# INDICATORS GUIDE FOR MINE CLOSURE PLANNING

Tool for Assessing Performance in Mine Closure Management

IBRAM
BRAZILIAN MINING

A&M INFRA
& CAPITAL PROJECTS
BY ALVAREZ & MARSAL

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# INDICATORS GUIDE FOR MINE CLOSURE PLANNING

Mine Closure Management

**Brazilian Mining Institute – IBRAM**
**Alvarez & Marsal**

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# IBRAM Presentation

Planning for the closure of a mine is a complex process. From the planning horizon measured in decades to the social, economic and environmental parameters that tend to change from one generation to the next. Issues related to governance within mines, integration of the planning process and operational engineering, as well as the increasingly present participation of communities around operations, add different contours to the planning for the closure of a mineral operation the closure of a mineral operation.

The way in which these closures are planned and managed has a decisive influence on the dialogue about the costs and benefits of mining for society – which may, in turn, influence new governance structures for the sector. Well-executed measures increase the level of credibility and establish successful partnerships, thus creating a legitimate legacy for the mining sector.

Recognizing this, the Brazilian Mining Institute (IBRAM) in partnership with Alvarez & Marsal is launching this **Guide to Indicators for Mine Closure Planning**. Through performance assessment indicators, this document brings materiality to the set of guidelines and good practices related to the closure of a mineral deposit's activities.

This set is included in the already established and still current Guide for Mine Closure Planning, launched by IBRAM in 2013.

Currently, to plan the closure of a mine, it is necessary to engage everyone - company, government, academia, communities when defining the scope of the challenge. Integration in the planning process is an important mechanism for the mining project to create lasting value, even when the mining company is no longer present.

For the closure process to be successful, it is essential to also consider the closure of the mine as an essential part of the business. This Guide was developed to help the public related to the subject to make informed decisions, based on the holistic analysis of the closure aspects and on the evaluation of performance and continuous improvement of its processes and procedures.

With this Guide, IBRAM reinforces its commitment to the sustainability agenda in the mining business and to contributing to balanced, responsible and long-term development in the regions where mining activities are located.

Have a nice reading!

**Raul Jungmann**
Chief Executive Officer

# ALVAREZ & MARSAL Presentation

In 2023, Alvarez & Marsal, one of the world's leading management consulting firms, through its infrastructure business unit A&M Infra, has partnered with IBRAM to launch a publication that provides a practical approach for mining companies on the topic of mine closure planning. The partnership between A&M Infra and IBRAM reflects a joint commitment to raising standards and practices in the mining industry.

In 2024, we announced the **Indicators Guide for Mine Closure Planning**, a document that provides a Tool for Assessing Performance in Mine Closure Management, aiming to guide companies in assessing and improving their current management standards in relation to this topic.

Mining is a fundamental economic activity for the supply of raw materials essential for industrial and technological development. However, the life cycle of a mine does not end with the extraction of resources; it culminates in the closure phase, a critical phase that requires careful planning and diligent execution.

In this context, indicators for mine closure planning are essential mechanisms for the effective management of the mine decommissioning process. They reinforce safe planning, in accordance with regulatory standards, and with a minimized environmental and social impact.

By investing in an effective system of indicators, mining companies not only comply with their legal, ethical and established good practice obligations, but also promote long-term sustainability, ensuring a positive legacy for communities and the environment, aligning best practices with stakeholders expectations.

We hope that this document will contribute to the improvement of the mining sector in Brazil and assist in the integrated management of mine closure in its practical context of application, providing greater guidance to professionals engaged in planning, raising awareness among company leaders regarding the importance of the topic and promoting safety and sustainability for current and future generations.

Have a nice reading!

**Rafael Aveiro Marchi**
Managing Partner of A&M Infra

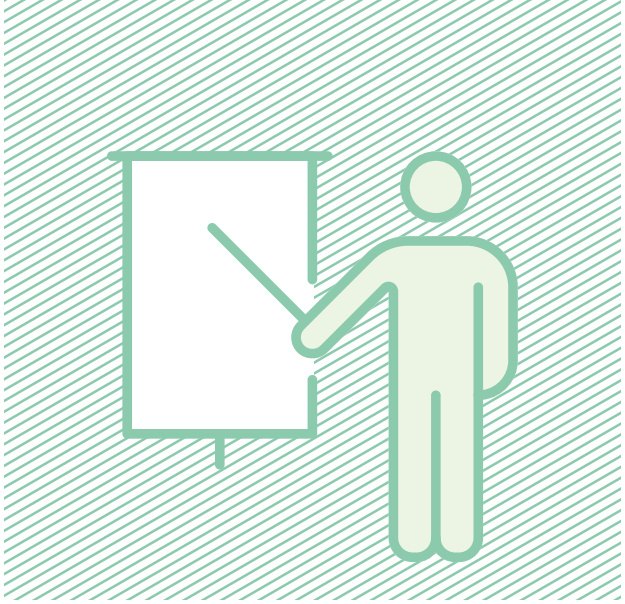
# 1 PURPOSE OF THE DOCUMENT

This document aims to provide a Tool for Assessing Performance in Mine Closure Management, which consists of a guidance tool for companies to assess their current management standards in relation to this topic.

