



ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

**GEF GOLD+ Bolivia: Enhancing the formalization and mercury reduction in
artisanal and small-scale gold mining in the Plurinational State of Bolivia**

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ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

GOLD+ Bolivia: Enhancing the formalization and mercury reduction in artisanal and small-scale gold mining in the Plurinational State of Bolivia

1. INTRODUCTION

1.1. OBJECTIVE

This document is the Environmental and Social Management Plan (ESMP) of the project “*GOLD + Bolivia: Enhancing the formalization and mercury reduction in artisanal and small-scale gold mining in the Plurinational State of Bolivia*”.

The plan aims at supporting and ensuring that the project activities do not adversely affect the environment and people.

The ESMP is an evolving living document that will require improvement as new information becomes available and as new issues arise or become apparent. Thus, an effective and transparent monitoring of the implementation of the plan is crucial.

1.2. RELEVANCE

Environmental and social sustainability is fundamental to achieving development results and is systematically integrated into the United Nations Industrial Development Organization (UNIDO) project cycle through the consistent application of an environmental and social assessment procedure.

Therefore, it is necessary to identify adverse impacts and risks that may arise during implementation and propose appropriately according to their nature, respective environmental and social safeguards to avoid, minimize and mitigate those impacts.

UNIDO helps its Member States with technical assistance projects that mainly provide training, policy reforms, institutional strengthening, and technology conversion, committing to implement in each of its interventions, requirements, and safeguard policies of the Global Environment Facility (GEF)¹.

In this sense, the current Environmental and Social Management Plan (ESMP) for the project GOLD+ Bolivia comprises identifying environmental and social risks and proposes mitigation measures together with a monitoring program.

1.3. ENVIRONMENTAL AND SOCIAL RISK SCREENING

The environmental and social risk category (“Category B”) was determined at the concept stage and reconfirmed during the project preparatory phase based on UNIDO “*Environmental and Social Safeguards Policies and Procedures*”.

¹ GEF (2018). Policy on Environmental and Social Safeguards. Available [here](#).

This categorization establishes the conditions necessary to plan the Environmental and Social Assessments that will be required by the ESMP, specifying:

Category B

Likely, impacts will be few in number, site-specific and few, if any, will be irreversible. In most cases, impacts can be easily minimized by applying appropriate management and mitigation measures or by incorporating internationally recognized design criteria and standards.

Based on this categorization, it was verified that the operational safeguards (OS) activated for the GOLD+ Bolivia project are the following:

- Operational Safeguard 8. Labour and working conditions;
- Operational Safeguard 9. Resource efficiency and pollution prevention; and,
- Operational Safeguard 10. Health, safety, and community protection.

Additional safeguards that are specific to the artisanal and small-scale mining activities that operate legally in protected areas and the ones related to indigenous peoples (IPs) for those mining activities that overlap with indigenous territories should also be considered:

- Operational Safeguard 2. Protection of natural habitats and biodiversity²; and
- Operational Safeguard 4. Indigenous Peoples³.

Table 1 summarizes the details and objectives of the operational safeguards activated:

Table 1. Activated Operational Safeguards

SAFEGUARD	OBJECTIVE	SCOPE OF APPLICATION
Operational Safeguard 8 - Labour and Working Conditions	Promotes decent work, ensuring that the project complies with national labour laws and ILO objectives (fair labour, non-discrimination, equal opportunities), protecting workers, including vulnerable groups such as children, women and migrant workers, promoting safe and healthy working conditions, avoiding child labour	All UNIDO executing partners will have human resources policies and procedures that ensure these national standards and laws are respected
Operational Safeguard 9 - Resource Efficiency and Pollution Prevention	Avoid and minimize the adverse impacts of pollution on human health and the environment by avoiding or minimizing waste, emissions, and pollution at the	The operating system applies specifically to UNIDO projects that:

² OS 2 should be considered for interventions planned in the ASGM activities taking place in Suches-Pelechuco as it is located in the Apolobamba national protected area.

³ OS 4 should be considered for the ASGM activities taking place in Larecaja Tropical as it overlaps with the Lecos de Larecaja indigenous territory; Suches-Pelechuco as it overlaps with Marka Copacabana Cololo Antaquilla indigenous territory; San Ramón as it affects the Chiquitano indigenous territory; and Madre de Dios as it affects the Tacana II indigenous territory.

	project level, promoting the sustainable use of natural resources (materials, energy, land and water)	<ul style="list-style-type: none"> ▪ Are aimed at improvements to existing waste management practices; ▪ Generate or cause the generation of solid, liquid, or gaseous wastes/emissions; and, ▪ That consume or cause significant consumption of water, energy, or other resources
Operational Safeguard 10 - Health, Safety, and Community Protection	Anticipate and avoid adverse impacts on the health and safety of project affected communities and beneficiaries during the life of the project, both from routine and non-routine circumstances	The operating system applies specifically to projects that may present significant risks to human health and safety. Standards to avoid or minimize impacts to human health and the environment due to contamination are included in the OS 9 on Resource Efficiency and Pollution Prevention
Operational Safeguard 2 - Protection of Natural Habitats and Biodiversity	It reflects the importance of biodiversity and the value of key ecosystems for the population, emphasizing the need to respect, conserve and maintain the knowledge, innovations and practices of indigenous communities and local communities	It applies specifically to UNIDO projects that: <ul style="list-style-type: none"> ▪ Are located in critical habitats; and, ▪ Are located in areas that provide ecosystem services on which potentially affected stakeholders depend for their survival, livelihood or primary income
Operational Safeguard 4 - Indigenous People	Guarantee the rights of indigenous people based on the United Nations Declaration on the Rights of Indigenous Peoples, international and national laws	It applies specifically to UNIDO projects that affect indigenous peoples and their natural habitat. Its scope is established in the Environmental and Social Assessment of the project.

The following measures (Table 2) have been considered for the implementation of the GOLD+ Bolivia project activities:

Table 2. Implementation measures of GOLD+ Bolivia project

SAFEGUARDS TRIGGERED DURING THE A&S RISK ASSESSMENT AT CONCEPT/PIF LEVEL	WERE ENVIRONMENTAL AND SOCIAL RISKS VERIFIED DURING PROJECT PREPARATION?		DETAIL	SCOPE OF APPLICATION GOLD+ BOLIVIA PROJECT
	YES	NO		
Operational Safeguard	X		The activities of gold mining cooperatives will require measures to ensure that	All the beneficiary gold mining cooperatives during

8. Labour and Working Conditions			Occupational Health and Safety (OHS) standards are in place. Generally, the working conditions are deficient which could lead to potential risks.	the implementation of the GOLD+ Bolivia project.
Operational Safeguard 9. Resource Efficiency and Pollution Prevention	X		Environmental management is generally low in the ASGM sector and technical assistance will be required to implement best practices to reduce the negative impacts on the environment and comply with the current environmental legislation. Water, soil, and biodiversity are identified as the most at-risk elements.	The beneficiary gold mining cooperatives that are supported for reducing and/or eliminating mercury use, improving waste management and resource efficiency.
Operational Safeguard 10. Health, Safety, and Community Protection	X		Most of ASGM cooperatives generally affect nearby local communities. Artisanal and small-scale mining can contaminate rivers which leave the miners and surrounding communities depending on these water bodies vulnerable to diseases and contamination.	All the activities that can present risks to the health and environment of local communities due to pollution related to ASGM activities.
Operational Safeguard 2. Protection of Natural Habitats and Biodiversity ⁴	X		It is essential to minimize the risk of habitat and biodiversity loss in areas of high natural and cultural value.	All ASGM activities that are likely to affect natural ecosystems, biodiversity, and their areas of influence. The Suches-Pelechuco mining area <u>will not be prioritized</u> .
Operational Safeguard 3. Indigenous Peoples ⁵	X		Considering that the Political Constitution of the Plurinational State of Bolivia recognizes several indigenous people in its territory, some of them can be affected by ASGM activities. It is essential to put in place measures to protect their national and international rights.	All ASGM activities that are likely to affect indigenous peoples (IPs) within their areas of influence. During the pre-selection of the areas for the project, it was recommended to work in the <u>Illimani area which</u>

⁴ Activated for the particular case of the Suches-Pelechuco mining area which overlaps with the Apolobamba protected area where extractive activities can be carried out legally according to current regulations and zoning.

⁵ Activated for the particular case of mining sites with influence on indigenous territories (Suches-Pelechuco site on Marka Cololo Copacabana Antaquilla indigenous territory, Larecaja Tropical mining site on Lecos de Apolo indigenous territory, San Ramón mining site on Chiquitano indigenous territory).

				<p><u>does not overlap with IPs territories.</u></p> <p>However, if the area selected during the inception phase overlaps with IPs, extensive consultations with the main stakeholders would take place and an Environmental and Social Impact Assessment (ESIA) would be conducted.</p>
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1.4. METHODOLOGY

For the preparation of the ESMP, a methodology was prepared based on UNIDO “*Environmental and Social Safeguards Policies and Procedures*”⁶, adapting it to the context of artisanal and small-scale gold mining (ASGM) in Bolivia and the components, outcomes, outputs and activities planned under the GOLD+ Bolivia project.

A participatory process took place during the preparatory phase, in which all the relevant stakeholders were involved, in order to make the ESMP inclusive, legitimate and adapted to the reality of ASGM in Bolivia (Figure 1).



Figure 1. Workshop with project stakeholders

The following activities were carried out:

- i. Review of the GOLD+ Program Framework Document and the concept of the GOLD+ Bolivia child project to identify the main components, activities and expected results⁷;
- ii. Review of the political, legal and institutional framework related to the ASGM sector and its associated environmental and social implications in Bolivia;

⁶ UNIDO (2021). Environmental and Social Safeguards Policies and Procedures. Available [here](#).

⁷ The documents are available [here](#).

- iii. Review of relevant secondary information focused on describing the socio-environmental problems and management of the ASGM sector in Bolivia;
- iv. Systematization of information of the main mining areas considered for the project with a particular focus on metallurgical aspects related to the use of mercury in gold recovery and its social and environmental implications;
- v. 31 semi-structured surveys and interviews took place with members of the Inter-institutional Working Group on Responsible Gold (*Grupo Inter-institucional de Trabajo en Oro Responsable*, GIT-OR) and other relevant entities to gather recommendations for the environmental and social safeguards to be considered for the GOLD+ Bolivia project⁸;
- vi. 1 meeting with leaders of the gold mining cooperatives (5 women and 12 men) from the department of Santa Cruz⁹;
- vii. 1 meeting with leaders of the gold mining federations and cooperatives (6 women and 15 men) from the department of La Paz¹⁰;
- viii. 1 meeting with key actors (7 women and 21 men) of the Illimani mining area in the department of La Paz to identify social and environmental risks¹¹;
- ix. 1 meeting with representatives (18 women and 2 men) of the National Network of Women Miners in Bolivia to identify social and environmental risks¹²;
- x. 1 field visit to the municipalities of Guanay, Tipuani and Teoponte, populations located inside the Larecaja Tropical area with leaders of gold mining cooperatives, officials of the autonomous municipal governments and representatives of the indigenous organization *Pueblos Indígenas Lecos y Comunidades Originarias de Larecaja* (PILCOL)¹³;
- xi. 1 working group with environmental and mining experts, advisors, environmental secretaries of gold mining cooperatives and federations (FENCOMIN, FEDECOMIN, FERRECO and FECOMAN) and representatives of the Vice-Ministry of Mining Cooperatives under the Ministry of Mining and Metallurgy (MMM) to provide feedback on the proposed ESMP for the GOLD+ Bolivia project¹⁴; and
- xii. Presentation of the ESMP in the validation workshop.

Following this methodology, all the stakeholders obtained updated information on the project activities as well as the possible environmental and social risks in all the proposed mining areas pre-selected and assessed during the project preparatory phase. In addition, this process facilitated the identification of the related mitigation measures.

The results of the ESMP will also be validated at a later stage during the implementation phase of the GOLD+ Bolivia project. Due to the nature and dynamics of the sector, new risks and mitigation measures could arise during the implementation phase and the ESMP will be updated accordingly.

⁸ Refer to Annex 1 – Results of virtual interviews with representatives of the GIT-OR.

⁹ Refer to Annex 2 – Summary of meeting with leaders of gold mining cooperatives in Santa Cruz.

¹⁰ Refer to Annex 3 – Summary of meeting with leaders of gold mining federations and cooperatives in La Paz.

¹¹ Refer to Annex 4 – Summary of meeting with key stakeholders in the Illimani mining area.

¹² Refer to Annex 5 – Summary of meeting with women miners from the RNMM.

¹³ Refer to Annex 6 – Field visit to Larecaja Tropical area, department of La Paz.

¹⁴ Refer to Annex 7 – Results of feedback workshop on ESMP.

1.5. STRUCTURE

The Environmental and Social Management Plan for the GOLD+ Bolivia project comprises seven components:

- i. Introduction
- ii. General information on the GOLD+ Bolivia project;
- iii. Institutional and regulatory framework related to ASGM in Bolivia;
- iv. Environmental and social risks identified with the related mitigation measures;
- v. Capacity building plan;
- vi. Communications plan; and
- vii. Implementation of the Environmental and Social Management Plan.

2. GOLD+ BOLIVIA PROJECT

2.1. PROJECT DESCRIPTION

“GOLD+ Bolivia: Enhancing the formalization and mercury reduction in artisanal and small-scale gold mining in the Plurinational State of Bolivia” is a child-project part of the phase 2 of the [PlanetGOLD Programme](#) that will be funded by the GEF and implemented by UNIDO during five (5) years.

Its objective is to reduce and eventually eliminate the use of mercury in the artisanal and small-scale gold mining (ASGM) sector in the Plurinational State of Bolivia which mainly takes place through mining cooperatives in the country.

This will be achieved through a holistic and multi-sectoral integrated approach that increases access to financing to adopt sustainable mercury-free technologies and access to traceable gold supply chains in the sector. In addition, gender equality will be a cross-cutting issue throughout the project.

The project (Table 3) presents the following components and outputs with their respective approaches and objectives.

