pressure to determine the ball charge level on-line. The essential model parameters are pressure and sound, and this model has an 86% coefficient correlation which is simple, coherent, transparent and repeatable. This distinguishes us as pioneers in energy efficiency.

### Introduction

**MSC** operates a 36' x 19' SAG Mill, driven by 13 MW of variable speed in both senses, equipped with steel chrome - molybdenum liners, 5.5 " grinding balls and sound control.

Until a few years ago it was a common practice for SAG mills to be run with low mineral charge levels at maximum ball charge level to improve throughput. Generally, such mills had limits on the total charge mass and/or motor capacity, and the resulting low charge levels often resulted in increased liner and bolt damage. According

to the charge tool, both outputs Figs. 2, 3 are for similar charge mass and the same power use. Fig. 3 has the highest ball to rock ratio and the lowest charge level; hence, in that mode the mill liners are more vulnerable to impact damage.

**MSC** uses sound control to maintain the optimum charge level around 105 dB. This helps determine the mass variation by Bearing Pressure which is in direct correlation with Ball Charge Level variations.

### Conclusions

On-line control of the ball level in **MSC** has contributed to improving performance and reducing energy consumption (ensuring an optimum Ball Charge Level). This enhanced overall efficiency.

Moreover, it can be concluded also that this project has contributed indirectly to reducing the total intensity ratio of greenhouse gas emissions.

## EMISSIONS

### Greenhouse gases

In order to calculate the greenhouse gas emissions, the document entitled “Greenhouse gas – Quantification and reporting of greenhouse emissions for organizations – Guidance for the application of ISO 14064-1” – UNE-ISO/TR 14069:2015 IN - is used.

In 2017, the total greenhouse gas (GHG) emissions are 216,379 t CO<sub>2</sub>eq, which is slightly higher than the amount reported in 2016 (215,062 t CO<sub>2</sub>eq) ✓. This fact may be because of the increase of energy consumption and fuels associated with the production increase <sup>(305-5)</sup>. The total value is composed of 92,854 t CO<sub>2</sub>eq <sup>(305-1)</sup> (direct emissions) and 123,525 t CO<sub>2</sub>eq (indirect emissions) ✓<sup>(305-2)</sup>.

The intensity ratio of total GHG emissions is 0.341, which is the result of dividing the total emissions, including energy consumption, by the total tonnes of mineral concentrates produced in a year. The total value of the intensity of emissions is composed of the intensity of direct emissions with a value of 0.149 t CO<sub>2</sub>eq per tonne of concentrate and an intensity of indirect emissions with a value of 0.198 t CO<sub>2</sub>eq per tonne of concentrate ✓<sup>(305-4)</sup>.

There is no information on biodegradation of biomass for the calculation of biogenic CO<sub>2</sub> emissions, and the year results show that GHG emissions were not reduced.

### Dust and noise

The air quality in **MSC**'s area of influence is monitored in eight PM-10 stations located around the mine, tailings deposit and camp; and two stations with cascade impactors installed in the San Cristóbal and Culpina K communities. According to the standards of the Environmental Protection Agency (EPA), measurements are made 24 hours a day, every 12 days.

To prevent dust and particulate material dispersion in the air, **MSC** has implemented the following controls:

- Speed restriction of vehicles in the operational area.
- Frequent irrigation of roads.
- Application of bischofite on the surface of truck roads.
- Construction of a 140 m diameter dome over the stockpile.

With respect to noise generation, monthly monitoring is carried out at specific points within the operations area and in communities. In general, the measured values are below the permissible limits.



## Biodiversity (304-2, 304-3)

In the environmental impact assessment of the project, a baseline inventory of flora and fauna was prepared, which is verified and updated by biologists every six months. The results of this semi-annual monitoring are included in reports submitted to the environmental authorities, and to date there are no significant impacts or changes in biodiversity ✓.

In the entire southwestern highlands of Bolivia, vegetation is scarce with a predominance of shrubs (tholas), which are the primary food source for camelid livestock. In the Red List of Threatened Species in Bolivia, ten different threatened typical plant species have been identified because they are used as fuel (firewood) for domestic and industrial uses, and more recently because of the change in use of the soil to grow quinoa.

According to the International Union for the Conservation of Nature, the main endangered fauna species within the operations area are: James's Flamingo, Andean ostrich, quirquincho and Andean fox; the endangered flora include the thola, yareta and sicha shrubs ✓ (304-4).

There are no protected or high-diversity areas close to the mining operation ✓. The National Reserve for Andean Fauna Eduardo Abaroa is the closest protected area, and is located 150 kilometers to the south. The river called Río Grande is located 12 kilometers south of the mine and is also considered an important ecosystem, in which bird species are abundant, specially flamingos (304-1).

## Soil remediation and rehabilitation (304-3)

**MSC** annually prepares and executes a master plan for remediation and rehabilitation of areas affected by mining activities, with the purpose of reestablishing traditional use of the soil and preserving the local ecosystems.




Since 2017, the rehabilitation plan has covered 113 ha of areas disrupted by the construction and operation phases which have been rehabilitated gradually with support from a local community-owned company.

In 2017, the rehabilitation of 17.1 ha has been completed within the operational area of **MSC**, and 9.54 ha outside of this limit. This land was made available to the communities, in accordance with agreements previously signed with the company.

QUANTITY OF AFFECTED AND REHABILITATED LAND	2015	2016	2017
Disrupted areas not yet rehabilitated (total affected area)	2,350 ha	2,507 ha	2,507 ha
Total rehabilitated area	9.46 ha	26.64 ha	26.64 ha

\* 77.82 ha are currently being rehabilitated; the areas are made available when vegetation coverage is similar to at least 80% of the natural vegetation coverage of the surroundings.

## INVESTMENTS AND TOTAL EXPENSES IN ENVIRONMENTAL PROTECTION

	2015	2016	2017
 Operational costs and investments in prevention, mitigation and remediation of environmental impacts	US\$ 2,558,378	US\$ 1,600,408	US\$ 4,315,978
 Rehabilitation, revegetation and maintenance of areas disrupted due to mining work, in and outside the operational areas	N/A	US\$ 140,625	US\$ 147,876
 Environmental prevention and management costs	US\$ 104,369	US\$ 114,728	US\$ 214,646



The operational and investment costs related to prevention, mitigation and remediation of environmental impacts include activities for removal of the top soil layer of the mine and tailings deposit, civil works in the drainage system for the mine, irrigation and chemical stability of the roads (bischofite application) to avoid dust dispersion, cleaning and maintenance of the dams in the Toldos ravine, and operation and maintenance of the tailings deposit water recovery system. The latter is the main reason for the higher investment in 2017.




The costs of environmental prevention management include equipment calibration, monitoring and measure-

ment, laboratory analysis, maintenance of meteorological stations and environmental consultancies.