The tool was structured with the objective of guiding senior management of companies regarding the minimum requirements for compliance with the closure of a mine, reinforcing the strategic nature of closure planning, which must be implemented at all organizational levels of the company.

The tool was based on the Guide for Mine Closure Planning (Sánchez, 2013), published and disseminated by IBRAM in 2013, and enables the measurement and monitoring of companies' performance in relation to the guidelines and good practices of the Guide for Mine Closure Planning, through specific performance indicators. The use of the tool also improves the consistency of management and performance assessments carried out by companies, as well as of external audits to which they may be subject, such as audits.

The application of the tool requires that the evaluator have sufficient experience in the practice of managing and monitoring a mine closure program, since professional judgment is required to verify compliance with the indicators. Likewise, the assessments must have the cooperation of the company's employees who will be interviewed.

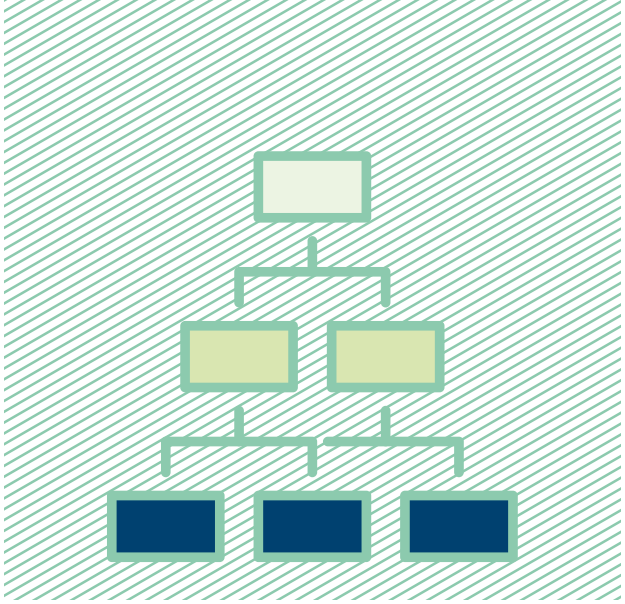


# 2 METHODOLOGICAL PROCESS

The Tool for Assessing Performance in Mine Closure Management is an initiative of the Environmental Impact Mitigation Working Group, part of the Brazilian Mining ESG Agenda, with technical support from the consulting firm Alvarez & Marsal.

The tool's construction process engaged the participation of mining companies and different stakeholders, including open consultation rounds, workshops and interviews with mining companies and academics. During the construction process, suggestions and recommendations from various professionals and members of the Environmental Impact Mitigation Working Group were taken into consideration.

The full list of participants in the open consultations can be found in Annex 5: List of Participants in the Open Consultations.



# 3 DOCUMENT STRUCTURE

The Tool for Assessing Performance in Mine Closure Management presents a total of thirty-eight performance indicators, which are organized and related according to the guidelines and good practices of the Guide for Mine Closure Planning.

The Guide for Mine Closure Planning establishes seven guidelines for mine closure, namely:

1. Closure planning should begin at the conception of a new mine project;
2. The company should plan the closure of active mines;
3. Closure planning should engage internal and external stakeholders;
4. The results of the planning should be recorded in closure plans and other related documents;
5. The company must estimate all costs associated with the closure of a mine;
6. The company must follow local socioeconomic development;
7. The closure plan must be updated whenever there are substantial changes in the mine project

For each guideline, good closure practices are recommended, as shown in Figure 1:

For each good practice, performance indicators were established, allowing for the measurement of compliance. There are five classification levels for each indicator, which are represented by the letters C, B, A, AA and AAA, with level AAA being the level of excellence in good practice and C being the level of least adherence to good practice.