Table 3. Project Components and Focus Areas

COMPONENTS	OUTPUTS	FOCUS AREA	RESULTS
1. Improve the formalization of ASGM	<p>1.1 State actors from central, departmental, and municipal governments linked to the ASGM sector have improved capacities to promote policies, programmes, regulations, and actions aimed at a greater formalization of the sector</p> <p>1.2 Productive actors in the ASGM sector as well as the parent organizations and federations strengthened to promote formalization processes in the sector and its productive activities</p> <p>1.3 Jurisdictional Approach (JA) and multi-stakeholder</p>	An enabling environment for the formalization of ASGM through multi-sectoral, holistic and integrated approaches	A higher degree of formalization in the sector through multi-sectoral and integrated approaches and capacity building of actors involved in ASGM formalization

	<p>approach piloted at selected ASGM area</p> <p>1.4 Women capacities to exert their rights are strengthened and a public policy agenda is generated towards formalization, gender equality and women empowerment</p>		
<p>2. Access to finance is enhanced through financial inclusion and responsible supply chains</p>	<p>2.1 Public and private funding bodies strengthened to increase support to ASGM and complementary financial mechanism implemented</p> <p>2.2 Individual and institutional capacities of ASGM actors improved in areas of overall management, entrepreneurship, and financial education</p> <p>2.3 Efficiency, control and monitoring of gold commercialization processes increased to build transparent, traceable and responsible gold supply chains</p>	<p>Capacity building and education of local financial institutions and the creation of transparent and responsible supply chains</p>	<p>Increased financing options for miners by achieving better gold prices facilitated by transparent and accountable supply chains</p>
<p>3. Increase adoption of mercury-free technologies</p>	<p>3.1 Productive actors in ASGM are strengthened to implement technologies that use less or no mercury for more profitable and/or environmentally cleaner gold recovery</p> <p>3.2 ASGM productive actors' awareness on supply of mercury-free equipment increased and linkages with</p>	<p>Application of jurisdictional approach to reduce mercury use in a geographic landscape, involving stakeholders to implement mercury-free technologies</p>	<p>Reduction of mercury use in ASGM is achieved through increased adoption of mercury-free technologies by miners</p>

	<p>technology providers created</p> <p>3.3 Academic centers, universities and institutes strengthened to include responsible gold production as part of the training curricula</p>		
<p>4. Knowledge sharing, communication, and support for local capacity building</p>	<p>4.1 Inter-institutional mechanism where different stakeholders exchange, disseminate and share information related to ASGM in Bolivia established</p> <p>4.2 Information, knowledge and lessons learned on key ASGM topics generated and disseminated at the national and international levels</p> <p>4.3 Women’s capacities in leadership are strengthened and regional exchanges among Andean women miners are promoted to increase visibility of gender in ASGM</p>	<p>Support for capacity building in the different components, knowledge sharing and communication with a more significant impact of focus at the mining level</p>	<p>Knowledge sharing and communication strategies aimed at all ASGM stakeholders to support and increase formalization and mercury reduction initiatives</p>

2.2. TENTATIVE AREAS FOR THE GOLD+ BOLIVIA PROJECT

The project will carry out its activities in specific mining sites that will be assessed and confirmed during the project inception.

In the project preparatory phase, the main mining areas in Bolivia (Illimani, Yani, Suches – Pelechuco, Larecaja Tropical, Madre de Dios, and San Ramon, whose location within the national territory is shown in Figure 2) were analyzed.

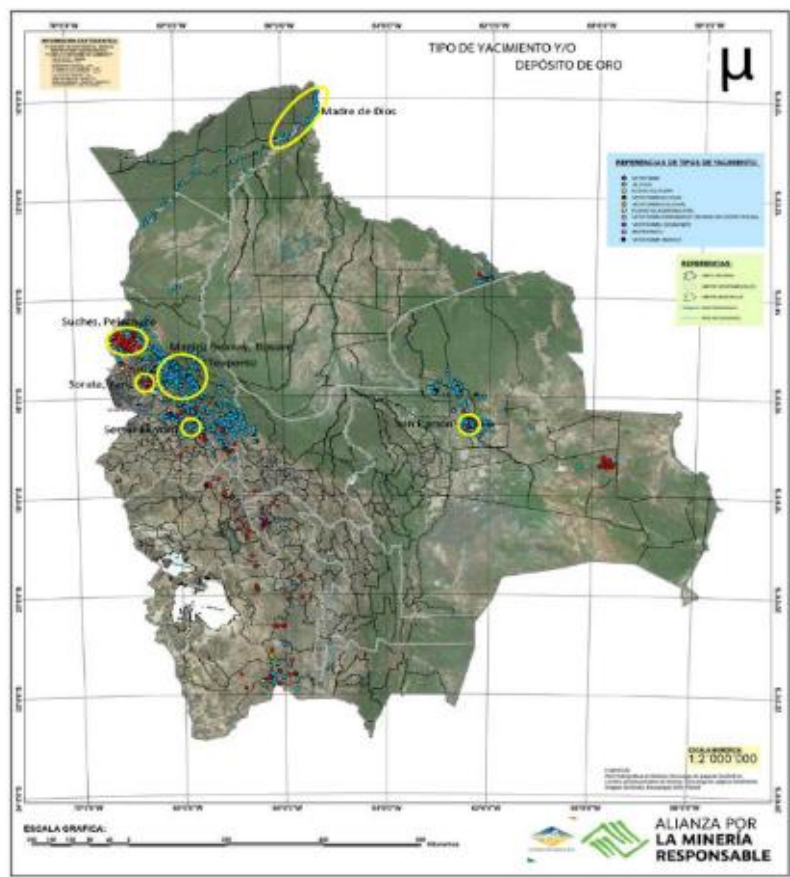


Figure 2. GOLD+ Bolivia Mining Areas

Based on secondary information and the collection of primary data, a matrix was prepared for each of the pre-selected mining areas, including an analysis of the advantages and disadvantages for the implementation of the GOLD+ project, as well as a rating in terms of the following aspects (1 being the lowest and 10 being the highest): political-strategic, administrative and management, environmental, technological, and social.

The elements analyzed were based on a set of criteria developed at the programme level as well as on the experience of the local team in relation to ASGM in the country (e.g., number of gold mining cooperatives, engagement of the mining communities and the local government, use of mercury, presence of children in the ASGM areas...).

Each area was rated according to the above-mentioned elements on a scale from 1 to 10 and were ranked to highlight the areas that express the conditions needed to pilot a jurisdictional approach successfully as well as the context that will allow the project to have a greater impact and effective possibility of changing the current conditions of the sector (Table 4).

Table 4. Areas analyzed during project preparatory phase (a scale of 1 to 10 was used for each indicator, 10 being the best scenario) (Source: Project team)

Area	Political criteria	Administrative criteria	Technical criteria	Environmental criteria	Social criteria	TOTAL
Illimani	8	8	7	7	4	34
Sorata-Yani	7	8	6	7	5	33
San Ramón	6	7	6	6	6	31
Larecaja Tropical	6	5	6	4	6	27
Suches Pelechuco	6	5	5	6	4	26
Madre de Dios	5	4	6	4	5	24

The assessment jointly with consultation with key national stakeholders led to the recommendation to work in the Illimani area as it has the necessary pre-conditions to ensure a successful pilot of the jurisdictional approach.

However, the area and specific mining sites will be confirmed during the inception phase. Therefore, the environmental and social risks and proposed mitigation measures will need to be further refined during the implementation of the project.

If other area is selected, the ESMP should be reviewed and updated (triggering OS 2 and OS3 when appropriate) and an Environmental and Social Impact Assessment (ESIA) will be required. If IPs are present in the territory, extensive consultations will need to take place to identify possible impacts of project activities on these communities.

During the project inception, an in-depth analysis of the selected jurisdiction should take place assessing the economic activities, protected areas, communities, water and other resources, competing interests in common resource use...

Specific to the project sites, an environmental and social due diligence process should take place gathering information on i) specific sites/practices and technologies, ii) environmental aspects (i.e., pollution control systems) and iii) social aspects (i.e., women and children affected).

A general description of the areas analyzed is provided in the following sections.

2.2.1. ILLIMANI

Located in the municipality of Irupana in the department of La Paz, the Illimani mining area (Figure 3) hosts a considerable number of gold mining cooperatives organized organically as the Illimani mining center affiliated to the federation FEDECOMIN LP.

The cooperatives carry out their exploitation works on primary deposits of hard rock containing gold-bearing quartz veins, generally accompanied by metallic sulfides or oxides. Gold is present both visibly on the quartz and very finely disseminated in the sulfides.

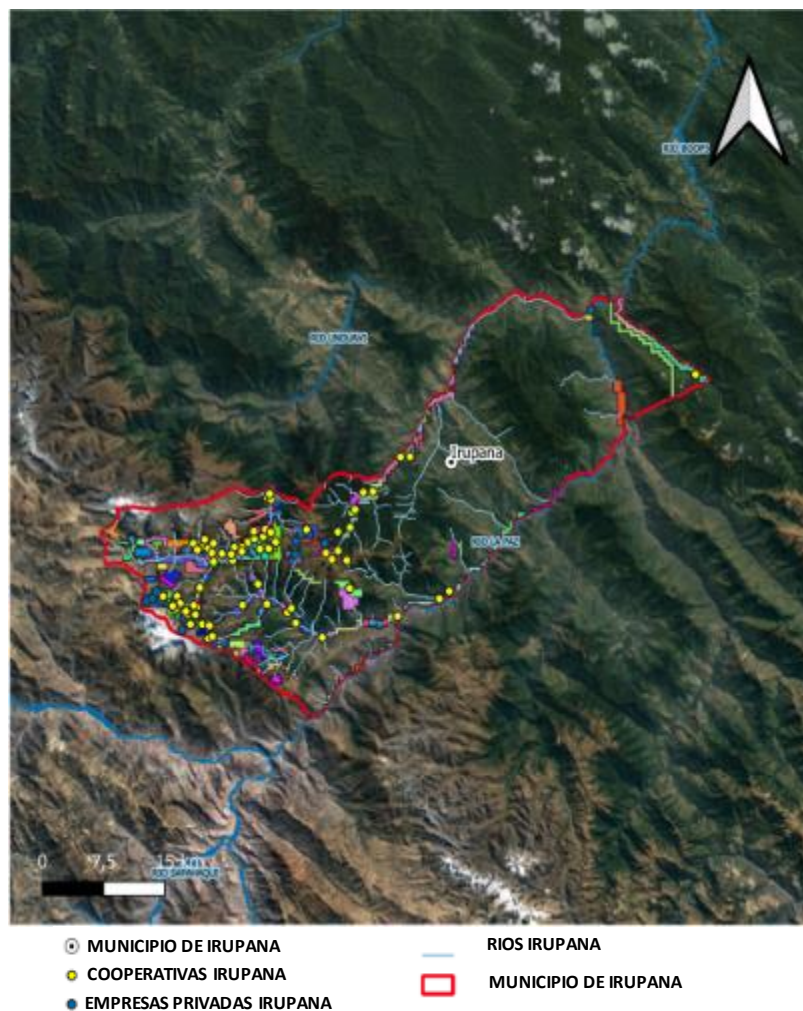


Figure 3. Mining activities in the Illimani area (Source: Google Earth)

Gold recovery is mainly carried out by amalgamation with the use of mercury. The milling and amalgamation processes are performed simultaneously, using ball mills where mercury is introduced to all the gold-bearing material in open circuits. This harmful practice, common in gold mining cooperatives, is one of the worst practices for gold recovery due to the high mercury emissions into the environment in the form of "floured mercury".

Exposure to mercury threatens human health as it can have toxic effects, especially for developing fetuses and young children. Mercury pollution results in impaired cognitive function, neurological damage, kidney damage and other several health problems. Mercury pollution also harms wildlife and ecosystems.

Some mining cooperatives in the sector (Figure 4), such as the 15 de Agosto and Bolsa Negra mining cooperatives, have been supported by the Alliance for Responsible Mining (ARM), Cumbre del Sajama S. A. and the Better Gold Initiative (BGI) in the implementation of good practices for the reduction and elimination of mercury through responsible gold certification seals.

These cooperatives, together with the gold mining cooperatives Peña Grande and 24 de Septiembre in the same sector, are setting up cyanide leaching plants in the industrial zone of the municipality of Viacha in the department of La Paz, with relative success.



Figure 4. Illimani mining area images. (Source: F. Carrillo)

Environmental aspects

The main challenges appear when implementing treatment systems for mining tailings and acidic water, which are often, discharged from the treatment plants directly into the water without any treatment. Due to topographic difficulties (some mining cooperatives operate in the highlands at the foot of the Illimani snow-capped peak), implementing sedimentation ponds and final disposal areas for metallurgical mining waste is a significant concern.

This mining area does not overlap with any threatened ecoregion in Bolivia, although it generates externalities due to river contamination in the Yungas of La Paz, which is considered relevant from the ecological point of view.

Social aspects

The contamination of rivers due to mining activities could lead to social conflicts, as nearby communities are mainly dedicated to agricultural activities.

There is no evidence of child labor as it is generally prohibited by the mining cooperatives due to the harsh working conditions of the sector. However, there is a high presence of mining workers who are not members of the cooperatives, who generally carry out the heaviest work in occupational, health and safety conditions that need to be improved.

The relationship with nearby communities is generally good due to the generated economic impact and labor opportunities via mining activities. Some cooperatives even provide resources to the communities for health and education. Nevertheless, environmental issues are of the highest concern for community-related clashes.

2.2.2. YANI

Located in the municipality of Sorata in the department of La Paz (Figure 5), this area has a large number of gold mining cooperatives, mainly located in the upper slopes of the snow-capped Illampu, a place where there is a record of mining activity since colonial times.

Gold recovery, as in the Illimani sector, is done almost exclusively by amalgamation using mercury, with the milling and amalgamation processes being carried out simultaneously, using ball mills of different sizes. Here, mercury is introduced to all the gold-bearing material in considerable volumes and open circuits, making this process one of the worst practices under the Minamata Convention on Mercury.

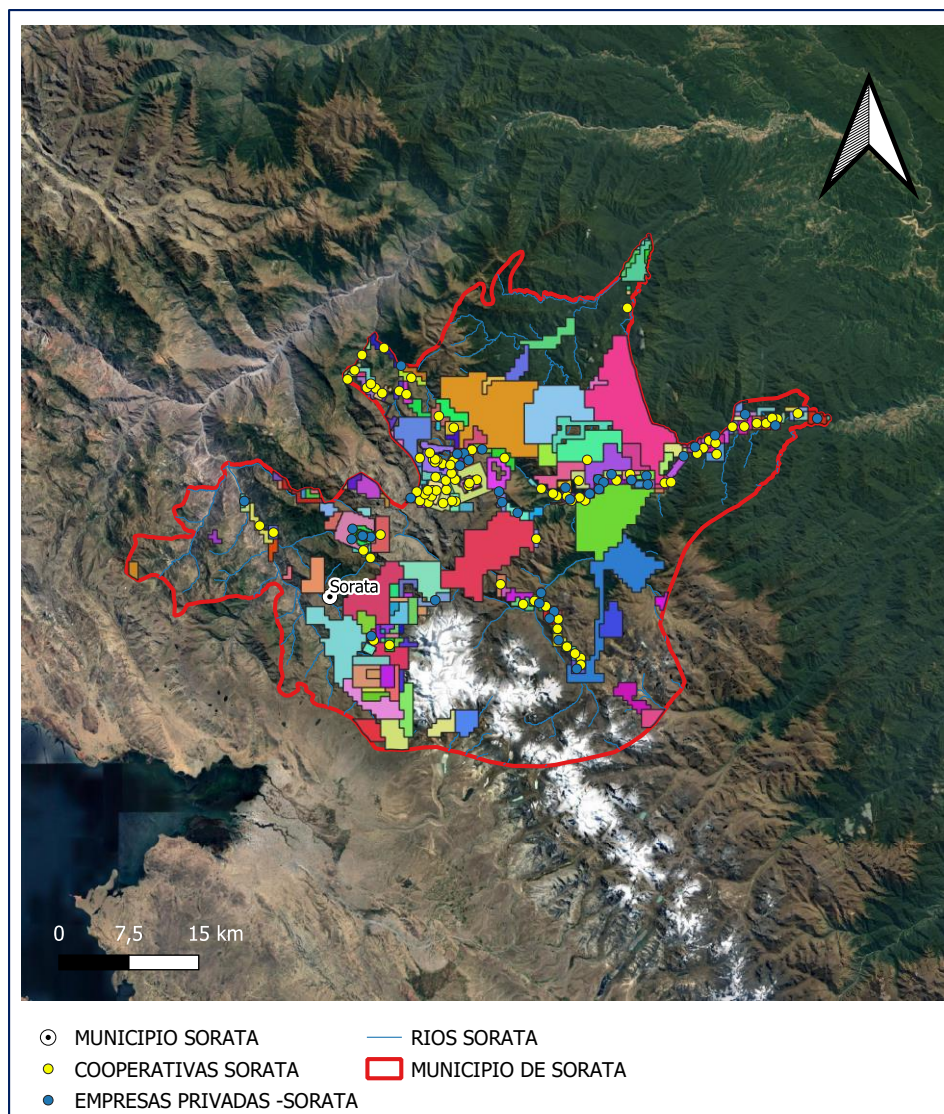


Figure 5. Mining activities in the Yaní area (Source: Google Earth)

Some mining cooperatives in the sector (Figure 6), such as the Yaní and San Lucas mining cooperatives, have been supported by the Alliance for Responsible Mining (ARM), Cumbre del Sajama S. A. and the Better Gold Initiative (BGI) to implement good practices for the reduction and elimination of mercury through responsible gold certification seals.