### Environmental complaints ✓<sup>(103-2)</sup>

**MSC** has a process through which it receives and responds to stakeholder concerns or complaints in environmental matters. The company is responsible for reviewing, evaluating and identifying the actions required to respond to, address and resolve those concerns in a timely manner.

In 2017, a concern of the community of Culpina K linked to environmental matters was addressed.

		
STAKEHOLDER	CONCERN	MSC'S RESPONSE
Culpina K Community	<p>Authorities and representatives of Culpina K raised their concerns about possible tailings spills and the risk of infiltration of process water into the subsoil in the Wila Khara sector</p>	<p>The community representatives were invited to visit the tailings deposit, where <b>MSC</b> staff heard their concerns and showed them the current state of the operational area.</p> <p>As a result of this visit, it was agreed that such concerns from the community would be addressed through prevention projects and periodic monitoring to ensure a proper management of the tailings and to minimize the risk of infiltration of the process water to lower soil levels.</p>

### Significant spills <sup>(306-3)</sup>

During 2017, all environmental incidents associated with spills were considered to be minor spills and involved substances in quantities of less than 10 liters ✓. Similarly, according to the **MSC** event classification chart of the recording and investigation of incidents, they have a temporary impact, are reversible and recoverable in the near-term.

### Environmental compliance

Minera San Cristóbal complies with all environmental prevention and control regulations established by the Bolivian government and the international standards adopted in the company's Business Management System. **MSC** receives inspection and verification visits from governmental, sectorial and departmental entities. It also carries out internal and

external audits to verify compliance with legal obligations and operating rules.

In 2017, no reportable environmental incidents were presented to the Competent Environmental Authority within any of the company's activities. Nor was a penalty or sanction imposed for the noncompliance of environmental laws or regulations ✓<sup>(307-1)</sup>.

### Mine closure planning <sup>(MM10)</sup>

The planning of programs, projects and technical studies required for updating the Mine Closure Plan for Minera San Cristóbal continued in 2017 and included completion of:

- Geochemical characterization of mine residues stored in the mine dumps, tailings from the mineral concentra-



tion plant, and the low-grade mineral stocks. There is information available regarding the physical, chemical, and mineral qualities as well as the potential acid rock drainage, for the purpose of use in closure activities and remediation and rehabilitation works.

- Geotechnical identification and characterization of soil banks which could be used as coverage material, for the closure and rehabilitation of dumps and tailings deposit, with adequate hydraulic properties to guarantee effectiveness and sustainability in the post closure and abandonment phases.
- Top soil inventory (organic soil) recovered from the mining area and tailings deposit, and the maintenance plan for future use during the concurrent and final closure.
- Optimization study in the production of seedlings for revegetation with native species; pilot tests on revegetation performance with native and introduced species, using alternative methods of manual seeding, transplanting and hydro-sowing; cost-benefit evaluation for selection of the best species.
- Survey of meteorological and hydrological data, the water balance in the micro-basins of the area of influence of the operations, and programming of a hydrogeological study in the Mine and Toldos sector.
- Evaluation of alternative uses of the coverage for the accumulation of mining residues and tailings, and an estimate of the associated costs.
- Estimated budget update for future Asset Retirement Obligations (ARO), aimed at readjusting the financial provisions for the closure of operations.
- Review of the mining and environmental regulatory frameworks, identification of regulatory requirements for updating the closure plan, and analysis of legal voids.
- External verification of the obtained results, through a third-party review and validation of the technical procedures and the cost and budget estimations for the ARO.
- Execution of training plans for staff involved in the revision and updating of the closure of operations.

# 12

## Neighboring Communities





## APPROACH

The relationships with communities and other stakeholders are based on the company's values. **MSC** has a relationship with the communities and organizations in the area of influence through channels that ensure continuous communications. The main mechanisms of interaction with the different stakeholders are interviews, permanent contacts, formal and informal conversations; together with meetings in different areas.

**MSC** complies with Bolivian legislation about the rights of indigenous people, as well as international treaties, guidelines and principles related to the mining activity. The company is committed to the well-being and sustainable development of the communities, and supports actions aimed at strengthening and empowering the communities to achieve a better future in close collaboration with the Consultative Council Los Lípez San Cristóbal. It should be noted that in 2017 there were no cases of violation of the rights of indigenous people ✓<sup>(411-1)</sup>.

### Area of influence

The operations of **MSC** are surrounded by the Native Indigenous Farmer Territory (TIOC, in Spanish) – Provincial Union Federation of Indigenous Communities of Nor Lípez. The area of direct influence of the mining operation comprises four communities: San Cristóbal, Culpina K, Vila Vila and Río Grande. The area of indirect influence includes eight communities located along the main road between Uyuni and Avaroa, and also communities located along the railway which the company uses to transport its mineral concentrates. We also interact with other communities located near the project (MM5).

The relationship with the communities of San Cristóbal, Culpina K, Vila Vila and Río Grande is based on agreements that have been complied with in an environment of mutual respect, consensus and constant communication between the communities and the company. The initial agreements were signed with San Cristóbal in 1998, Culpina K in 1999, Vila Vila in 1999 and with Río Grande in 2006.

In 2007, plans were drawn up and implemented for the restitution of cropland and camelid cattle grazing fields of

the affected families. Actions were taken to mitigate the effects of the use of land for the tailings pipes, well fields and railroad.

In 2011, in response to concerns about the medical care for employees in the communities' health centers, a Memorandum of Understanding and a Pact of Harmony, Health and Sustainable Productivity were signed. Thus, construction of a second-level hospital in San Cristóbal was agreed upon and the quality of the health services was improved, increasing coverage to the entire population of the communities surrounding the San Cristóbal Project.

In 2017, in view of the need to increase the area required for operations, an agreement was signed with the community of San Cristóbal. The actions taken were focused on giving support to families with livestock affected by this expansion.

### Community relationship management <sup>(102-43, 103-2)</sup>

To maintain a close and regular relationship with stakeholders, **MSC** has Community Relations offices in communities in the direct impact area, which are mainly supported by Community Liaisons in each community. Authorities, representatives of institutions and community members come to these offices to make inquiries, submit requests for support and receive answers, express concerns or make complaints, and hold meetings on various subjects of interest.

To address concerns from communities and organizations in the area of indirect influence, the Regional Liaison performs scheduled routine visits to the different communities with the purpose of keeping in touch with stakeholders, addressing requests, identifying and responding to concerns and preoccupations, and knowing their development expectations, among other matters ✓<sup>(413-1)</sup>.

It is considered relevant to maintain these good close relationships and permanent contacts with the communities in order to share and exchange information, respond to their concerns, support their plans and projects, help authorities and organizations in civic, cultural and representation events, participate in meetings, organize social action programs and provide solid support to vulnerable groups.