**Figure 1** – Guidelines and good practices of the Guide for Mine Closure Planning

| Guideline 1 | Guideline 2 | Guideline 3 | Guideline 4 | Guideline 5 | Guideline 6 | Guideline 7 |
|---|---|---|---|---|---|---|
| **PF must begin from the conception of a new mine project** | **The companies must plan the closure of active mines** | **PFM should engage internal and external stakeholders** | **The results of the planning should be recorded in PFs and related documents** | **Companies should estimate all costs associated with mine closure** | **The company must follow local socioeconomic development** | **The PF should be updated whenever there are substantial changes in the mine project or surrounding conditions** |
| **BP 1.1 -** Consider the company's strategic closure planning | **BP 2.1 -** Gather technical documentation on the mine | **BP 3.1 -** Identify external and internal stakeholders | **BP 4.1 -** Record the results of the planning in a Closure Plan | **BP 5.1 -** Estimate the costs of programs related to closure | **BP 6.1 -** Analyze the local and regional socioeconomic context | **BP 7.1 -** Update the assessment of environmental and social impacts |
| **BP 1.2 -** Define closure objectives, including future use, along with analysis of project alternatives | **BP 2.2 -** Prepare mine history | **BP 3.2 -** Communicate information about the closure process | **BP 4.2 -** Prepare decommissioning and environmental recovery programs | **BP 5.2 -** Periodically update the cost estimate of programs related to closure | **BP 6.2 -** Monitor development and quality of life indicators | **BP 7.2 -** Monitor regulatory changes that may influence the closure objectives |
| **BP 1.3 -** Consider closure objectives when preparing the mine project | **BP 2.3 -** Consider the mining and industrial heritage when defining closure objectives | **BP 3.3 -** Consult external and internal stakeholders | **BP 4.3 -** Prepare Contingency Plan | **BP 5.3 -** Make financial provision for closure | **BP 6.3 -** Develop programs that promote the diversification of the local production base | **BP 7.3 -** Keep stakeholders mapping up to date |
| **BP 1.4 -** Identify and assess the socio-environmental impacts of closure when preparing the EIA | **BP 2.4 -** Conduct or update an accurate socio-environmental diagnosis | **BP 3.4 -** Implement a mechanism for receiving and recording complaints and managing conflicts | **BP 4.4 -** Prepare social programs | | **BP 6.4 -** Implement programs aimed at community development | **BP 7.4 -** Consider closure objectives in investments in research and technological development and in innovation management |
| **BP 1.5 -** Prepare acid drainage prevention study and plan, when necessary | **BP 2.5 -** Assess the risks of existing structures | **BP 3.5 -** Engage stakeholders in post-closure monitoring | **BP 4.5 -** Assess and manage the risks of closure measures and programs | | | **BP 7.5 -** Consider closure in the information management system |
| **BP 1.6 -** Consider different closure scenarios | **BP 2.6 -** Define closure objectives, including future use of the area | | | | | **BP 7.6 -** Provide systematic treatment to uncertainties inherent in mine closure planning |
| | **BP 2.7 -** Promote the progressive recovery of degraded areas | | | | | **BP 7.7 -** Update the Closure Plan periodically or when necessary |

Source: Guia para Planejamento do Fechamento de Mina [Guide for Mine Closure Planning] (Sánchez, 2013)

The evaluator must assess whether the company or mine meets the criteria of the indicators, answering the questions presented in the self-assessment checklist.

However, this document has the following annexes:

**Annex 1:** Frequently Asked Questions: Users should consult this annex to address any questions they may have regarding the topic of mine closure.

**Annex 2:** Glossary: provides definitions of various terms used in the tool. The definitions are aligned with the glossary established in the Guia para Planejamento do Fechamento de Mina [Guide for Mine Closure Planning ](Sánchez, 2013).

**Annex 3:** Self-Assessment Checklist: users must use the checklist to assess the classification level of each indicator.

**Annex 4:** Action Plan Model: users should use the action plan model to address the weaknesses mapped.

**Annex 5:** List of Participants in the Open Consultations: indicates the participants in the open consultation process for the development of this document.

# 4 EXECUTIVE SUMMARY

The production of mineral goods is a fundamental activity for modern society. In Brazil, mining represents one of the largest sectors of the economy, having shown consistent growth in recent decades, given the discovery of new deposits, the growing demand for iron ore and commodities on the international market, the country's economic and industrial development and the evolution of technological resources.

As an industry based on finite resources, mining activity, through human intervention in natural settings, has a destabilizing effect on ecosystems. Furthermore, it triggers major social impacts, especially in regions with a high level of economic dependence on mining activities.

To mitigate the impacts arising from the decommissioning of a mining enterprise, mining companies have the responsibility to plan the closure of their mines assertively and prior to the deactivation phase, in addition to documenting their commitments and closure strategies in a mine closure plan.

When planning for the closure of a mine is initiated late, near the end of its useful life, there is a considerable increase in the financial costs associated with closure activities, in addition to an accumulation of environmental and social impact liabilities.

Therefore, there is a need to anticipate actions that allow for adequate mine closure planning, through the progressive recovery of degraded areas and the implementation of social and environmental programs. Nevertheless, mining companies must encourage the future use of mining areas, leaving a sustainable legacy and promoting the opportunity to benefit future generations, considering that the socioeconomic impacts arising from the activity must be treated with the same rigor as the environmental, health and safety impacts.