Figure 6. Yani mining area images. (Source: F. Carrillo)

Environmental aspects

The main challenges focus on the implementation of treatment systems for mining tailings and acidic wastewaters, which are sometimes discharged from the mining mills directly into bodies of water without treatment due to topographical difficulties. Indeed, many mining cooperatives are located in the highlands at the foot of the snow-capped Illampu. Thus, implementing sedimentation ponds and areas for the final disposal of metallurgical mining waste become a significant risk to assume.

This mining area does not overlap with any threatened ecoregion in Bolivia, although it generates externalities due to river contamination in the Yungas of La Paz, which is considered ecologically important.

Social aspects

This contamination of rivers at the watershed's headwaters due to mining activities could lead to socio-environmental conflicts with downstream communities, which are mainly engaged in agriculture.

There is no evidence of child labor (which is generally prohibited by the mining cooperatives themselves due to the harsh working conditions); however, there is a high presence of mining workers who are not members of the cooperatives and who do the heaviest work.

The relationship with the community is good as these communities are generally inhabited by the miners' families from the mining cooperatives, who provide support in terms of machinery for road maintenance and financial support for health and education.

2.2.3. SUCHES-PELECHUCO

Located in the municipality of Pelechuco in the department of La Paz (Figure 7), with an important presence of gold mining cooperatives operating within the protected area of national interest Apolobamba. As the activities take place on a zone designated for the use of extractive natural resources, gold mining can therefore be carried out legally in compliance with the respective regulations. Gold mining activities have grown steadily over the last 10 years, as has the Ananea area on the Peruvian side, which is adjacent to the area.

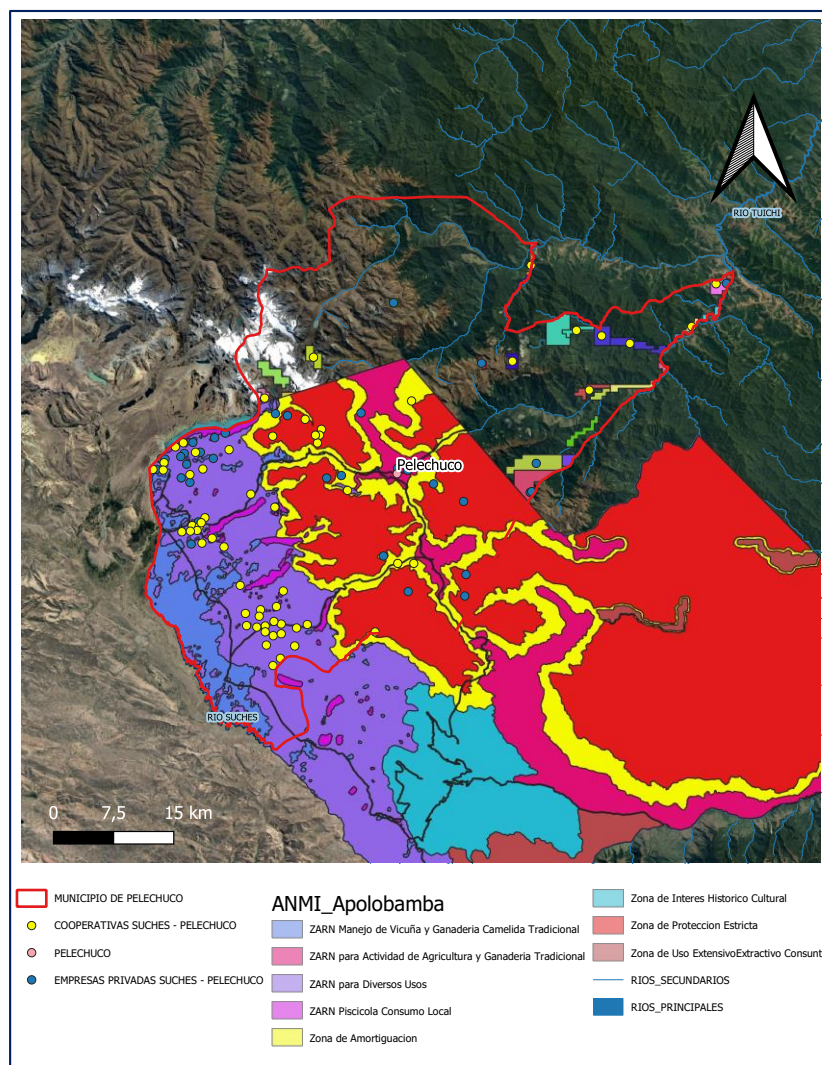


Figure 7. Mining activities in the Suches-Pelechuco area (Source: Google Earth)

The excavation, loading and transport of gold ore from fluvio-glacial and moraine deposits are done by heavy machinery, which performs open-pit mining. These large volumes of cargo are then gravimetrically concentrated using "chutes" in which, with the help of pressurized water jets, the material is disintegrated, and the diluted pulp is directly channeled to obtain concentrates. This concentrate is finally amalgamated with mercury to recover coarse gold, which is considered promising because of a reduced use of mercury.

Some cooperatives in the sector (Figure 6.6) have been supported by the Wildlife Conservation Society (WCS) in alliance with the Better Gold Initiative (BGI) to implement best

practices that support the compatibility of their mining activity within the Apolobamba protected area (Águilas de Oro and Rayo Rojo mining cooperatives).



Figure 8. Suches-Pelechuco mining area images. (Source: F. Carrillo and O. Torrico)

Environmental aspects

The main challenges are focused on the management of sludge and treatment of turbid water generated in the "chutes", which due to the flat topography of the sector, can be implemented without much technical complication. It is important to work on rehabilitation of areas degraded by open pit mining activity as it takes place in areas with high ecological value to preserve the wetlands and fauna such as vicuñas and Andean cats.

The Suches River Basin Master Plan is currently being developed and is of relevance to all local and municipal authorities, which, among other issues, are concerned on mining contamination of the rivers.

Social aspects

In terms of social issues, there is the Marka Cololo Copacabana Antaquilla indigenous territory with which the gold miners must establish good relations and the park rangers of the protection corps.

There is no child labor (which is generally prohibited by the mining cooperatives themselves because of the harsh working conditions), and occupational health and safety conditions need to improve substantially.

2.2.4. LARECAJA TROPICAL

This mining sector includes the municipalities of Mapiri, Guanay, Teoponte and Tipuani (Figure 9) which have an extensive gold mining tradition (where the first gold mining cooperatives in Bolivia were founded in the 1970s).

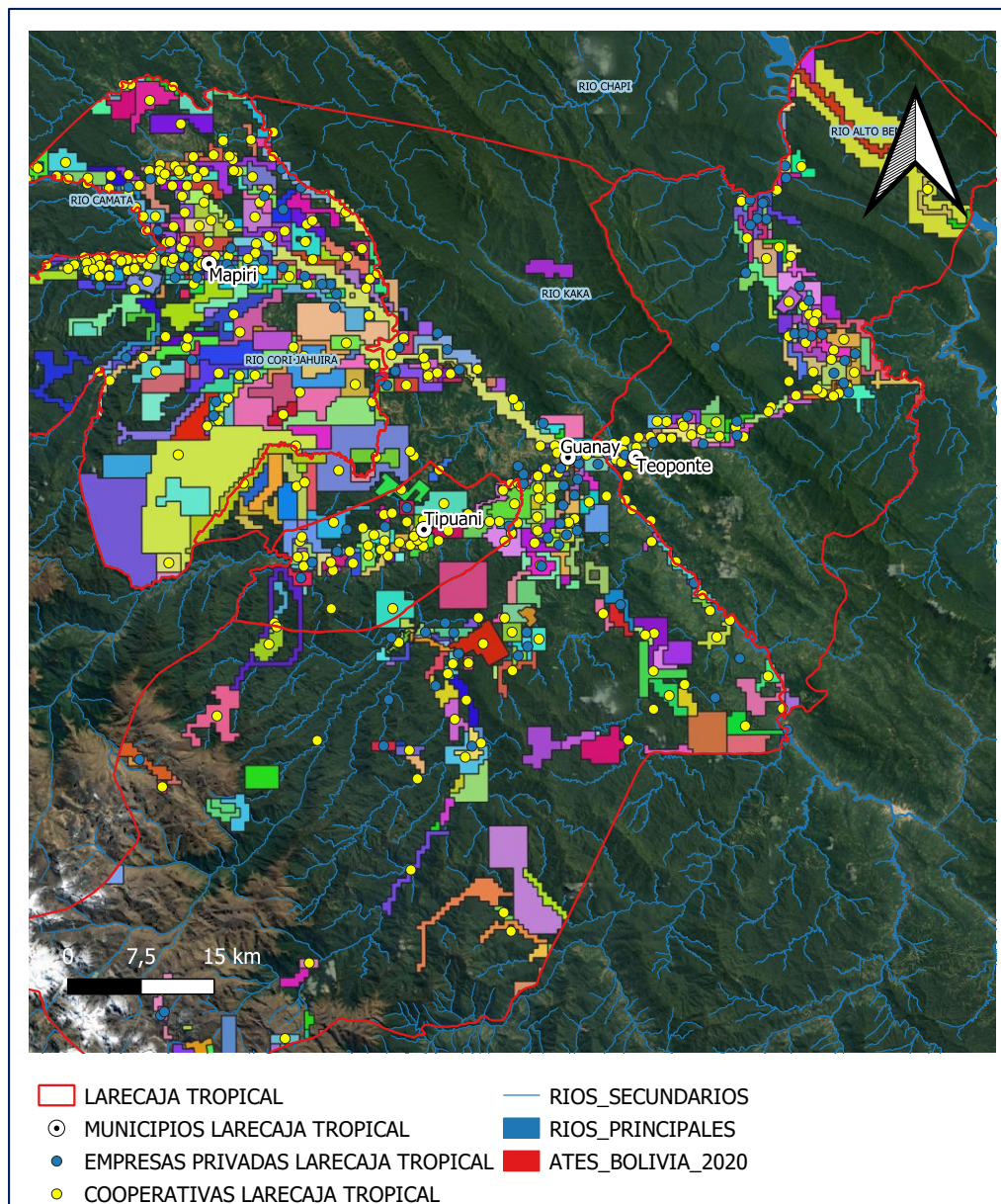


Figure 9. Mining activities in the Larecaja Tropical area (Source: Google Earth)

The mining method is mainly open pit in wooded areas and mechanized in platforms and terraces (Figure 10). The gold recovery method is simple as it consists of a washing and classification stage, plus a concentration stage in troughs where coarse gold is retained in mats. Here, mercury is limited to the amalgamation of the gold contained in the concentrates retained in the troughs.



Figure 10. Larecaja Tropical mining area images. (Source: F. Carrillo)

Environmental aspects

Although the use of mercury does not represent a high environmental risk in this type of alluvial operations, significant impacts are generated through the creation of landfills, the alteration of watercourses, and the destruction of beaches and the general landscape. This generates substantial changes in the forms of relief and causing destruction of vegetation cover and habitat, thus setting in motion significant ecological degradation processes.

In the absence of remediation and rehabilitation actions, many of these effects become scars on the landscape or long-term dynamic processes that continue to affect the environment.

The mining sector overlaps with the threatened Yungas de La Paz ecoregion, which is heavily degraded by gold mining.

Social aspects

Socially, women "barranquilleras" with minors generally accompany the processing of waste material from the mining cooperatives. This vulnerable groups need to be protected while working conditions and education and work opportunities should be provided.

In some sites, conflicts over mining areas have been reported between neighboring gold mining cooperatives. In addition, some cooperatives sign agreements with private entities that allow the latter to operate in the territory in exchange for a percentage of the gold production which is illegal under the current regulations.

Occupational, health and safety conditions need improvement and there are risks of landslides during the rainy season which can also pose risks for workers and surrounding communities.

2.2.5. SAN RAMÓN

Located in the municipality of San Ramón in the Chiquitanía region of the department of Santa Cruz de la Sierra (Figure 11), a region with a manual gold mining tradition that has seen a growth in ASGM in recent years, expressed in cooperatives that organically created FEDECOMIN Santa Cruz.

This area has not yet been consolidated as a traditional gold mining area at the national level, but it is seen as a promising area due to mining cooperatives and private entrepreneurs' increasing presence of mining activities.

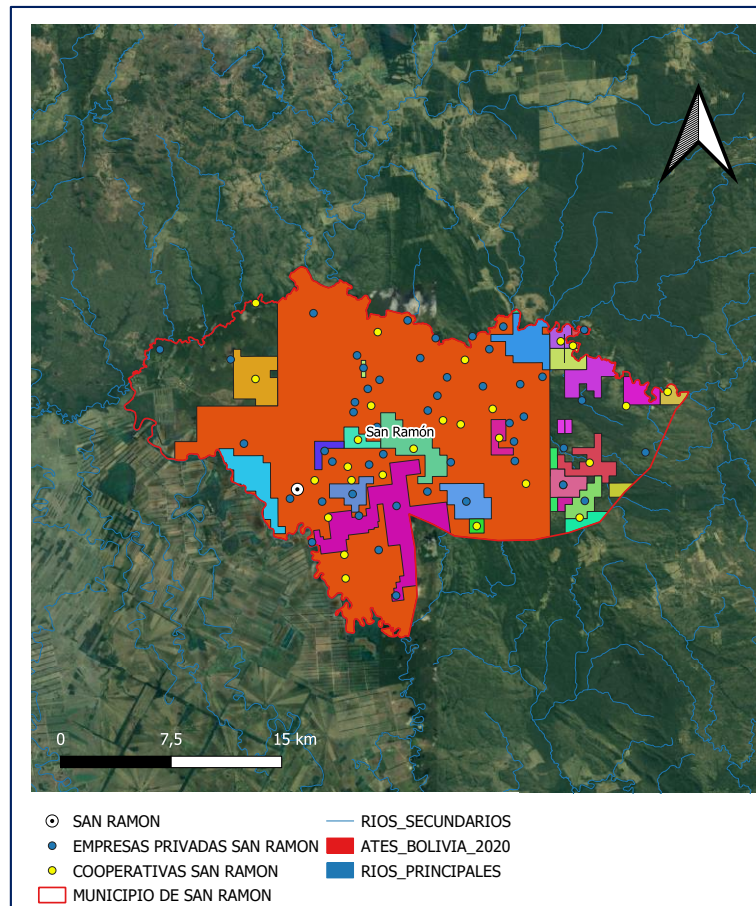


Figure 11. Mining activities in the San Ramón area (Source: Google Earth)

The mining takes place mainly through open pits in forested areas using heavy machinery or pressurized "monitors" that break up the material from the alluvial gold deposits of ancient causes that are concentrated in small "chutes" for the recovery of thick gold in troughs (Figure 12). The use of mercury is not very considerable, except in the manual activity of the so-called "bateadores" who use it in small quantities. There are references to private companies operating in the area with technical personnel and more sophisticated equipment to recover gold more efficiently.