Annual guided visits to the company operations by regional authorities and institutions are organized for the purpose of knowing the operation, environmental management programs and the work that is performed for the benefit of the communities in the influence area.

### **Social capital** (102-43)

Over time, Minera San Cristóbal has strengthened its relationship with different stakeholders, generating an active social interaction among the different social actors, associations and organizations, mainly from communities in the influence area.

Strengthening the relationships with the stakeholders has allowed for creation of a social platform for collaboration, cooperation and joint work towards socioeconomic development of the communities, which gave rise to the Consultative Council Los Lípez San Cristóbal. The Council becomes a representative co-participation body of leaders from communities in the area of direct influence who are legitimate representatives of their communities and carries out a strategic plan to promote local development of the communities in close collaboration with the political authorities, social and productive organizations of the surrounding

communities and with technical assistance from a team of professionals from Minera San Cristóbal.

To accomplish the various strategic project plans, different strategic alliances are entered into with cooperating entities, the Mayor of Colcha K, governmental entities and other actors who coordinate and interact in social, economic and environmental settings for the achievement of common objectives.

### **Resettlement and mitigation of impacts** (MM9)

The community of San Cristóbal has experienced some 20 years of continuous socio-economic growth since signing the agreement to relocate the town. In 2017, the population was 1,985 inhabitants, 635 homes were registered, 98% of which have access to basic services such as drinking water, electricity, sewage, telecommunications and road infrastructure.

Today, it has schools for the preschool, primary and secondary levels attended by 847 students, 15% of whom go on to higher education. Illiteracy is only 3%. Regarding health, 70% of the population has health insurance and 83% of the economically active population has employment.





To implement the resettlement and mitigation plans, **MSC** carries out socio-economic impact assessments of the affected families. Later, field visits, meetings with families and community authorities are held to agree on resettlement and mitigation actions. Finally, these actions are translated into plans that are executed and followed up to evaluate their impact on the communities.

As part of the resettlement and mitigation actions, **MSC** supports impacted families in the construction of animal pens, the opening of roads to new grazing areas, the construction of irrigation systems for forage, animal health, controlled management of animals, the restitution of cropland, and training for farmers, among others.

## SUPPORT TO NEIGHBORING COMMUNITIES

Minera San Cristóbal pays special attention to the needs and concerns of its vulnerable groups in the communities. Some examples of this type of programs in 2017 are:

### Improvement of houses of the elderly

Within the framework of the elderly support program in the communities in the direct impact area, **MSC** performs a social evaluation of people of this group in a critical situation or with basic service needs in houses and small farms. Once the need is identified, social support actions are implemented, such as house repairs, installation of water for consumption, provision of energy, construction of drinking fountains for animals, furniture provision, among others.

### Strengthening of family integration

The communities in the direct impact area are going through sociocultural changes. Within the framework of the Social Management Plan, **MSC** gives support with orientation programs regarding the practice of values for a healthy family coexistence, which contribute to social wellbeing in the community. In this context, social actions targeting



households were implemented to provide guidance in the new situations and forms of family interrelation.

In 2017, different activities were performed, among which:

- Theater evenings and presentations in the schools of the communities.
- Recreational events on international family day with the participation of parents and their children in old-fashioned games.
- Workshops about the importance and role of families.
- Broadcasting of radio messages about the value of families in society.

## Financial education

With the purpose of promoting and providing guidance on the adequate administration of economic resources in households from communities in the direct impact area, in coordination with financial entities, **MSC** developed sensitization workshops about financial education targeting the communities of San Cristóbal, Culpina K and Vila Vila. The workshops focus on topics referring to: “Family Savings”, “Investing for the Future”, “Efficient use of the household’s financial resources”, “Creating a Future for Entrepreneurs”, “Creating a Future for Youth”, and “Creating a Future for Children”. Around 990 participants of different ages attended these events.

## COMMUNITY GRIEVANCE MECHANISMS: ADDRESSING COMMENTS AND COMPLAINTS


✓<sup>(103-2)</sup>

The Department of Sustainable Development and Community Relations addresses concerns and complaints through a mechanism based on the experience and characteristics of the environment (communities, social organizations, civil society). This mechanism has variables that allow for cataloging the level of importance of each situation according to the type of concern, factor (environmental, economic, social, political and cultural) and origin (direct and indirect influence area).

In 2017 a software application for addressing concerns, suggestions and complaints was developed. Both mecha-

nisms are complementary and are used for improving this function.

In the communities in the indirect influence area, **MSC** has Community Relations offices that are a medium to be in touch with the stakeholders, where concerns and expectations are received from such groups either verbally or in writing. The responsible staff analyzes and, if necessary, processes the matter, sharing it with relevant staff. Depending on the factor (environmental, economic, social, political, cultural), the responsibility is transferred to the areas concerned of **MSC**; otherwise, the matter is handled directly by the team of Sustainable Development and Community Relations ✓<sup>(413-1)</sup>.

		
COMPLAINTS RECEIVED	COMPLAINTS CLOSED	COMPLAINTS IN PROCESS
13	3	10

Of the 10 complaints in process, 7 are related to construction projects in progress, 2 are related to environmental concerns (water extracted from wells for operations and the dissemination of environmental management) and 1 is related to institutional strengthening for the municipality of Colcha K.

Weekly follow-up is carried out of the number and status of open issues to identify progress, changes and resolution. A matter is considered resolved when the approval of the person or stakeholders is received.

## CONCERNS IN THE COMMUNITIES AND RESPONSE OF MSC IN 2017 ✓<sup>(102-44)</sup>

### Sustainable development for the communities

From the perspective of its social responsibility and strategic alliance with the Consultative Council Los López San Cristóbal, **MSC** supports and provides technical assistance for sustainable development of the communities, based on the environmental, social and economic management of social and community-based productive organizations.



With regard to the environment, it promotes the rational use of natural resources and solid and liquid waste management; in the social sphere, it supports the health centers and public schools to achieve quality services; and with regard to the economic sphere, it develops productive chains of organic quinoa, camelids, tourism and the exploitation of vicuña fiber; with the objective of contributing to the generation of employment and income.

To guarantee environmental, social and economic sustainability, the individual, organizational and institutional capacities are strengthened.

### Road infrastructure

**MSC** continued with periodic maintenance activities of access roads to Uyuni – San Cristóbal – Alota.

On the other hand, with the purpose of avoiding dust generation in the communities, bischofite was applied on the road embankment.

In 2017, the communities in the direct influence area made efforts to implement the asphalt road project with the Government of Potosí. This initiative is under evaluation.

### Water

The generation of direct and indirect employment thanks to the presence of the **MSC** mining project has been the determining factor for population growth, mainly in the communities in the direct impact area.