Figure 12. San Ramón mining area images. (Source: F. Carrillo and M. Salinas)

Environmental aspects

The main problems are the formation of environmental liabilities in exploration and exploitation operations, with the formation of "artificial mining pits" as a result of open-pit mining activities, as well as deforestation that causes erosions. This means that the rehabilitation of the areas must be considered.

The area does not overlap with a threatened ecoregion, but it borders the Chiquitanía ecoregion, which is vital because of its natural value.

Social aspects

Socially, women "bateadoras" may be accompanied by children, and there are also indigenous Chiquitano people with whom good relations must be established.

Sometimes the mining areas overlap with cattle ranching activities, which requires agreements with the landowners.

Safety and occupational health conditions are essential to improve. During the rainy season, access and mining work becomes difficult due to the characteristics of the ways and the soil.

2.2.6. MADRE DE DIOS

Located between the departments of Pando and Beni, the Madre de Dios River¹⁵ belongs to the Amazon Basin (Figure 13), one of the most biodiverse regions of natural and cultural importance in the world that crosses the countries of Peru and Bolivia. It is a tributary of the Beni River, has an approximate length of 1,150 km and is a binational river, as it flows through the southeastern part of Peru and northwestern Bolivia. Rafts affiliated with the ASOBAL rafters' association, which organically belongs to FECOMIN, operate on the Madre de Dios River.

¹⁵ Due to the type of mining practices and its influence in the Manuripi protected area and the Tacana II Indigenous Territory, the Madre de Dios mining area will not be prioritized for the GOLD+ Bolivia project.

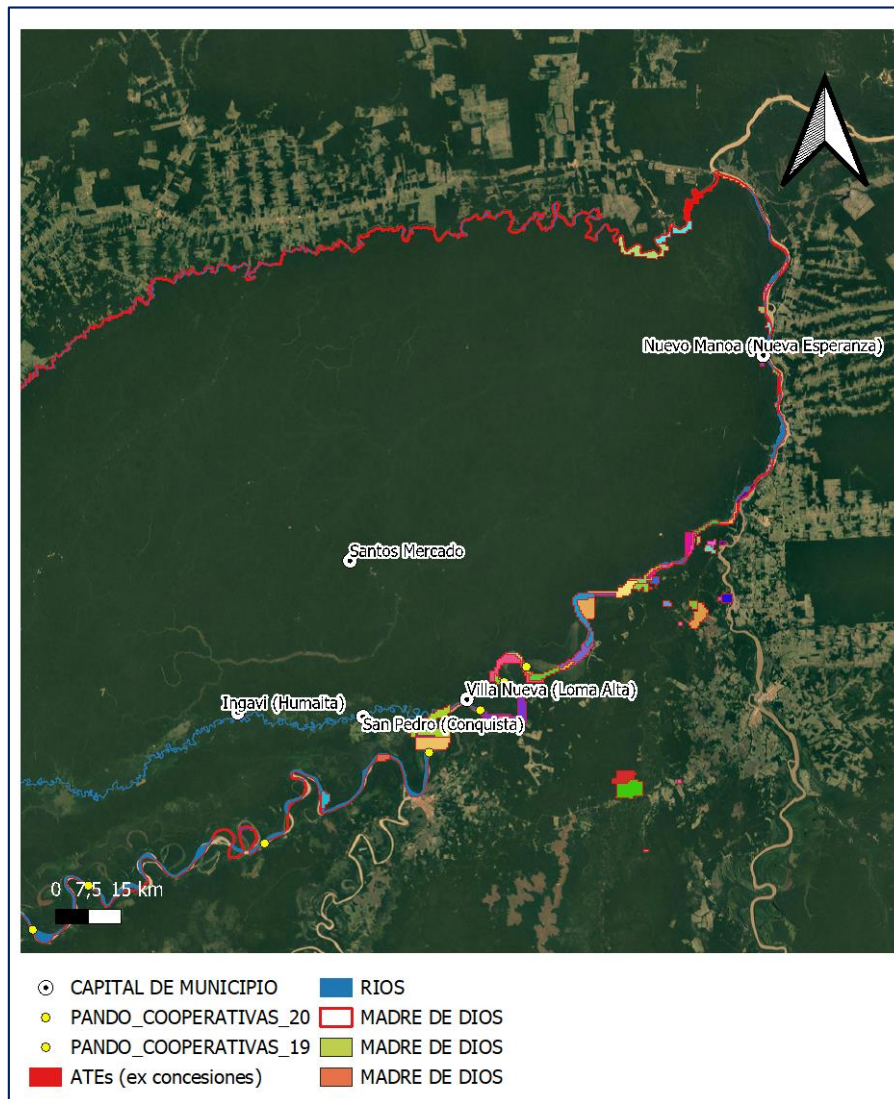


Figure 13. Mining activities in the Madre de Dios area (Source: Google Earth)

The mining work is mainly done by rafts, which are floating wooden platforms (pontoons) that use suction hoses and a hydraulic pump driven by a diesel engine to suck the gold-bearing material from the river bottom (Figure 14), thus causing a high impact on the ichthyofaunal. Each raft has a chute where the alluvial gold-bearing material is concentrated for later amalgamation with mercury. According to recent studies, this amalgamation operation is carried out using feet in some cases or with the help of automatic agitators in others. The rafts require operating depths between two and ten meters, which limits the working time of these units to April and May and part of June. Indeed, during the heavy rainy season and the dry season, work is halted.

According to Supreme Decree 3516 of March 28, 2018, the Madre de Dios River was declared a Fiscal Mining Reserve to carry out prospecting and mining exploration activities to determine its mineralogical potential.



Figure 14. Madre de Dios mining area images. (Source: F. Carrillo)

Environmental aspects

Part of the Madre de Dios River includes the full extension of the Manuripi National Amazon Wildlife Reserve, an area of great biological value.

Social aspects

Furthermore, the Tacana II indigenous territory is located in the area of influence, which is affected by mercury contamination of the rivers through the biomagnification of mercury in fish. There are also records of significant social conflicts due to mining activities.

3. INSTITUTIONAL AND REGULATORY FRAMEWORK

3.1. NATIONAL LEGISLATION RELATED TO THE MINING SECTOR

3.1.1. NORMATIVE FRAMEWORK

The environmental regulations for the mining sector in Bolivia have as a general regulatory framework Law 1333 of 27 April 1992 and its five (5) regulations promulgated by Supreme Decree 24176 of 8 December 1995.

There are also regulations on general environmental management, prevention and control as well as pollution, waste and hazardous substances. Specific environmental regulations for the mining sector include Supreme Decree 24782 of 31 July 1997 (*Reglamento Ambiental para Actividades Mineras*, RAAM).

Mining activities legally operating within protected areas are regulated by Supreme Decree 24781 of 31 June 1997, General Regulations for Protected Area Management.

Similarly, Supreme Decree 3549, which modifies and incorporates new provisions to the Environmental Prevention and Control Regulation, approved by Supreme Decree N° 24176 and Supreme Decree N° 28592, is vital for the optimization of environmental management, adjusting the Regulatory Instruments of Particular Scope and the Technical Administrative Procedures, and prioritizing the functions of Environmental Inspection and Control within the framework of current environmental regulations.

The regulations related to the environmental management of mining activities can be found on Table 5.

Table 5. Environmental Legislation in Bolivia

ENVIRONMENTAL REGULATIONS OF BOLIVIA	PURPOSE OF THE LAW AND/OR REGULATIONS
LAW N° 1333. LAW OF MARCH 27, 1992. ENVIRONMENTAL LAW.	The purpose of the Law is to protect and preserve the environment and natural resources, regulate the actions of man concerning nature, and promote sustainable development to improve the quality of life of the population.
SUPREME DECREE NO. 24176. DECEMBER 8, 1995. APPROVES THE REGULATION OF THE ENVIRONMENTAL LAW.	Approves the regulation of the Environmental Law, integrated by the regulations of (a) General Environmental Management, (b) Environmental Prevention and Control, (c) on Atmospheric Pollution, (d) on Water Pollution, (e) for Activities with Hazardous Substances and (f) on Solid Waste Management, as well as their respective annexes, instruments that are an integral part of this supreme decree.
SUPREME DECREE N° 24782. DATED JULY 31, 1997. APPROVES THE ENVIRONMENTAL REGULATIONS FOR MINING ACTIVITIES.	Approves the Environmental Regulations for Mining Activities, which are an integral part of this Supreme Decree. Those who carry out prospecting and exploration activities, concentration, smelting, refining and commercialization of minerals, whether or not they constitute an integral part of the mining production process, shall be subject to the provisions of the Environmental Regulations for Mining Activities.

SUPREME DECREE NO. 25158 OF SEPTEMBER 4, 1998 OF ORGANIZATION AND FUNCTIONS OF SERMAP.	It establishes the rules of organization and operation of the National Service of Protected Areas and its attributions within the framework established by the Law of Organization of the Executive Power (LOPE) and its regulatory provisions.
SUPREME DECREE Nº 26705 OF JULY 10, 2002. COMPLEMENTATION AND MODIFICATION OF ARTICLES 97 AND 102 OF THE GENERAL REGULATION OF ENVIRONMENTAL MANAGEMENT.	Article 97 of the General Regulations of Environmental Management, approved by Supreme Decree No. 24176 of December 8, 1995, is supplemented. Likewise, article 102 of the General Regulations for Environmental Management, approved by Supreme Decree No. 24176 of December 8, 1995, is supplemented.
SUPREME DECREE Nº 27173 OF SEPTEMBER 15, 2003.	The purpose of this Supreme Decree is to incorporate in Article 17 of the Environmental Prevention and Control Regulation, Category 4, a list of projects in the electricity sector, in the application of Article 18 of the same Regulation.
SUPREME DECREE Nº 28499 OF DECEMBER 10, 2005. COMPLEMENTARY NORM - MODIFYING THE REGULATION OF ENVIRONMENTAL PREVENTION AND CONTROL - GENERAL REGULATION OF ENVIRONMENTAL MANAGEMENT AND ENVIRONMENTAL AUDITS.	The purpose of this Supreme Decree is to modify the administrative procedure for environmental quality control provided for in Title V of the Environmental Prevention and Control Regulation, Article 58 of the General Environmental Management Regulation - RGGG, approved by Supreme Decree No 24176 of December 8, 1995, and Articles 3 to 7 of Supreme Decree No 26705 of July 10, 2002.
SUPREME DECREE No 28587 OF JANUARY 17, 2006. MODIFICATION TO THE ENVIRONMENTAL REGULATIONS FOR MINING ACTIVITIES	Article 2 of Supreme Decree No. 24782 of July 31, 1997, is modified, determining the inclusion of the commercialization of minerals as it constitutes a mining activity itself.
SUPREME DECREE No 28592 OF JANUARY 17, 2006. COMPLEMENTS AND MODIFICATIONS TO ENVIRONMENTAL REGULATIONS.	The Complementary Norms to Supreme Decree No. 24176 of December 8, 1995, Title IX, Chapter I of the General Regulation of Environmental Management, Title IX, Chapter I of the General Regulation of Environmental Management, Title IX Sole Chapter, Article 169 of the Regulation of Environmental Prevention and Control and Title I, Chapter II, III, Title II, Chapter I, II and Title IV of the Regulation of Environmental Prevention and Control, which as an Annex are an integral part of this Supreme Decree, are approved.
LAW NO. 071 OF DECEMBER 21, 2010, MOTHER EARTH RIGHTS LAW.	The purpose of the Law is to recognize the rights of Mother Earth and the obligations and duties of the Plurinational State and society to guarantee the respect of these rights.
SUPREME DECREE No 3549 OF MAY 02, 2018, MODIFIES, SUPPLEMENTS, AND INCORPORATES NEW PROVISIONS TO THE ENVIRONMENTAL PREVENTION AND CONTROL REGULATION - RPCA.	This Supreme Decree aims to modify, complement, and incorporate new provisions to the Environmental Prevention and Control Regulation. It was approved by Supreme Decree No. 24176, December 8, 1995, and Supreme Decree No. 28592, January 17, 2006, to optimize environmental management, adjusting the Instruments of Regulation of Particular Scope and the Technical-Administrative Procedures, prioritizing the functions of Environmental Inspection and Control, within the framework of the environmental regulations in force.
SUPREME DECREE No 3856 OF APRIL 03, 2019, MODIFIES THE	The purpose of this Supreme Decree is to amend the Environmental Prevention and Control Regulation, approved by

ENVIRONMENTAL PREVENTION AND CONTROL REGULATION - RPCA.	Supreme Decree No. 24176, of December 8, 1995, as amended by Supreme Decree No. 3549, of May 2, 2018.
LAW NO. 755. LAW OF 28 OCTOBER 2015. LAW ON INTEGRAL WASTE MANAGEMENT.	The purpose of this Law is to establish the general policy and the legal regime of Integrated Waste Management in the Plurinational State of Bolivia, prioritizing prevention for the reduction of waste generation, its use and sanitary and environmentally safe final disposal, within the framework of the rights of Mother Earth, as well as the right to health and to live in a healthy and balanced environment.
SUPREME DECREE NO. 2954 OF OCTOBER 19, 2016, GENERAL REGULATION OF LAW NO. 755.	The General Regulations of Law No 755, of October 28, 2015, on Integral Waste Management are integral to this Supreme Decree and are hereby approved.
LAW NO. 759. LAW OF NOVEMBER 17, 2015, RATIFIES THE "MINAMATA CONVENTION ON MERCURY".	Following Article 158, Paragraph I, numeral 14 of the Political Constitution of the State, Article 37 of Law No 401 of September 18, 2013, on the Conclusion of Treaties and Article 13 of Supreme Decree No 2476 of August 5, 2015, the "Minamata Convention on Mercury", signed in Kumamoto, State of Japan, on October 10, 2013, is ratified.

Concerning the conclusion of Multilateral Environmental Agreements (MEAs) relevant for the project:

- In mention to the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits resulting from the utilization of genetic resources. On March 22, 1989, Bolivia signed and ratified on 15 November 1996, "Convention on Biological Diversity";
- Regarding the use of mercury for gold mining, Bolivia, through Law 759 of 17 November 2015, ratified the "Minamata Convention on Mercury"; and,
- Regarding access to information, public participation, and access to justice in environmental matters, Bolivia ratified the "Escazú Agreement" employing Law 1182 of 3 June 2019.

3.1.2. REGULATORY REQUIREMENTS

The gold mining cooperatives in Bolivia must comply with the following laws and regulations for their environmental and social legality:

- Political Constitution of the State of Bolivia;
- Framework Law of Mother Earth and Integral Development for Living Well;
- Environmental Law 1333;
 - General Regulation of Environmental Management – RGGA;
 - Prevention and Environmental Control Regulation – RPCA;
 - Regulation on Atmospheric Contamination – RMCA;
 - Regulation on Water Pollution – RMCH;
 - Regulation for Activities with Hazardous Substances – RASP;
 - Regulation on Solid Waste Management – RGRS;
- Environmental Regulations for Mining Activities – RAMM;
- General Regulation of Protected Areas – RGAP;

- Mining and Metallurgy Law 535;
- General Labour Law;
- General Law of Occupational Health and Safety and Welfare;
- Law 759 ratification of the Minamata Convention on Mercury; and,
- Supreme Decrees of sanitary emergency related to COVID19.

3.1.3. POLITICAL CONSTITUTION OF THE PLURINATIONAL STATE OF BOLIVIA

The Bolivian [State Political Constitution](#) (*Constitución Política del Estado*, CPE) which is the highest norm at the national level highlights the following important points to consider regarding environmental and social issues related to ASGM:

Title II. Fundamental Rights and Guarantees

Chapter IV – Rights of Indigenous and Aboriginal Peasant Nations and Peoples

- Within the framework of the unity of the State and in accordance with this Constitution, the indigenous and aboriginal peasant nations and peoples enjoy the following rights (Article 30.2):
 - To participate in the benefits from the exploitation of natural resources in their territories; and
 - To the autonomous indigenous territorial management and to the exclusive use and exploitation of the renewable natural resources existing in their territory without prejudice to the rights legitimately acquired by third parties.

Chapter V – Social and Economic Rights. Section I. Right to the Environment

- People have the right to a healthy, protected, and balanced environment. The exercise of this right must allow individuals and groups, present and future generations, and other living beings to develop regularly and permanently (Article 33); and,
- As an individual or on behalf of a collective, any person is entitled to exercise legal actions in defence of the right to the environment, without prejudice to the obligation of public institutions and to act *ex officio* against violations against the environment (Article 34).

Title II. Environment, Natural Resources Land and Territory

Chapter I – Environment

- It is the duty of the State and the population to conserve, protect, and make sustainable use of natural resources and biodiversity and maintain the balance of the environment (Article 342);
- The population has the right to participate in environmental management, to be previously consulted and informed about decisions that could affect the quality of the environment (Article 343);
- Environmental management policies will be based on applying environmental impact assessment systems and environmental quality control, with the exception and in a

transversal manner to all production activities of goods and services that use, transform, or affect natural resources and the environment (Article 345);

- The natural heritage is of public interest and strategic character for the sustainable development of the country. Therefore, its conservation and use for the benefit of the population shall be the exclusive responsibility of the State and shall not compromise sovereignty over natural resources (Article 346);
- The State and society will promote the mitigation of the harmful effects on the environment and of the environmental liabilities that affect the country. It declares the responsibility for historical environmental damages and the imprescriptibility of environmental crimes (Article 347.1); and
- Those who carry out activities that have an impact on the environment shall, in all stages of production, avoid, minimize, mitigate, remediate, repair and compensate the damages caused to the environment and people's health, and shall establish the necessary safety measures to neutralize the possible effects of environmental liabilities (Article 347.2).

Chapter IV - Mining and Metallurgy

- The State will be responsible for the mineralogical wealth found in the soil and subsoil, whatever its origin and its application will be regulated by law. The State mining industry, private mining industry and cooperative societies are recognized as productive actors (Article 369.1);
- The State will be responsible for the direction of the mining and metallurgical policy and the development, promotion, and control of the mining activity (Article 369.3);
- The State shall exercise control and supervision over the entire mining production chain, and the activities carried out by the holders of mining rights, mining contracts or pre-constituted rights (Article 369.4);
- The State shall promote and strengthen mining cooperatives to contribute to the country's economic development (Article 370.2);
- The mining rights in the whole productive chain and the mining contracts must fulfil a socio-economic function exercised directly by their holders (Article 370.3); and,
- The mining areas granted by contract are non-transferable, non-sizable and non-transmissible by hereditary succession (Article 371.1).

3.1.4. FRAMEWORK LAW ON MOTHER EARTH AND INTEGRAL DEVELOPMENT TO LIVE WELL

The purpose of the [Law](#) passed on 15 October 2012 was to establish the vision and foundations of integral development and living well in harmony and balance with Mother Earth, thus guaranteeing the continuity of the regenerative capacity of the components and life systems of Mother Earth while recovering and strengthening local and ancestral knowledge.

Living Well through integral development in harmony and balance with Mother Earth must be carried out in a complementary, compatible, and interdependent manner with the following rights (Title II, Chapter III, Article 9):

1. Rights of Mother Earth, as a collective subject of public interest as the harmonious and balanced interaction between human beings and nature, in the framework of the recognition that the economic, social, ecological and spiritual relationships of people and society with Mother Earth are limited by the capacity of regeneration of Mother Earth's components, zones and life systems in the framework of Law No. 071 of the Rights of Mother Earth.
2. Collective and individual rights of the indigenous and aboriginal peasant nations and peoples, intercultural and Afro-Bolivian communities, within the framework of the Political Constitution of the State and the United Nations Declaration on the Rights of Indigenous Peoples and Convention 169 of the International Labor Organization.
3. Civil, political, social, economic and cultural rights of the Bolivian people in order to Live Well through their integral development, satisfying the needs of societies and individuals within the framework of the social, cultural, political, economic, productive, ecological and cultural dimensions.
4. The right of the rural and urban population to live in a just, equitable and supportive society free of material, social and spiritual poverty, within the framework of the full enjoyment of their fundamental rights.

The bases and orientations of Living Well, through integral development in mining and hydrocarbons, are (Title III, Chapter I, Article 26):

1. The activities of exploration, exploitation, refining, transformation, industrialization, transportation and commercialization of mining and hydrocarbon resources will be carried out progressively, as appropriate, with the most suitable and cleanest technologies with the objective of reducing to the environmental and social damages.
2. The mining and hydrocarbon production processes will be developed within the framework of specific instruments for the regulation and management of life systems, which will be subject to comprehensive, recurrent and interinstitutional technical monitoring and audits of life systems with the participation of the population affected by these productive processes. When these processes are developed in the territories of indigenous and aboriginal peasant nations and peoples and Afro-Bolivian communities, participation in said audit shall be carried out within the framework of their own rules and procedures in accordance with the Law.
3. To develop industrialization processes in mining and hydrocarbons that have met the requirements with the State and that guarantee the sustainability of the regeneration capacities of the zones and life systems.
4. Establish measures so that public and private, national and foreign companies or cooperatives that develop mining and hydrocarbon activities, works or projects, to carry out processes of restoration of life zones and mitigation of damages. Small mining producers and mining cooperatives shall carry out these processes jointly with the competent entities of the Plurinational State of Bolivia.
5. Establish measures so that public and private, national and foreign companies or mining and hydrocarbon cooperatives that cause irreversible damage to irreversible damage to the components of Mother Earth, are subject to liability responsibilities according to a specific law.

6. All forms of exploitation of the components of Mother Earth, non-metallic, brine, evaporite and other existing components, must be carried out under the following conditions extraction and transformation processes within the framework of harmony and balance with Mother Earth.

3.1.5. NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLAN

The National Economic and Social Development Plan (*Plan Nacional de Desarrollo Económico y Social*, PDES) for the period 2016-2020 highlighted as one of the fundamental pillars the “Environmental Sovereignty with Integral Development”, promoted the implementation of the civilizing model of Living Well, energized the integral development of the country while respecting the capacities and regeneration of the components of Mother Earth.

The framework of the Laws mentioned above establish the need to build complementarity between:

- Respect for the rights of Mother Earth;
- Respect for the rights of people to their integral development through the exercise of their fundamental rights;
- Respect for the rights of the population to live without material, social and spiritual poverty; and
- Respect for the rights of indigenous people.

3.2. INSTITUTIONAL FRAMEWORK RELATED TO THE MINING SECTOR

According to national legislation, the component environmental authorities at the different levels build the environmental institutional framework for the mining sector in Bolivia.

The details regarding the different entities and their competencies is detailed in Table 6.

Table 6. Environmental and Institutional Framework

ENTITY	DENOMINATION	FUNCTIONS AND ATTRIBUTIONS (related to mining)
Vice-Ministry of the Environment, Biodiversity, Climate Change and Forestry Management and Development	Competent Environmental Authority (<i>Autoridad Ambiental Competente</i> , AAC)	<p>Implements sustainable management of natural resources and the protection of the country's life systems.</p> <p>Exercise the functions of supervision and control at the national level on environmental and natural resources activities.</p> <p>Approves, rejects, or requests complements to the reports issued by the CSO for the issuance of Environmental Licenses.</p> <p>Oversees compliance with the measures approved in the Environmental Action Plans of the Environmental Licenses.</p>
Ministry of Mining and Metallurgy	Sectorial Competent Organism (<i>Organismo</i>	In coordination with AACN, participates in environmental management by formulating proposals related to mining in technical standards, environmental policies, and sectoral plans.

	<i>Sectorial Competente, OSC)</i>	<p>Reviews the regulatory instruments of environmental scope for Environmental Licenses to issue technical opinions (simultaneously with SERNAP when appropriate).</p> <p>Participates in environmental monitoring and control processes.</p>
Departmental Autonomous Governments	<p>Departmental Competent Environmental Authority (<i>Autoridad Ambiental Competente Departamental, AACD</i>)</p>	<p>Within the scope of its jurisdiction, exercises oversight and control functions over activities related to the environment and natural resources.</p> <p>Issues, denies or suspends Environmental Licenses (when applicable in operations under its jurisdiction).</p>
National Protected Areas Service (SERNAP)	<p>National Protected Areas System Authority (<i>Sistema Nacional de Áreas Protegidas, SNAP</i>)</p>	<p>Plans, administers and oversees the integrated management of the national protected areas that make up the National System of Protected Areas (SNAP).</p> <p>Regulates activities within the protected areas of the SNAP and oversees them according to their categories, zoning and regulations based on management plans (mining can only be carried out in areas of natural resource use based on the zoning of protected areas with integrated management category).</p> <p>Reviews the regulatory instruments of environmental scope for Environmental Licenses to issue a technical opinion.</p>

4. ENVIRONMENTAL AND SOCIAL RISKS WITH RELATED MITIGATION MEASURES

4.1. DESCRIPTION OF RISKS AND MITIGATION MEASURES

4.1.1. GENERAL ENVIRONMENTAL AND SOCIAL RISKS

Environmental and social impacts may be encountered during project implementation. Such risks may arise during mining and ore processing. In cases where mercury is still being used by project beneficiaries, occupational, health and safety (OHS) standards should be in place and a proper management of mercury wastes must be ensured.

Environmental Impacts

There are two groups that may be affected as a result of gold mining and processing and the use or handling of mercury and mercury-compounds and wastes: workers involved and communities around the areas. These people are exposed to physical, chemical or biological hazards of mining and processing. In areas where mercury is still being used prior to the conversion to mercury-free processing, exposure to mercury can be direct (skin contact, inhalation, ingestion) or indirect (intake of polluted water or contaminated food, inhalation of contaminated air).

More than the impacts mentioned, the project is expected to have positive long-term improvements in the environment. Soil, water and air pollution that may result from the mismanagement and improper disposal of the mercury and mercury compounds could be eliminated once the project is implemented.

Social and Economic Impacts

Negative social impacts are expected to be minimal and limited. Resettlement is not expected to happen. Direct effects on ecosystems, sites with archaeological, historical or cultural value are not likely to occur. In IP areas, the impact of the project to the socio and economic activities of the community must be carefully assessed.

Mitigation Measures

Proper mitigation measures must be developed to address the impacts identified. The objective is to reduce or minimize the effect of the impacts.

The environmental and social risks identified in the preparatory phase for the project *“GOLD+ Bolivia: Enhancing the formalization and mercury reduction in artisanal and small-scale gold mining in the Plurinational State of Bolivia”* (taking into account the location, regulatory framework and operational safeguards activated by UNIDO) can be found in Table 7.

Table 7. Identified Risks and Mitigation Measures

IDENTIFIED RISK	OPERATIONAL SAFEGUARD	MITIGATION MEASURE	TECHNICAL DETAILS	TIMELINE	RESPONSIBILITY
Workers' safety during mining and processing of ore	Labour and working conditions	Provision of work clothes and personal protective equipment (PPE). Occupational Risk Management in work areas. Storage of toxic and hazardous substances. Implementation of an emergency and first aid plan.	Apply the Occupational Safety and Health Program (PSST) approved by the Ministry of Labour. Refer to the General Law of Hygiene, Occupational Safety and Welfare 16998.	At all times	PEE Beneficiary mining cooperatives
Spread of COVID-19 among project beneficiaries/team	Labour and working conditions	Implementation of COVID19 biosafety protocol for the mining sector. Comply with Supreme Sanitary Decrees issued by the Ministry of Health. Promote control of COVID19 vaccination cards.	Refer to multi-ministerial resolution 01/2020 Ministry of Mining and Metallurgy - Ministry of Health.	At all times	PEE Beneficiary mining cooperatives
Presence of child labour in selected mining sites	Labour and working conditions	Monitor and ensure that children are not involved in mining activities in selected sites. Revision of child labour policy in Internal Regulations.	Refer to national legislation (Law 548).	At all times	PEE Beneficiary mining cooperatives
Displacement of women and vulnerable groups through technological changes	Labour and working conditions	Conduct a gender impact assessment and its corresponding mitigation measures to avoid risks of exclusion.	N/A	At project inception	PEE Beneficiary mining cooperatives
Generation of smoke and other air pollutants from mining operations,	Efficiency and pollution prevention	Preventive maintenance of fuel-powered equipment and machinery.	Refer to the Air Pollution Regulations	Whenever possible	PEE Beneficiary mining cooperatives

equipment, and vehicles		<p>Promote the change to electric equipment and clean energy sources.</p> <p>Submit Environmental Monitoring Report for the AIR factor.</p>	<p>Environmental Law 1333.</p>		
Generation of waste products from the use of mercury in ore processing	Efficiency and pollution prevention	<p>Discourage the use of inappropriate mercury processing.</p> <p>Promote measures to eliminate the worst forms of mercury amalgamation.</p> <p>Ensure waste rocks and tailings and disposed in designated areas.</p>	<p>The project will promote mercury-free processing technologies; for residual activities which produce mercury wastes, the wastes must be handled according to the environmental license and international best practices.</p>	Project inception	<p>PEE Beneficiary mining cooperatives</p>
Generation of solid waste from the mining operations	Efficiency and pollution prevention	<p>Ensure mining and metallurgical waste management plan is implemented for handling mining and processing wastes.</p>	<p>Mining and metallurgical waste management plan will define storage, collection, segregation, recycling, reuse, and disposal procedures for all wastes generated in the area.</p> <p>Refer to Environmental Regulations for Mining Activities RAAM.</p> <p>Environmental Law 1333.</p>	Project inception	<p>PEE Beneficiary mining cooperatives</p>

<p>Uncontrolled use of ground and surface water</p>	<p>Health, safety, and community protection</p>	<p>Evaluate water availability in the selected sites with the help of data from the nearest meteorological station. Introduce technologies that involve recycling of process water and train miners in recycling practices such as hydraulic pumps driven by electric current.</p>	<p>Refer to national legislation (Law 1333, Law 535).</p>	<p>Whenever possible</p>	<p>PEE Beneficiary mining cooperatives</p>
<p>Mining operations affect health of workers and surrounding communities</p>	<p>Health, safety, and community protection</p>	<p>Provision of appropriate measures to avoid negative impacts on the health of workers/communities: avoid noise and dust generation; avoid smoke and other gaseous pollutants; ensure chemicals are used and stored in an environmentally sound manner.</p>	<p>Preferred use or purchase of equipment with silencers and emission reduction and ensure proper maintenance. If needed, provision of scrubbers, filters, and dust collectors. Limit working hours and operations of equipment > 80dB to lessen nuisance to community. Standards on hazardous and toxic chemicals. Refer to Water Pollution Regulation. Environmental Law 1333.</p>	<p>At all times</p>	<p>PEE Beneficiary mining cooperatives</p>
<p>Deforestation and biodiversity loss</p>	<p>Natural habitats and</p>	<p>Development and implementation of progressive soil rehabilitation plans</p>	<p>A restoration plan should be developed and</p>	<p>At all times</p>	<p>PEE</p>

increase due to mining activities	biodiversity protection	supported by the jurisdictional approach for sustainable landscape management. Implementation of biodiversity and ecosystem plan for mining operations. Ensure implementation of treatment systems for liquid discharges from processing plants. Submit Environmental Monitoring Report for WATER factor.	contained in the environmental license for each mining operation. Refer to national legislation (Law 1333, Law 535).		Beneficiary mining cooperatives
Potential impact to indigenous people (IP) who are directly or indirectly involved in the mining/processing	Indigenous People	Consultation with IP; potential development of ESIA.	N/A	Project inception	PEE Beneficiary mining cooperatives

4.1.2. CLIMATE CHANGE RELATED INFORMATION

Bolivia is one of the countries with the most negligible contribution to climate change due to its low greenhouse gas emissions although it is one of the most affected countries by this phenomenon¹⁶.