Due to demographic growth, traditional sources of natural water were no longer able to meet the growing demand for drinking water from the population. Therefore, water intake systems have been built and put into operation using pumping wells. Currently, these pumping systems are the main sources of supply for the communities in the direct impact area.

Operation and maintenance of the current water intake, water distribution and sewage systems necessarily require an





institution that meets the requirements for this service. To achieve this, a process for institutional strengthening of the Water Committees was initiated.

## Employment

With the purpose of analyzing the employment opportunity situation in the communities, a baseline was performed. This will enable both the companies and the community authorities to strengthen labor skills.

The economic development projects implemented in the communities, in coordination with the Consultative Council Los Lipez San Cristóbal, are potential alternatives for employment of young professionals and nonprofessionals in the medium and long term.

## SOCIAL MINE CLOSURE PLANNING

With the purpose of planning the social closure, compliance with agreements and covenants signed with the communities in the area of influence of the Minera San Cristóbal operation is monitored continuously. The method of relationships with the different stakeholders is maintained and their perceptions are known; this is reflected in the social license. Sustainable development programs are carried out and trends and socioeconomic impacts towards the closing of operations are identified.

Additionally, a “resilience study” is planned in the area of direct influence of the activities of Minera San Cristóbal, to know and understand the capacity of the population to re-

spond to socio-economic impacts arising from the loss of benefits from the mining activity. This will provide inputs for planning the social closure strategy. This study directly involves organizations such as the “Consultative Council Los Lipez San Cristóbal”, representatives of the municipality of Colcha K, competent departmental and National State entities, academic institutions and professionals related to the environment and mining.

A specialized technical team will support the planning phase of the closure and rehabilitation. This team will be made up of representatives of Minera San Cristóbal and national and international consultants. The objective is to ensure formulation of effective and sustainable proposals in the long term, within the framework of the principles of transparency, trust and mutual respect.

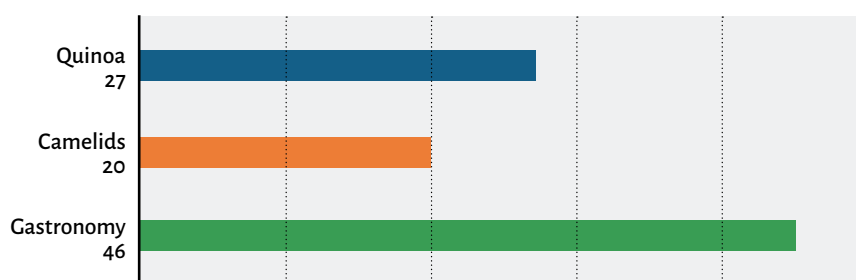
## DEVELOPMENT PROJECTS FOR 2017 (413-1)

### Education project

With the objective of contributing to the improvement of education, in line with Education Law 070 “Avelino Siñani – Elizardo Perez”, through the Consultative Council and the Ministry of Education, **MSC** has supported regular and alternative education at the school in San Cristóbal.

In Regular Education, community-based socio-productive projects have been designed in two schools, based on the potential and needs of the communities, providing support with equipment to implement productive education in the processing of quinoa and handicrafts.

N° OF PRODUCERS TRAINED AS BASIC TECHNICIANS 2017



Source: Education project



In alternative education, in coordination with the Ministry of Education, work has been carried out with young people and adults who did not finish secondary school to evaluate and certify skills in gastronomy and

handicrafts. Subsequently, the training was completed through specific modules in gastronomy, quinoa growing and the raising of camelids with the aim of training basic technicians.





## CASE STUDY

# Certification and technical training of youth and adults

## Background

In 2017, with support from **MSC** and based on Law 070, the Consultative Council Los Lipez San Cristóbal carried out the education project in the communities in the direct and indirect influence area. Youth and adults of both genders who due to diverse circumstances were not able to finish secondary school or obtain a professional diploma and who work in tourism, quinoa production, camelid and handicrafts activities, can be granted a certificate as **experts** in that job or can continue with complementary training to become **basic, assistant and medium-level technicians** recognized by the Ministry of Education.

## Objective

Create skilled labor opportunities for young and adult producers through the certification of skills by the Ministry of Education in order to contribute to sustainable development in the manufacturing sector.

The following **relevant** actions were performed:

- **Strategic Alliances** with the Ministry of Education, Vice-Ministry of Alternative Education, Departmental



Practical evaluation for camelid experts



Basic technical evaluation for gastronomy.



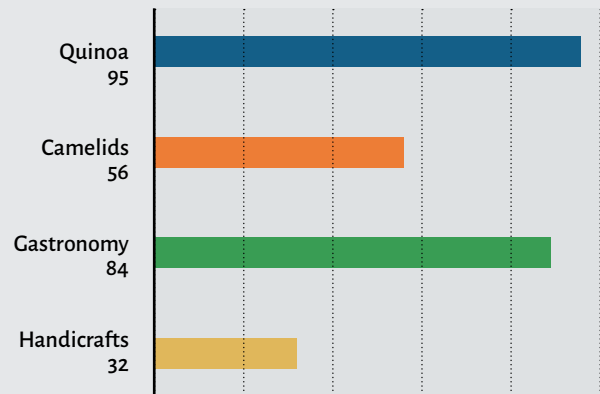
Sub-Directorate of Alternative Education, District Education Directorate of Colcha – K, Alternative Education Centers of ETA-Uyuni and CEIPA-Potosí and productive organizations for quinoa, camelids, gastronomy and handicrafts.

- Technical coordination with the Ministry of Education for the evaluation and certification of competencies.
- Participative regional curriculum planning for the training of basic, assistant and medium-level technicians.
- Coordination with Alternative Education Centers of Potosí and Uyuni for complementary training.
- Coordination with technical staff from the municipality and productive organizations for productive technical training.
- Evaluation of producers as basic technicians.

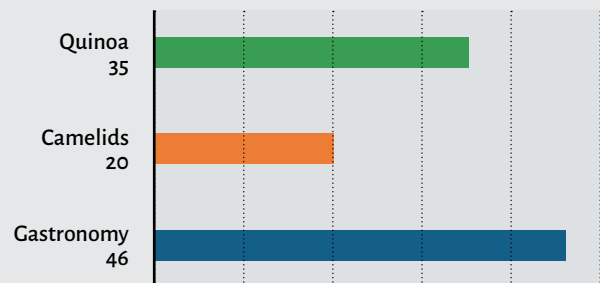
The project **results** in 2016 and 2017 were: 267 producers certified as experts and 101 producers certified as Basic Technicians, with a 72% female participation.

The municipality of Colcha K requested support from the Consultative Council and **MSC** to replicate this experience in other communities of the municipality in future years. That is how it contributes to sustainable development of the productive sector.