The country is highly dependent on the exploitation of natural resources, such as agriculture, mining and hydrocarbons, which account for more than 40% of the economic activity and almost 80% of the exports while the agriculture, forestry and fishing sector employ almost 44% of the workers.

Among the main vulnerabilities to climate change in Bolivia are the following:

- The wide topographic spectrum from rainforest or arid plains to Andean summits and the related range of climatic conditions combined with social vulnerability make the country more susceptible to natural disasters;
- Significant concentrations of the population are found in fragile mountain ecosystems and expanding arid zones;
- The country is considered to have an abundance of water resources, but water scarcity is a growing problem in parts of the highlands and valleys; and,

¹⁶ United Nations System in Bolivia (2020). Bolivia is one of the countries suffering the most due to climate change. Available [here](#).

- Temperature increases and climate variability are also causing several health-related problems, with diseases such as malaria and dengue fever expanding to other areas.

Due to the notable elevation changes throughout the country, different climates are present. Its average annual temperature and precipitation variation is detailed in Figure 15 showing two marked climatic seasons: the dry season (April to September) and the rainy season (October to March).

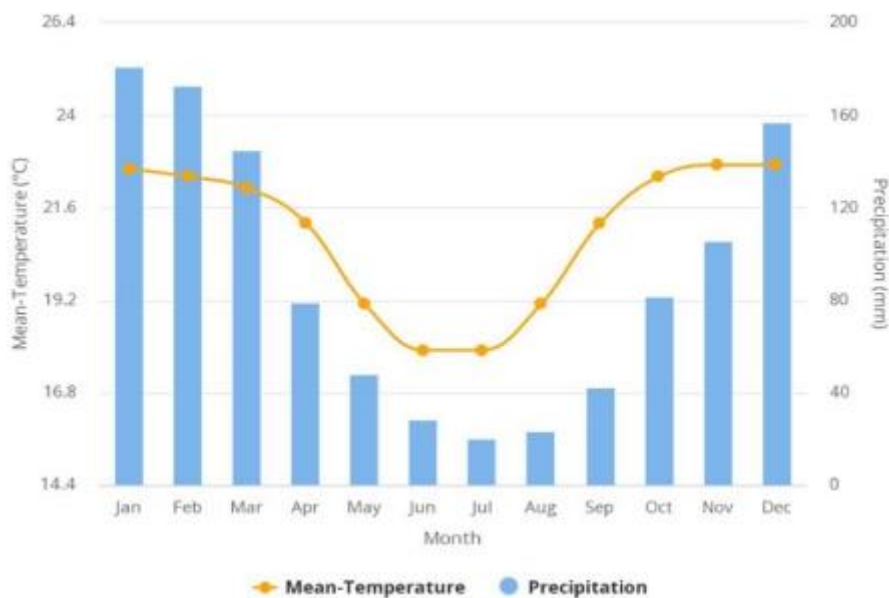


Figure 15. Monthly climatology of mean-temperature and precipitation from 1991-2020 (Source: World Bank Group)

CLIMATE DATA PROJECTIONS 2020-2060¹⁷

Climate change projections are obtained through global climate models and are useful to support decision-making on climate-related aspects.

Figure 16 estimates that the average monthly temperature variation for the period 2020-2030 will be 1°C warmer.

¹⁷ Source: Climate Change Knowledge Portal.

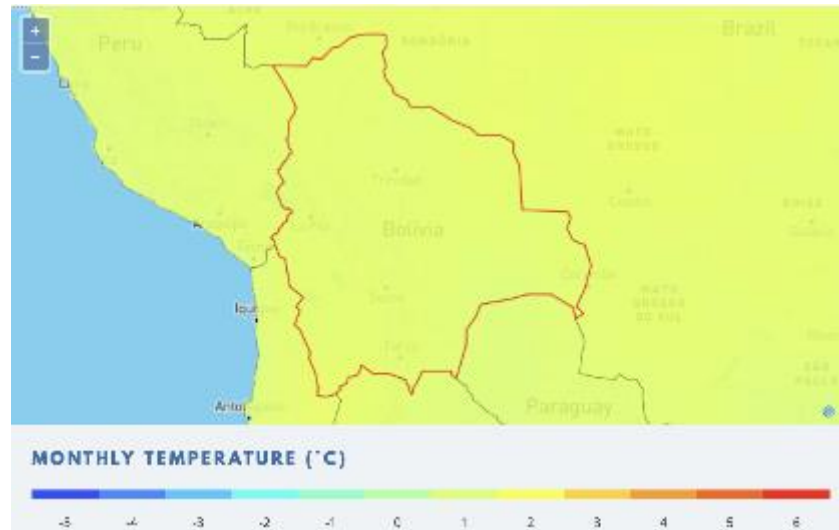


Figure 16. Projected change in monthly temperature for 2020-2039 (Source: World Bank Group)

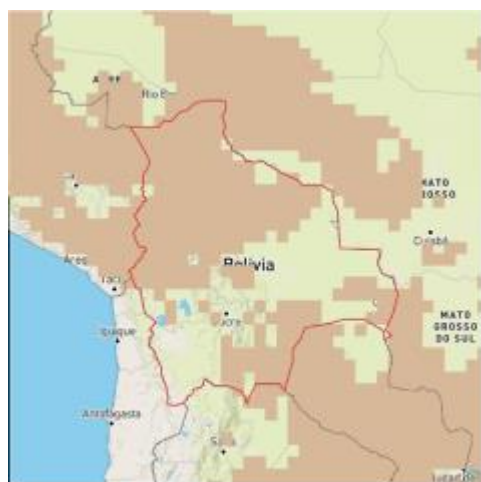
Climate change projections estimate that the temperature variation for the period 2020-2030 will be 1 °C warmer.

In addition, the following trends have been identified in the medium and long-term:

- The wet scenario forecasts an average temperature increase of 1.5 °C and the dry scenario forecasts an average temperature increase of 2.4 °C;
- Cold days show a decreasing trend from 2 to 12 days;
- The wet scenario forecasts an increase in annual precipitation of 22% while the dry scenario forecasts a decrease in annual precipitation of 19%;
- Dry days are projected to increase by 6 to 7 days; and
- Winters are projected to be drier and summers are projected to be wetter, resulting in increased risks of flooding and droughts.

CLIMATE CHANGE AT MINING AREAS

Vulnerability to climate change in relation to droughts, floods, forest fires and landslides due to precipitation have been analyzed for the mining areas considered for the GOLD+ Bolivia project. The maps in Figure 18 show georeferenced information at the national level.



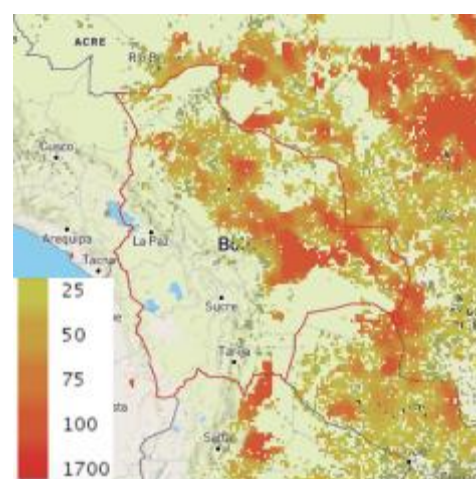
Drought events (bluish-colored squares)



Flood hazard (In cm)



Density of wildfires



Precipitation-triggered landslides

For more referenced information on droughts, floods, fires, fires and landslides (Source: World Bank Group)

Climatic information for each mining area (Table 8) can be found below and should be considered to identify climate change-related risks in the implementation of the GOLD+ Bolivia project. During the project inception, the selected project sites will be screened against hazards and vulnerabilities.

Table 8. Mining Areas Climatic Information

INFORMATION	MINING AREA					
	ILLIMANI	YANI	SUCHES PELECHUCO	LARECAJA TROPICAL	SAN RAMON	MADRE DE DIOS
Climate	Cold sub-Arctic weather	Cold sub-Arctic weather	Cold sub-Arctic weather	Humid tropical weather	Humid continental warm-summer weather	Humid continental warm-summer weather
Climate change vulnerability	Low	Moderate	Moderate	Low	Low	Moderate
Drought Events	Yes	Yes	Yes	Yes	No	Yes

Flood events	No	No	No	Yes	Yes	Yes
Wildfire density ¹⁸	0	0	0	0	100	25
Precipitation triggered landslides ¹⁹	1 - 30	1 - 30	1 - 30	31 - 100	0	0

¹⁸ The scale for wildfires density goes from the lowest to highest scales as follows: 0-25, 25-50, 50-75, 75-100 and 100-1700.

¹⁹ The scale for precipitation triggered landslides goes from the lowest to highest scales as follows: 1-30, 31-100, 101-300, 301-1,000, >1,000.

4.2. ENVIRONMENTAL AND SOCIAL RISK MONITORING

The ESMP should be implemented in the selected mining area for the GOLD+ Bolivia project. The details for the implementation of the mitigation measures of the ESMP are detailed in Table 9.

Risks and mitigation measures were identified during the early part of the project preparation when the specific project sites have not yet been identified.

The measures will have to be validated during the project implementation.

Table 9. E&S Risk Monitoring

IDENTIFIED RISK	PARAMETERS TO BE MEASURED	THRESHOLDS / DETECTION LIMITS	METHOD OF SUPERVISION	MEASUREMENT FREQUENCY	LOCATION	RESPONSIBILITY
Worker's safety during mining and processing of ore	Number of reported accidents <u>Refer to risk: mining operations affect health of workers and surrounding communities</u>	No accidents are reported in the selected mining sites	Review of records	Quarterly	At the project selected sites for mining and processing	<u>Responsible entity:</u> Beneficiary mining cooperative/workers <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Labour, Employment and Social Welfare
Spread of COVID-19 among project beneficiaries/team	Number of cases reported during project activities	0 cases	Review of records	Quarterly	Where project activities take place	<u>Responsible entity:</u> PEE
Presence of child labour in selected mining sites	Number of children involved in mining activities	No children are present in mining sites	Review of records	Quarterly	At the project selected sites for mining and processing	<u>Responsible entity:</u> Beneficiary mining cooperative <u>Verification:</u> PEE
Displacement of women and vulnerable groups through technological changes	Number of women affected by introduction of equipment <u>(Refer to gendered impact assessment planned under Component 3)</u>	No women are affected by the introduction of equipment	Review of records Gendered impact assessment	Quarterly	At the project selected sites for mining and processing	<u>Responsible entity:</u> PEE
Generation of smoke and other air pollutants from mining operations,	Concentration of air emissions (such as CO, SO ₂ and NO _x) and	Permissible air quality limits:	Laboratory analysis Semi-annual Technical	Semi-annual	At the project selected sites for mining and processing	<u>Responsible entity:</u> Beneficiary mining cooperative

equipment, and vehicles	suspended PST and PM10 in work areas	CO = 10(mg/m ³) 8-hour average SO ₂ = 365(μg/m ³) 24-hour average NO _x = 10(mg/m ³) 8-hour average PST=260(μg/m ³) over 24 hours PM-10= 150(μg/m ³) in 24 hours	Report on environmental monitoring (air factor)			<u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy
Generation of waste products from the use of mercury in ore processing	Mercury in water and sediments	Depending on the limits of the equipment but must be within the prescribed limits of the Standard Methods Sampling according to the national standards	Site visits Laboratory analysis Environmental Annual Monitoring Report	Annual	At the project selected sites for mining and processing	<u>Responsible entity:</u> Beneficiary mining cooperative <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy
Generation of solid waste from the mining operations	Metric tons of waste generated	Final disposal of metallurgical mining wastes in accordance with the standards specified in Law 1333 and 535	Site visits Mining Waste Recording Forms Metallurgical Solid Mining Waste Management Plan Report	Annual	At the project selected sites for mining and processing	<u>Responsible entity:</u> Beneficiary mining cooperative <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy

<p>Uncontrolled use of ground and surface water</p>	<p>Water recycled through technologies introduced</p>	<p>% efficiency of water recirculation in ore processing plants</p>	<p>Site assessments and visits Documentation review</p>	<p>Semi-annual</p>	<p>At the project selected sites for mining and processing</p>	<p><u>Responsible entity:</u> Beneficiary mining cooperative <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy</p>
<p>Mining operations affect health of workers and surrounding communities</p>	<p>Physicochemical parameters of water quality Noise levels in dB (A) scale</p>	<p>Permissible limits for liquid discharges: pH = 6.9 (mg/l) TSS = 60 (mg/l) BOD5 = 80 (mg/l) Oils and fats = 10 (mg/l) Sulfides = 2.0 (mg/l) Free cyanide = 0.2 (mg/l) Mercury = 0.002 (mg/l) Iron = 1.0 (mg/l) Chromium +6 = 0.1 (mg/l) Arsenic = 1.0 (mg/l) Cadmium = 0.3 (mg/l) Lead = 0.6 (mg/l) Colifecal (NMP/100 ml) = 1000 Permissible noise</p>	<p>Laboratory analysis Semi-annual Environmental Monitoring Technical Report (water factor) Laboratory analysis Semi-annual environmental monitoring technical report (noise factor)</p>	<p>Semi-annual</p>	<p>At the project selected sites for mining and processing Surrounding communities</p>	<p><u>Responsible entity:</u> Beneficiary mining cooperative <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy</p>

		<p>impact limits</p> <p>Stationary sources: 68 dB (6 - 22 hours)</p>				
<p>Deforestation and biodiversity loss increase due to mining activities</p>	<p>Forest density (hectares)</p> <p>Rehabilitation of sites</p>	<p>Methods and guidelines for progressive rehabilitation of areas approved in the Environmental License</p>	<p>Sites assessments</p> <p>Geospatial mapping</p>	<p>Annually</p>	<p>At the project selected sites for mining and processing</p>	<p><u>Responsible entity:</u> Beneficiary mining cooperative <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy Municipal Autonomous Government</p>
<p>Potential impact to indigenous people (IP) who are directly or indirectly involved in the mining/processing</p>	<p>Number of IP affected negatively by the project</p>	<p>No IP are affected negatively by the project</p>	<p>Sites assessment</p> <p>Consultations</p>	<p>Annual</p>	<p>At the project selected sites for mining and processing</p>	<p><u>Responsible entity:</u> Beneficiary mining cooperative/workers IPs Community <u>Verification:</u> PEE <u>Competent authority:</u> Ministry of Environment and Water Ministry of Mining and Metallurgy</p>

5. CAPACITY DEVELOPMENT

5.1. ROLES AND RESPONSIBILITIES

The institutional arrangement, as well as a description of the roles and responsibilities of the different bodies are described here after and summarized in Figure 18:

- The **Project Executing Entity (PEE)** is responsible for the overall management of the financial and human resources directly related to project execution in the country. The PEE will be accountable to the implementing agency for the achievement of project outputs and outcomes. The PEE will consult both UNIDO as GEF Implementing Agency and the Project Steering Committee (PSC) in all matters concerning the project. In the delivery of its functions, it will act as the secretariat of the PSC;
- A **Project Steering Committee (PSC)** will be established to provide project direction, supervision, and overall guidance to project execution, making critical decisions on strategic matters. This body will also ensure the timely delivery of project outputs and the eventual achievement of the project outcomes by reviewing work plans and progress reports, approving work plan for the coming year, and taking adaptive management decisions if required. The PSC will be chaired by the Ministry of Environment and Water (MMAYA) and include representatives from the Ministry of Mining and Metallurgy, Ministry of Health and Sports, UNIDO and other key stakeholders; and,
- A **Project Management Unit (PMU)** will be in charge of the day-to-day management of the project and be set up by the Project Executing Entity in Bolivia within the Ministry of Environment and Water. It will be composed of a National Project Manager assigned and paid by the government, a Chief Technical Advisory (CTA) and an administrative assistant. The duties of the CTA for the PMU will be limited to drafting Terms of Reference as well as reviewing and compiling technical reports. Other technical project staff might be hosted in the PMU office but will not contribute to PMU activities. The PMU will regularly provide updates to UNIDO by submitting quarterly progress reports. UNIDO will share the updates with the PSC members and other relevant stakeholders.

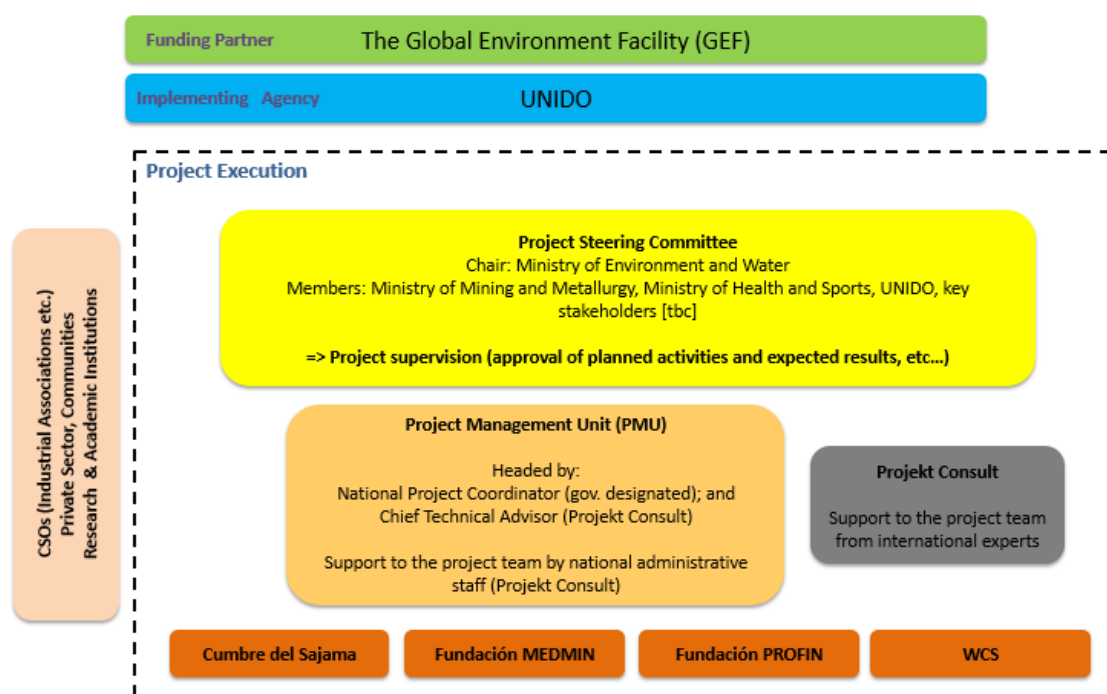


Figure 18. Execution arrangements of GOLD+ Bolivia

The project will be implemented by the United Nations Industrial Development Organization (UNIDO) in line with GEF Project and Program Cycle Policy.

The project will be executed by Projekt Consult as the Project Executing Entity assisting with the day-to-day management of the activities, including the implementation, and monitoring of the ESMP.

The main responsibility of implementing the ESMP lies with the Project Executing Entity (PEE) (Projekt Consult) and it must be implemented during the whole project duration.

The PEE will receive guidance from the Project Steering Committee (PSC) that include representatives of the Ministry of Environment and Water, the Ministry of Mining and Metallurgy and the Ministry of Sports and Health as well as UNIDO.

Project staff from the Project Management Unit (PMU) will receive training in relation to aspects relevant for the implementation of the ESMP (Table 10).

Additionally, the institutional needs will be assessed and awareness raising and knowledge generation in the areas of mercury, mercury compounds and wastes will take place during the project lifecycle.

Table 10. Capacity Building Plan

ACTIVITY	SUBJECT	CALENDAR	PARTICIPANTS
Training	Environmental and Social Management Plan (ESMP)	Project inception	PEE/ Gold mining beneficiary cooperatives
Training	Relevant regulations for the mining sector in Bolivia	Project inception	PEE/ Gold mining beneficiary cooperatives

Training	Adequate monitoring of environmental and social risks	Annual	PEE/ UNIDO
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6. COMMUNICATIONS PLAN

The project will develop a Communication Strategy in line with the planetGOLD program that should establish the necessary tools to disseminate information to the main stakeholders and establish fluid communication channels.

Activities, achievements, and lessons learned from the project will be shared to the relevant partners and in appropriate forums.

In addition, as part of the GEF Annual Monitoring Report (AMR), UNIDO will annually communicate implementation progress on issues that involve ongoing risk to or impacts on the project stakeholders, and on issues that the consultation process and/or grievance mechanism have identified as of concern to those stakeholders.

Specific to the ESMP, all safeguard documents including the Plan will be subject to consultation and disclosure in an accessible place, in a timely manner, in a form and language understandable to key stakeholders.

The ESMP will be disclosed on the UNIDO public website under the following link (<https://open.unido.org/projects/BO/projects/200049>).

A consultation with the stakeholders should take place during the inception phase of the project before the ESMP is validated and finalized.

In addition, the stakeholder engagement plan, which outlines the various consultation types, purposes, participation, reporting and timing, will be included in the ESMP.

Key activities to be included in the communication plan in relation to the ESMP are mentioned in Table 11.

Table 11. Communication Plan

Consultation	Purpose	Participants	Lead/Chair	Reporting	Schedule
Inception event	Project overview; project organization; project schedule; social & env impacts; ESMP	All project stakeholders	Ministry of Environment and Water / PEE	Inception event report	At project inception
Public consultation and site visit	Adjusting of mitigation measures, if necessary; impact of replacing and updating	Beneficiaries and nearby communities	Local authorities / PEE	Consultation report	At project inception When needed

	activities; comments and suggestions				
Public consultation and site visit	Effectiveness of mitigation measures, impacts of project implementation, comments, and suggestions	Beneficiaries and nearby communities	Local authorities / PEE	Consultation report	At project mid term When needed
Addressing community concerns	Consultation on Grievance Producers	Beneficiaries and nearby communities	PEE	Accountability and Grievance Mechanism	At project inception Regularly
Evaluation debriefing	Share and disseminate the results of the terminal evaluation, incl. ESMP	All project stakeholders	UNIDO / PEE	Terminal evaluation report	At project closure

An Accountability and Grievance Mechanism (AGM) has been developed and describes how all stakeholders will be able to raise grievances and how these will be processed at the program level. To ensure stakeholders are aware and able to access the grievance mechanism: i) A Grievances Form will be created on the PlanetGOLD website in multiple languages; ii) Links to the Grievances Form will be added throughout the PlanetGOLD Website; iii) A link to the Grievances Form will be included in the PlanetGOLD knowledge products; and iv) The project will allow for anonymous grievances.

If resolution of the complaint is not possible at the program level, UNIDO encourages the utilization of the UNIDO grievance mechanism detailed in the Environmental and Social Management Plan.

The Project Execution Entity (PEE) will be notified and responsible for addressing the issue in line with the UNIDO Environmental and Social Safeguards Policy.

7. IMPLEMENTATION OF THE ESMP

The implementation of the ESMP will be responsibility of the Project Executing Entity (PEE) of the GOLD+ Bolivia project under the supervision and monitoring of UNIDO in coordination with the Ministry of Environment and Water and the Ministry of Mining and Metallurgy.

These actors as well as other relevant stakeholders will participate in monitoring and information exchange activities in permanent coordination with beneficiary mining cooperatives.

The recruitment of an environmental and social expert will be considered for the development, monitoring and implementation of the plan.

The schedule for the implementation of the ESMP in the selected mining area can be found in Table 12.

Table 12. Implementation Schedule

ACTIVITY	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
ESMP adjustment/validation																				
Capacity development																				
Implementation of the Plan																				
Information dissemination																				
Consultation/grievance mechanism*																				
Evaluation of Plan																				

ANNEXES



ANNEX 1. RESULTS OF VIRTUAL INTERVIEWS WITH REPRESENTATIVES OF THE GIT-OR

The GIT-OR is a network of more than 15 entities including regional, national and international NGOs and CSOs, academia and other private institutions that work on the promotion of responsible mining in Bolivia.

Through interviews conducted during the project preparatory phase, the following results were obtained (in %) and considered in the elaboration of the ESMP (Figure 19 and Figure 20).

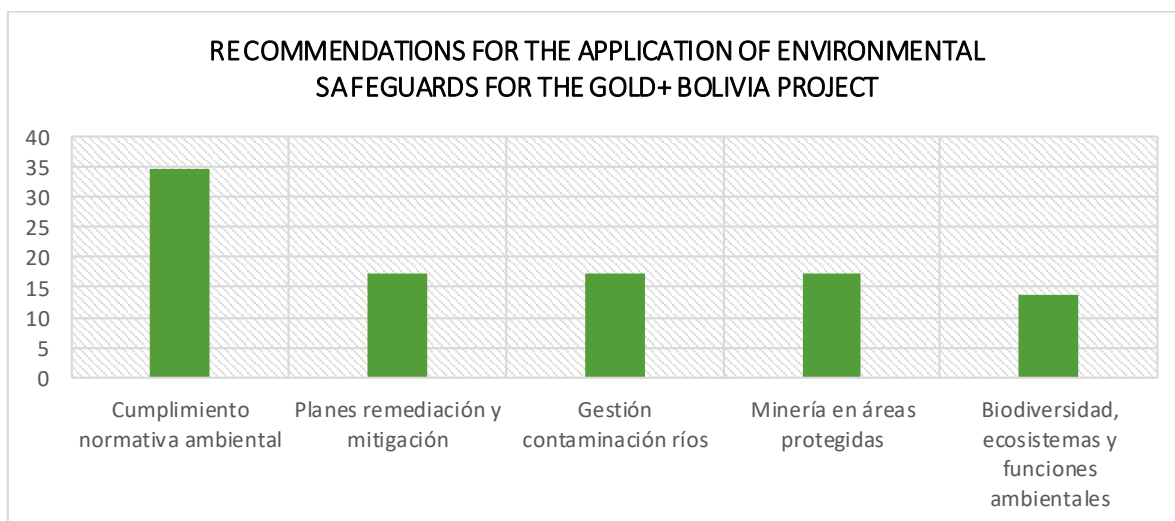


Figure 19. Recommendations for Environmental Safeguards of GOLD+ Bolivia

(Translation: Compliance with environmental regulations; Remediation and mitigation plans; River pollution management; Mining in protected areas; Biodiversity, ecosystems and environmental functions)

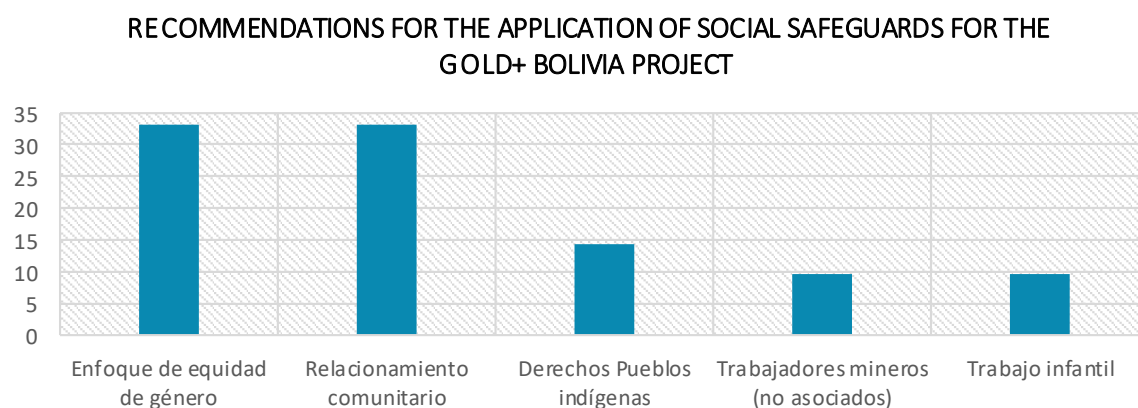


Figure 20. Recommendations for Social Safeguards of GOLD+ Bolivia

(Translation: Gender equity focus; Community relations; Indigenous Peoples Rights; Mineworkers (non-associated); Child labor)

ANNEX 2. SUMMARY OF MEETING WITH LEADERS OF GOLD MINING COOPERATIVES IN SANTA CRUZ

A meeting was held on 8 May 2021 in the town of San Ramón in the department of Santa Cruz de la Sierra with the leaders of the gold mining cooperatives associated with FEDECOMIN Santa Cruz (Figure 21).



Figure 21. Meeting of gold mining cooperative leaders at the San Ramón mining site (Source: D. Lafuente)

The meeting, coordinated by the President of the Administration of the Federation, had the objective of socializing the activities to be conducted under the preparatory phase of the project as well as the main components and activities envisaged under its implementation.

At the same time, information was gathered on the gold mining activities in the area which have recently seen an increase through the formation of gold mining cooperatives and small private companies.

ANNEX 3. SUMMARY OF MEETING WITH LEADERS OF GOLD MINING FEDERATIONS AND COOPERATIVES IN LA PAZ

A meeting was held on 11 May 2021 in the Vienna Hall of La Paz in the department of La Paz with the leaders of the national mining federation (FENCOMIN), the departmental federations (FEDECOMIN LP and FEDECOMIN SC) and the regional gold mining federations (FERRECO and FECOMAN) (Figure 22).



Figure 22. Meeting with Bolivian Gold Mining Federations (Source: M. Salinas)

The main objective of the meeting was to share information on the design of the GOLD+ Bolivia project and the preparatory phase and gather information and opinions about the project.

In addition, the ASGM activities and current implications in the country were also discussed.

ANNEX 4. SUMMARY OF MEETING WITH KEY STAKEHOLDERS IN THE ILLIMANI AREA

A meeting was held on 18 May 2021 in La Paz in the department of La Paz with local stakeholders from the Illimani area including departmental and municipal public officials, representatives of the mining federations, miners and community members) (Figure 23).



Figure 23. Meeting with key actors at Illimani mining site (Source: M. Salinas)

The main objective was to gather information for the preparation of the Environmental and Social Management Plan. Thus, the event focused mainly on identifying the concerns of the communities and the main environmental and social risks arising from the ASGM activities at this mining area, which is representative of the gold mining activity in Bolivia.

The main results of interview application (in %) can be found in Figure 24, Figure 25, Figure 26 and Figure 27.