#### PRODUCERS CERTIFIED AS EXPERTS 2016-2017



#### PRODUCERS CERTIFIED AS BASIC TECHNICIANS 2017



Certificates awarded as quinoa, camelid and gastronomy experts.

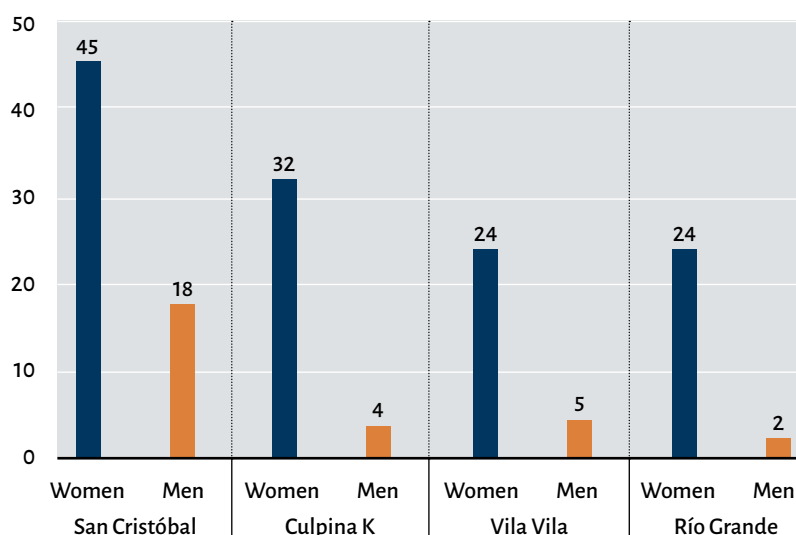


## Tourism project

With the objective of contributing to the generation of employment and income for the families involved in tourism activities, **MSC** -in partnership with the Consultative Council Los López San Cristóbal and the Foundation for Development Cooperation and Promotion of Assistance (CODEPSA, in Spanish)- has given technical assistance to hotel, gastronomy, handicraft and tourist guide enterprises of the “Pueblos Mágicos Los López Association”, which is made up of partners from the communities of San Cristóbal, Culpina K, Vila Vila and Río Grande. This work was performed based on three components:

- Organizational and Entrepreneurial Strengthening, defining the inclusive commercial model and business formalization through municipal licenses.
- Tourism operation and quality; training was provided in basic accounting and the definition of quality indicators.
- Commercialization, achieving participation of the entrepreneurs in the International Tourism Fair, which took place in Santa Cruz, and in the EXPOLIZEZ, which took place in the Uyuni salt flat, where products and services were sold to foreign and national tourists.

JOBS GENERATED BY TOURISM ACTIVITIES,  
ACCUMULATED 2013-2017







## CASE STUDY

# Management and use of vicuña fiber

As a typical camelid of the South American Andean plateau, the vicuña lives mostly in the west of Bolivia, specifically in the region of Los López, where Minera San Cristóbal operates. The indigenous population considers it to be “Pachamama (mother earth) livestock”. In the past, vicuñas were hunted indiscriminately until practically reaching extinction because of the value of their fiber. They have been protected for 50 years now. More than any other animal species, the vicuña represents Bolivia and today it has become an important part of the projection of its future.

## Background

Since 2017, the Consultative Council Los López San Cristóbal together with **MSC** is carrying out the Camelid Project within the framework of a strategic alliance with the General Directorate of Biodiversity, the Canadian Cooperation, Conservation International, the municipality of Colcha K and the Association of Vicuña Producers of Río Grande in 12 communities of the Region.

## Objective

Contribute to income-generation for the vicuña producing families and communities.

Thanks to technical assistance, the following relevant actions were achieved:

- Organization and planning of the project with 12 vicuña producing communities and 2,443 people.
- Organization of the Regional Association of Vicuña Producers of Colcha K (ARMAVI CK, in Spanish) with involvement of the communities.
- Estimation of the total population of 4,417 vicuñas in the 12 communities.
- Herding, capture, shearing of vicuñas in the 12 communities, after which the vicuñas are released until the next year.
- Manipulation, biometric measures, animal health and animal selection for shearing.
- Meeting for an organizational technical evaluation of all shearing campaigns.

## Project results in 2017:

- Capture of 496 vicuñas in the 12 communities.
- Shearing of 92.89 kg of vicuña fiber, for sale.
- Participation of 46% women and 54% men in the processes of organization, training, capture, shearing and selection.
- ARMAVI CK has accomplished positioning itself as a medium-large organization nationwide, thanks to the amount of sheared fiber for sale (92.89 kg).





## Camelid project

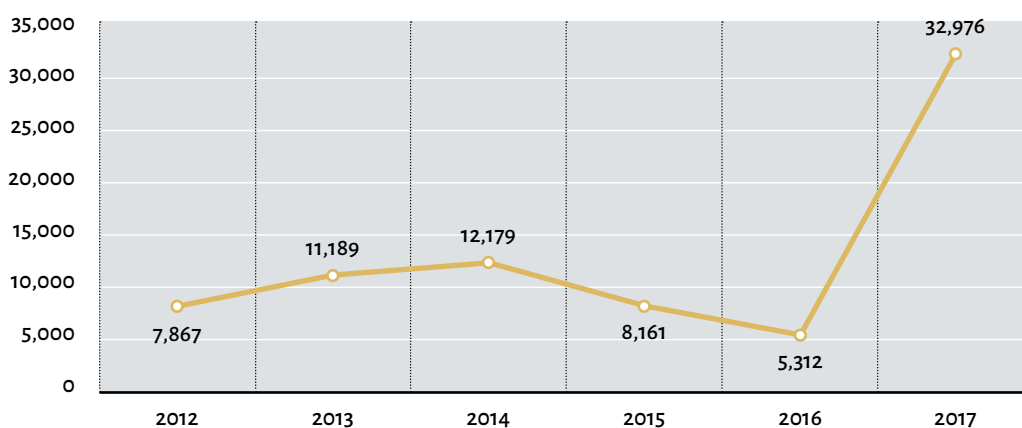
Execution of an integrated llama and vicuña management and exploitation project started, with the objective of contributing to income-generation for the families involved. This was possible thanks to the strategic alliance of the municipality of Colcha K, the Canadian Cooperation, Conservation International, the Consultative Council Los López San Cristóbal, the Association of Camelid Producers, and Minera San Cristóbal.

Nine communities continued to strengthen their productive foundations in terms of feed, animal health, management and improvement, generating value added through construction of a llama meat processing plant and abattoir.

Until 2016, the project for vicuña exploitation targeted the community of Río Grande. In 2017 it was extended to twelve communities, which organized the Regional Association of Vicuña Producers at the municipal level (ARMA-VI-CK, in Spanish). In turn, this enabled the start of construction of a fiber collection center, giving training and technical assistance in capture and shearing. In this first year of activity, 409 animals were sheared, yielding 93 kilograms of fiber.

### SHEARED VICUÑA FIBER MONETIZATION (US\$)

2012 - 2017



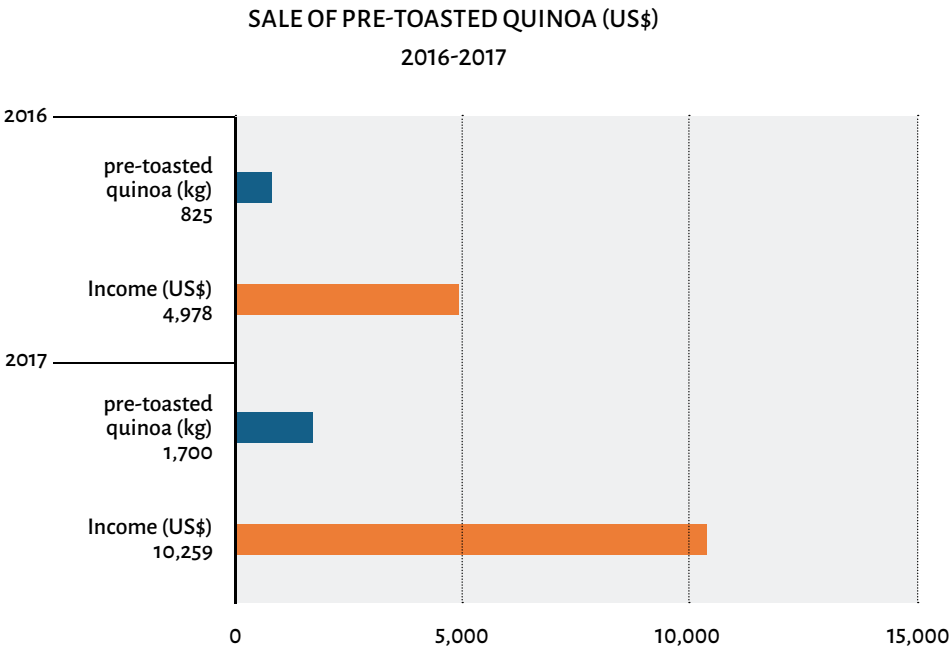
Quinoa project

Based on the improved production of certified quinoa under a productive chain focus in previous years, in coordination with the Association of Agricultural Producers of the Community of Culpina K (APRACCUK, in Spanish) and the municipality of Colcha K, in 2017 actions were implemented to contribute to improving the income of the producers in the following components:

- Production: Training and assistance in organic quinoa production continued in 16 communities, with 352 producers, for organic certification by the Bolivian Certification Agency (BOLICERT, in Spanish). Similarly, a digital registry system was implemented for quinoa production in coordination with the Autonomous University Tomás Frías.
- Transformation: The first steps in transformation were the production of bio-inputs and the production of pre-toasted quinoa. In the same way, APRACCUK was supported with a market study for derivatives of this important cereal, prioritizing de-saponified quinoa, pre-toasted quinoa, quinoa flakes and quinoa flour.



- Commercialization: Due to the lower price of organic quinoa grain at the national level, support was given to commercialize the bio-inputs and pre-toasted quinoa.



Source: Quinoa project

## Health project

With the objective of contributing to improvement of the services in the health centers of the communities in the direct influence area, and in coordination with the municipality of Colcha K, the main Municipal Medical Center, the Health Committees and the Consultative Council, **MSC** supported the following processes:

- Implementation of the level-two hospital: In previous years, support was given for the final design and construction. In 2017, the municipality of Colcha K received support for the final design of equipment.
- Accreditation of service quality: In coordination with the municipality of Colcha K and the Departmental Health Service of the city of Potosí (SEDES, in Spanish), technical assistance was provided to the medical staff in three centers and a health worker in the preparation and implementation of procedures and protocols to improve the standards for accreditation of the health service quality.
- Implementation of community health care: Within the framework of the Intercultural Community-based Family Healthcare Program (SAFCl, in Spanish) of the State, the preparation of family medical files and activities for the promotion of healthy lifestyles were supported.





# 13

## **Verification of the Sustainability Report** (102-56) ✓



Ernst & Young Ltda.  
Av. 20 de Octubre N° 2565 - Sopocachi  
Calle Torre Azul - Piso 10  
La Paz - Bolivia  
Tel: (591) 2 243 4333  
Fax: (591) 2 214 0947  
ey.com

**A FREE TRANSLATION FROM THE ORIGINAL ISSUED IN SPANISH  
REPORT OF A LIMITED REVIEW OF GRI STANDARDS**

La Paz, September 7, 2018

To the President and Members of the Board of Directors  
**MINERA SAN CRISTOBAL S.A.**

**Introduction**

1. We have carried out a limited review of the GRI standards (marked with "✓") included in the Sustainability Report ("Report") for the year ended December 31, 2017 of Minera San Cristobal S.A. ("Company"). The indicators included in the Report are the ones that the management has considered as more relevant to meet the stakeholders' interests and the guidelines for the preparation of the Report of *Global Reporting Initiative*, GRI Standards, and in the Mining and Metals Sector disclosures accompanying these guidelines.

**Board of Directors' responsibility**

2. The Board of the Company is responsible for establishing the basis and the criteria for the Report's preparation in accordance with GRI Standards for the preparation of the Report. The Board is also responsible for the definition, adjustments, and maintenance of the management systems and internal controls, from where the information is obtained.

**Responsibilities of Ernst & Young Ltda.**

3. Our responsibility is to issue an independent report of the GRI standards (marked with "✓"), included in the Report in the GRI content index, based on the limited review procedures listed in paragraph 4 and on the evidence obtained. The procedures applied on a limited review vary in nature and are less extensive than the ones performed on an engagement specifically designed to issue an opinion that provides security over the information's reasonability. Therefore, we do not express an opinion regarding all the GRI standards that are included in the Report referred in paragraph 1.

Our conclusions detailed in paragraph 5, refer exclusively to the information of the annual period ended December 31, 2017. Our limited review did not consider information of prior periods, except for that related to the indicators mentioned in paragraph 1, comparative with the year ended December 31, 2016.