Figure 24. Community concerns related to mining activity

(Translation: Environmental pollution; River pollution; Encroachments and conflicts; Depletion of reservoirs; Mercury usage)

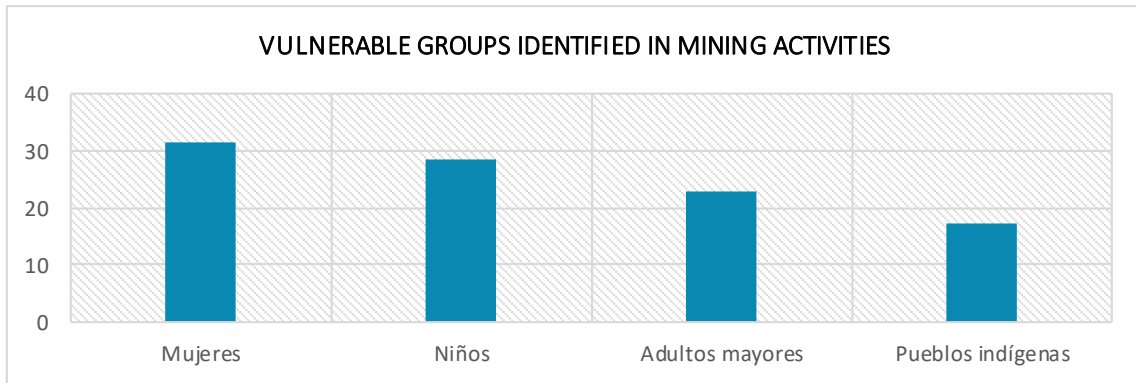


Figure 25. Vulnerable groups identified in mining activities

(Translation: Women; Children; Senior Citizens; Indigenous People)

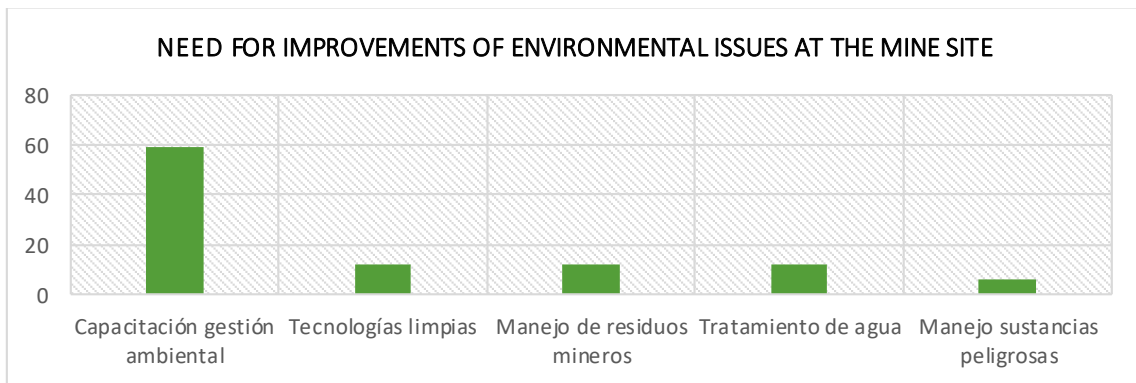


Figure 26. Need for improvements of environmental issues at mine site

(Translation: Environmental management training; Clean technologies; Mining waste management; Water treatment; Hazardous substances management)

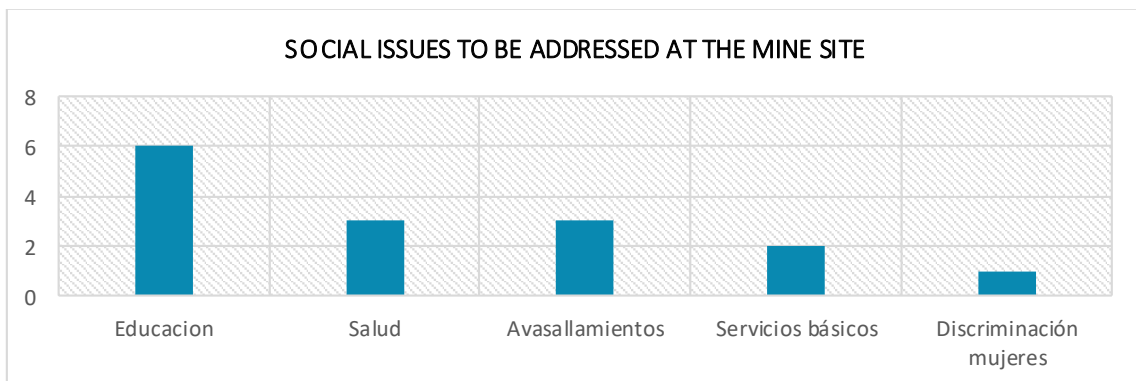


Figure 27. Social issues to be addressed at mine site

(Translation: Education; Health; Encroachment; Basic Services; Discrimination against women)

ANNEX 5. SUMMARY OF MEETING WITH WOMEN MINERS FROM THE RNMM

A meeting was held on 18 May 2021 in La Paz in the department of La Paz with THE National Network of Women Miners and women from the municipalities of Mapiri, Guanay, Teoponte and Tipuani.



Figure 28. Meeting with the National Network of Women Miners (Source: M. Salinas)

The objective of the meeting was to gather information for the preparation of the ESMP with an emphasis on gender-related issues.

The main results of the interviews (in %) can be found in Figure 29, Figure 30, Figure 31 and Figure 32.

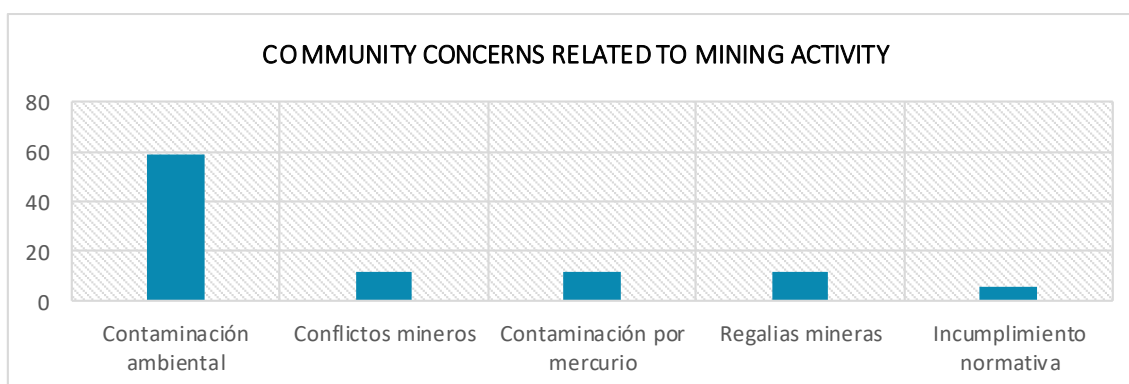


Figure 29. Community concerns related to mining activity

(Translation: Environmental contamination; Mining conflicts; Mercury contamination; Mining royalties; Regulatory noncompliance)

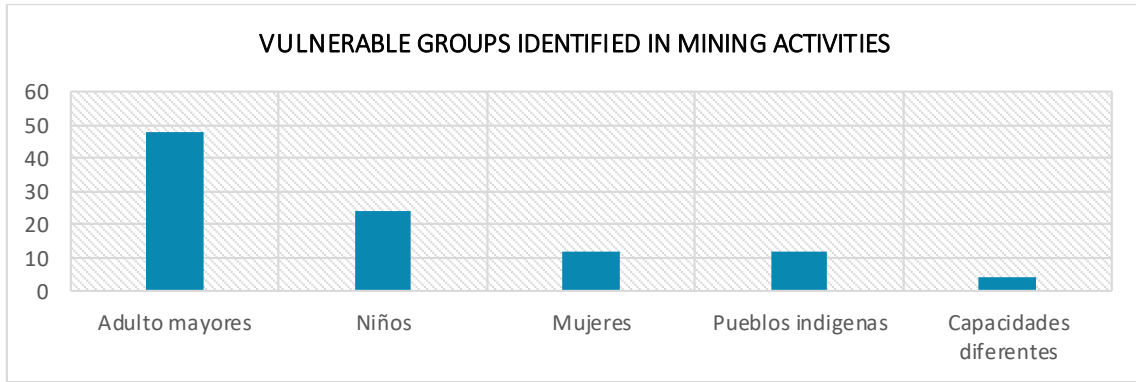


Figure 30. Vulnerable groups identified in mining activities

(Translation: Senior Citizens; Children; Women; Indigenous Peoples; Disabled)

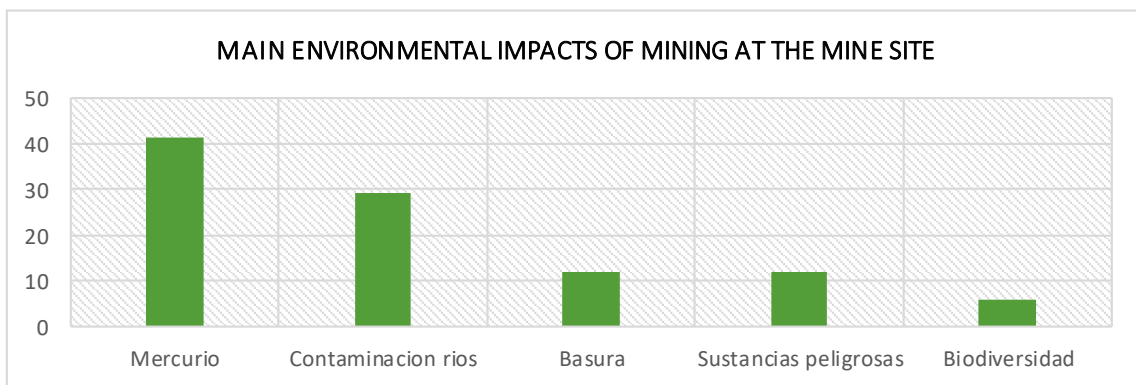


Figure 31. Main environmental impacts of mining at mine site

(Translation: Mercury; River Contamination; Garbage; Hazardous Substances; Biodiversity)

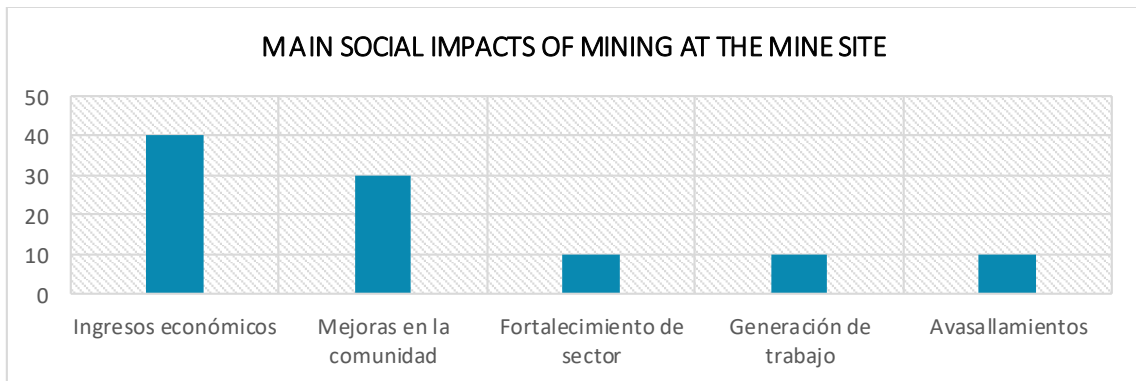


Figure 32. Main social impacts of mining at mine site

(Translation: Economic income; Community improvements; Sector strengthening; Job generation; Encroachments)

ANNEX 6. FIELD VISIT TO LARECAJA TROPICAL AREA, DEPARTMENT OF LA PAZ

A field visit to the municipalities of Guanay, Tipuani and Teoponte took place during the preparatory phase. It was possible to gather information through interviews with officials of the autonomous municipal governments, leaders of gold mining cooperatives and representatives of the indigenous organization Pueblos Indígenas Lecos y Comunidades Originarias de Larecaja (PILCOL) (Figure 33).



Figure 33. Meeting with leaders of Teoponte (Source: L. Montecinos)

ANNEX 7. RESULTS OF FEEDBACK WORKSHOP ON ESMP

A workshop was held on 26 May 2021 including authorities of the Vice-Ministry of Mining Cooperatives under the Ministry of Mining and Metallurgy, environmental advisors and secretaries of gold mining federations FENCOMIN, FECOMAN and FERRECO and environmental specialists in the mining sector from civil society organizations (Figure 34).



Figure 34. ESMP feedback workshop (Source: M. Salinas)

Based on the methodology proposed for the development of the Environmental and Social Management Plan for the GOLD+ Bolivia project, the objective of the meeting was to open a participatory space to gather recommendations and adjustments to the Environmental and Social Management Plan for the GOLD+ Bolivia project.

ANNEX 8. INTERVIEW FORM FOR THE COLLECTION OF INFORMATION (Spanish)

ENTREVISTA A ACTORES DE LA MINERÍA ARTESANAL Y DE PEQUEÑA ESCALA (MAPE)		
MEDIO AMBIENTE		
N° ENTREVISTA	<input type="text"/>	FECHA DE ENTREVISTA
		18 5 2021
I. UBICACIÓN GEOGRÁFICA		
1. DEPARTAMENTO:	La Paz	2. PROVINCIA:
3. MUNICIPIO:	Leupana	4. COMUNIDAD:
Iguico		
II. DATOS DE LA PERSONA ENTREVISTADA:		
5. NOMBRE Y APELLIDOS:	Manfredo Ruiz	6. SEXO:
		2. M 2. F
		7. EDAD:
		41
III. PREGUNTAS RELACIONADAS A MEDIO AMBIENTE:		
8. ¿Cuáles son los actividades laborales que se destacan en su comunidad?		
SEGÚN SU ORDEN DE IMPORTANCIA		
1. <input checked="" type="checkbox"/> MINERÍA	4. <input type="checkbox"/> PESCA	7. <input type="checkbox"/> SERVICIOS
2. <input checked="" type="checkbox"/> AGRICULTURA	5. <input type="checkbox"/> APICULTURA	8. <input type="checkbox"/> COMERCIO
3. <input type="checkbox"/> CANTADERÍA (Varales/Bolinos)	6. <input type="checkbox"/> INDUSTRIA	9. <input type="checkbox"/> OTRO
(ESPECIFIQUE)		
9. ¿Cuál cree que es la importancia de la actividad minera en su comunidad?		
de que hay mucha gente que no tiene trabajo y es por esta razón es muy importante la minería en su comunidad		
10. ¿Cuáles considera que son las principales preocupaciones que tiene la comunidad en relación a la actividad minera actual?		
1. falta de conocimiento de las normativas		
2. el tema de medio ambiente		
11. ¿Cuál es considera que son los principales impactos negativos ambientales que está generando actualmente la actividad minera actual?		
1. en particular mi cooperativa no tiene contrato		
2.		
12. ¿Cuáles de los siguientes grupos vulnerables están en su comunidad?		
A. <input type="checkbox"/> MUJERES	C. <input checked="" type="checkbox"/> PERSONAS DE LA TERCERA (DE LA VEJEZ)	E. <input type="checkbox"/> POBLACIÓN CON DISCAPACIDAD
B. <input type="checkbox"/> NIÑOS	D. <input type="checkbox"/> PUEBLOS ORIGINARIOS	X. <input type="checkbox"/> OTRO
(ESPECIFIQUE)		
13. ¿Los impactos negativos ambientales mencionados, cómo cree que afecta a los grupos vulnerables existentes en la comunidad?		
de que las personas de la tercera edad incluyen que están distinguiendo lo terreno		
14. ¿Cuáles considera que son los principales impactos sociales que está generando actualmente la actividad minera actual?		
1. el crecimiento económico que se vivifica la comunidad		
2.		