**Procedures achieved.**

4. Our limited review was conducted in accordance with International Standards on Assurance Engagements ISAE 3000, issued by the International Auditing and Assurance Standard Board (IAASB) of the International Federation of Accountants (IFAC) and it includes formulating questions to the Company's management as well as other areas that have participated in the preparation of the 2017 Report, and also, through certain analytical procedures and sample testing. To this end, we visited the Toldos mining camp located in the community of San Cristobal and the administrative office located in La Paz city. The work performed is described below:



- a) Interviews with the Superintendence of Business Development and Information Technology in order to understand the Report's preparation process. In addition, we have performed interviews with key personnel of the areas of: Sustainable Development, Local and Departmental Relations, Environment, Industrial Security, Health, Financial, Human Resources, Technical Development, Acquisitions and Contracts, Government Relations and Internal Audit, among others, which participated on the preparation and definition of the Report contents.
- b) Review of the procedures to gather and validate the GRI standards (marked with "✓"), which are included in the Report.
- c) Review of the alignment of the structure and content of the Report as indicated in the Guide for the preparation of the GRI Report and the sectorial supplement for the mining industry that complements the guide.
- d) Review of the relevant quantitative information through analytic procedures and other review procedures based on sampling testing of the GRI standards (marked with "✓") included in the Report, as well as its suitable compilation based on the data provided by the Company.

#### Conclusions

- 5. Based on the work performed, described in paragraph 4, nothing has drawn our attention to make us believe that:
  - a) The GRI standards (marked with "✓") reviewed and included in the Report, are not prepared, in every significant aspect, in accordance with the Guide for the preparation of the GRI Standards Report.
  - b) The self-statement made by the Company upon its adequacy to the GRI standards, in its "essential" option, does not meet, in every significant aspect, with the GRI standards option's specific criteria.
  - c) The GRI standards (marked with "✓"), included in the Report, are not reasonable.

**ERNST & YOUNG LTDA.**  
Member Firm of Ernst & Young Global



Javier Iriarte J.  
Partner





# 14

**GRI Content Index**<sub>(102-55)</sub> ✓



GRI STANDARD NUMBER	DESCRIPTION	STATUS OR LOCATION	PAGE
102-1	Name of the Organization	About Minera San Cristóbal	16
102-2	Activities, brands, products and services	About Minera San Cristóbal / Products	17
102-3	Location of headquarters	About Minera San Cristóbal	16
102-4	Location of operations	About Minera San Cristóbal	16
102-5	Ownership and legal form	Corporate Government -Organizational Structure / Organizational Structure	28
102-6	Markets served	About Minera San Cristóbal / Markets	18
102-7	Scale of the organization	About Minera San Cristóbal / Operational Highlights/ Most Outstanding Operational Items	19
102-8	Information on employees and other workers	Workforce / MSC Employees by gender	68
		Workforce / Local Hiring	69
102-9	Supply chain	About Minera San Cristóbal / Supply Chain	18
102-10	Significant changes to the organization and its supply chain	About Minera San Cristóbal / Operational Highlights	19
102-11	Precautionary Principle or approach	Corporate Government – Organizational Structure / Business Management System of Minera San Cristóbal	31
102-12	External initiatives	Corporate Government – Organizational Structure / Commitment to external initiatives	32
102-13	Membership of associations	Corporate Government – Organizational Structure / Memberships and Associations	36
102-14	Statement from senior decision-maker	Message from the President and Vice President & General Manager	8
102-16	Values, principles, standards and norms of behavior	Ethics and Integrity / MSC's values	40
102-17	Mechanisms for advice and concerns about ethics	Ethics and Integrity / Code of Ethics and Business Conduct	40
		Ethics and Integrity /Whistleblower Regulation	41
102-18	Governance structure	Corporate Government / Organizational Structure / Organizational Structure	28
102-20	Executive-level responsibility for economic, environmental and social topics	Corporate Government / Organizational Structure / Organizational Structure	28
102-21	Consulting stakeholders on economic, environmental and social topics	About this Report / Material Topics	22
102-25	Conflicts of Interest	Ethics and Integrity / Code of Ethics and Business Conduct	41
		Ethics and Integrity / Whistleblower Regulation	41
102-29	Identifying and managing economic, environmental and social impact	About this Report / Material Topics	25
102-30	Effectiveness of risk management processes	About this Report / Material Topics	25



GRI STANDARD NUMBER	DESCRIPTION	STATUS OR LOCATION	PAGE
102-31	Review of Economic, environmental, and social topics	About this Report / Material Topics	25
102-32	Highest governance body's role in sustainability reporting	About this Report / Material Topics	22
102-33	Communicating critical concerns	Ethics and Integrity / Whistleblower Regulation	41
102-34	Nature and total number of critical concerns	Stakeholder Engagement / Approach	48
102-40	List of stakeholder groups	Stakeholder Engagement / Stakeholders	49
102-41	Collective bargaining agreements	Workforce / Workforce Characteristics	68
102-42	Identifying and selecting stakeholders	Stakeholder Engagement / Stakeholders	49
102-43	Approach to stakeholder engagement	Neighboring Communities / Community Relationship Management	49
		Stakeholder Engagement / Stakeholders	106
		Neighboring Communities / Social capital	107
102-44	Key topics and concerns raised	Neighboring Communities / Concerns in the Communities and Response of MSC in 2017	109
		Stakeholder Engagement / Stakeholders	49
102-45	Entities included in the consolidated financial statements	About this Report / Footnote page 2	22
102-46	Defining report content and topic Boundaries	About this Report / Material Topics	22
102-47	List of material topics	About this Report / Material Topics and Boundaries: 2017	23
102-48	Restatements of information	About this Report	22
102-49	Changes in reporting	About this Report	22
102-50	Reporting period	About this Report	22
102-51	Date of most recent report	About this Report	22
102-52	Reporting cycle	About this Report	22
102-53	Contact point for questions regarding the report	We value your comments	7
102-54	Claims of reporting in accordance with the GRI Standards	About this Report	22
102-55	GRI content index	GRI Content Index	124
102-56	External assurance	About this Report	25
		Verification of the Sustainability Report	120
103-1	Explanation of the material topic and its Boundary	About this Report / Material Topics and Boundaries: 2017	23

GRI STANDARD NUMBER	DESCRIPTION	STATUS OR LOCATION	PAGE
103-2	The management approach and its components	Human Rights	45
		Workforce / Employee Grievance Mechanism	73
		Environmnet / Environmental complaints	102
		Neighboring Communities / Community relationship management	106
		Neighboring Communities / Community Grievance mechanisms: addressing comments and complaints	109
103-3	Evaluation of the management approach	Corporate Government - Organizational Structure / The Management Model	29
201-1	Direct economic value generated and distributed	Economic performance and contributions / Economic performance	61
202-2	Proportion of senior management hired from the local community	Workforce / Local hiring	69
204-1	Proportion of spending on local suppliers	Economic performance and contributions / Local procurement and Our Relationship with Local Suppliers	61
205-1	Operations assessed for risk related to corruption	Ethics and Integrity / Anti-Corruption / Anti-Bribery	41
205-2	Communication and training about anti-corruption policies and procedures	Ethics and Integrity / Anti-Corruption / Anti-Bribery	41
205-3	Confirmed incidents of corruption and actions taken	Ethics and Integrity / Anti-Corruption / Anti-Bribery	41
302-1	Energy consumption within the organization	Environment / Energy	96
302-3	Energy intensity	Environment / Energy	96
302-4	Reduction of energy consumption	Environment / Energy	96
303-1	Water withdrawal by source	Environment / Efficient use of Water	92
303-2	Water sources significantly affected by withdrawal of water	Environment / Efficient use of Water	92
303-3	Water recycled and reused	Environment / Efficient use of Water / Plant Water Consumption (2008-2017)	93
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Environment / Biodiversity	101
304-2	Significant impacts of activities, products and services on biodiversity	Environment / Biodiversity	101
304-3	Habitats protected or restored	Environment / Biodiversity Environment / Soil remediation and rehabilitation	101
304-4	IUCN Red list species and national conservation list species with habitats in areas affected by operations	Environment / Biodiversity	101
305-1	Direct (Scope 1) GHG emissions	Environment / Emissions / Greenhouse gas	100

GRI STANDARD NUMBER	DESCRIPTION	STATUS OR LOCATION	PAGE
305-2	Energy indirect (Scope 2) GHG emissions	Environment / Emissions / Greenhouse gas	100
305-4	GHG emissions intensity	Environment / Emissions / Greenhouse gas	100
305-5	Reduction of GHG emissions	Environment / Emissions / Greenhouse gas	100
306-1	Water discharge by quality and destination	Environment / Waste Rock (sterile storage piles) in mine	94
306-2	Waste by type and disposal method	Environment / Waste management / Solid waste	94
306-3	Significant spills	Environment / Significant spills	102
307-1	Non-compliance with environmental laws and regulations	Environment / Environmental compliance	102
401-1	New employee hires and employee turnover	The workforce / Changes in Human Resources	70
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	The workforce / Changes in Human Resources	70
401-3	Parental leave	The workforce / Changes in Human Resources	70
403-1	Workers representation in formal joint management-worker health and safety committees	Health and Safety / Hygiene, Occupational Safety and Wellbeing Mixed Committee	88
403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism and number of work-related fatalities	Health and Safety / Safety Performance	78
403-3	Workers with high incidence or high risk of diseases related to their occupation	Health and Safety / Problem prevention and control of employee health	80
403-4	Health and safety topics covered in formal agreements with trade unions	Workforce / Labor Relationships	71
404-1	Average hours of training per year per employee	Workforce / Training and Development	73
404-3	Percentage of employees receiving regular performance and career development reviews	Workforce / Training and Development	73
405-1	Diversity of governance bodies and employees	Workforce / Women with Equal Opportunities	69
406-1	Incidents of discrimination and corrective actions taken	Human rights	45
408-1	Operations and suppliers at significant risk for incidents of child labor	Human rights	45
411-1	Incidents of violations involving rights of indigenous peoples	Neighboring Communities / Approach	106



GRI STANDARD NUMBER	DESCRIPTION	STATUS OR LOCATION	PAGE
413-1	Operations with local community engagement, impact assessments, and development programs	100% ✓	—
		Neighboring Communities / Community Relationship management	106
		Neighboring Communities / Community Grievance mechanisms	109
		Neighboring Communities / Development Projects for 2017	111
419-1	Non-compliance with laws and regulations in the social and economic area	Economic performance and contributions / Approach	58
MM3	Total amounts of overburden, rock, tailings, and sludges and their associated risks	Environment / Waste management / Tailings	93
MM4	Number of strikes and lock-outs exceeding one week's duration, by country	Workforce / Labor Relations	72
MM5	Total number of operations taking place in or adjacent to Indigenous Peoples' territories, and number and percentage of operations or sites where there are formal agreements with Indigenous Peoples' communities	Neighboring communities / area of influence	106
MM7	The extent to which grievance mechanisms were used to resolve disputes relating to land use, customary rights of local communities and Indigenous Peoples, and the outcomes	Not Applicable	—
MM9	Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process	Neighboring communities / Resettlement and mitigation of impacts	107
MM10	Number and percentage of operations with closure plans	100% ✓	
		Environment / Mine closure planning	102

# Gallery



CELIA MAMANI CALCINA  
Truck Operator



MARCELINA CORIA  
Member of Community



ROBERTO RAMOS  
Member of Community



OLEGARIO COLQUE ALI  
Flotation Operator



MARIA LUZ QUISPE  
Community Girl



MARILYN MENDOZA SÁNCHEZ  
Contractor



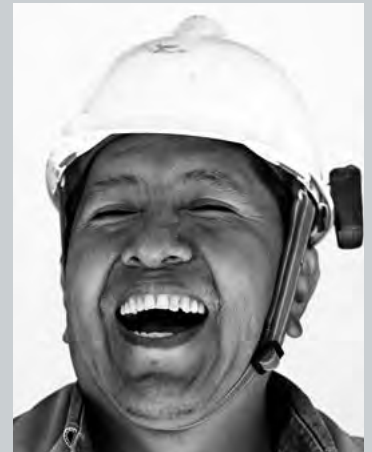
MIRIAN FLORES FELIX  
Member of Community



JOAQUÍN QUISPE MAMANI  
Loading Operator



QUINTÍN CABITA MAMANI  
Electromechanical Technician



EDWIN AYALA LLAVE  
Electromechanical Technician



SERAFIN COLQUE CÓRDOVA  
Mine Training Instructor



FREDDY RENAR CAYO COPA  
Electromechanical Technician



JAIME ORTEGA DURÁN  
Emergency Response Technician



LOYDA NOEMI GRABIEL CAYO  
Flotation Operator









**MINERA SAN CRISTÓBAL S.A.**

**TOLDOS  
CAMP**

Nor Lípez Province  
Potosí, Bolivia  
P: (591-2) 2153777  
[info@minerasancristobal.com](mailto:info@minerasancristobal.com)

**POTOSÍ**

Tarija Street N°12  
Potosí, Bolivia  
P: (591-2) 612-0487  
F: (591-2) 612-0486  
[info@minerasancristobal.com](mailto:info@minerasancristobal.com)

**LA PAZ**

Calacoto, 15<sup>th</sup> Street  
Torre KETAL Building, 5<sup>th</sup> floor  
La Paz, Bolivia  
P: (591-2) 262-3400  
F: (591-2) 211-7950  
[info@minerasancristobal.com](mailto:info@minerasancristobal.com)

[www.minerasancristobal.com](http://www.minerasancristobal.com)

 [@MinSanCristobal](https://twitter.com/MinSanCristobal)

 [/MineraSanCristobal](https://www.linkedin.com/company/MineraSanCristobal)

 [/MineraSanCristobal](https://www.facebook.com/MineraSanCristobal)