In the Brazilian legislative and regulatory sphere, there has been a strengthening of environmental protection laws and policies and the establishment of mandatory mine closure requirements in recent decades, as shown in Figure 2.

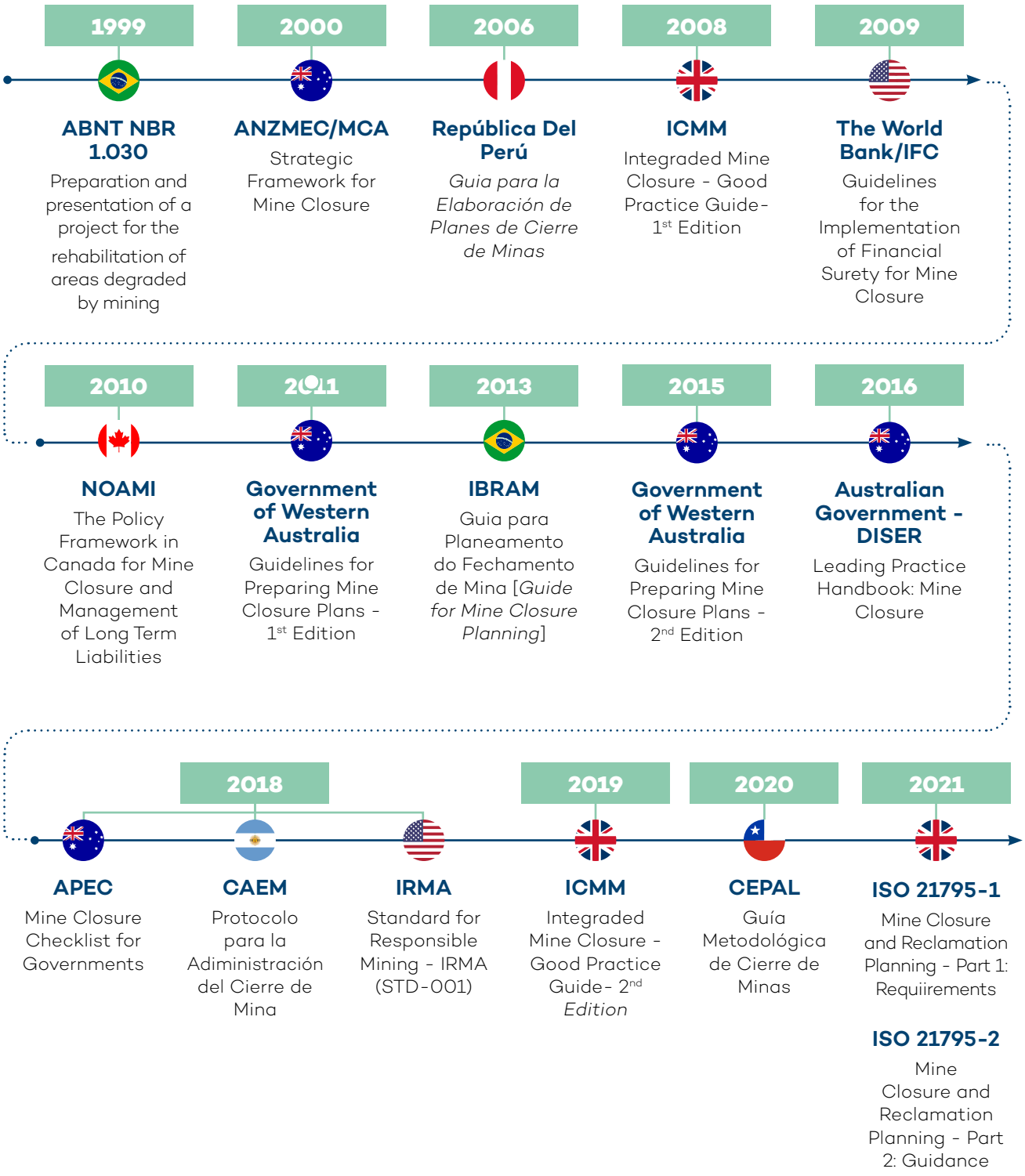
**Figure 2** – Main federal and state legislation on the subject of mine closure


Fonte: Alvarez & Marsal (2024)

The trend towards greater legislative and regulatory rigor in Brazil highlights the criticality of the issue and emphasizes the need for greater commitment on the part of mining companies regarding the implementation of measures to recover degraded areas in the post-mining scenario and the execution of efficient socioeconomic policies.

In the national and international regulatory sphere, the contribution of several Latin American, European and Oceanian countries has been noted over the last few decades, as shown in Figure 3.

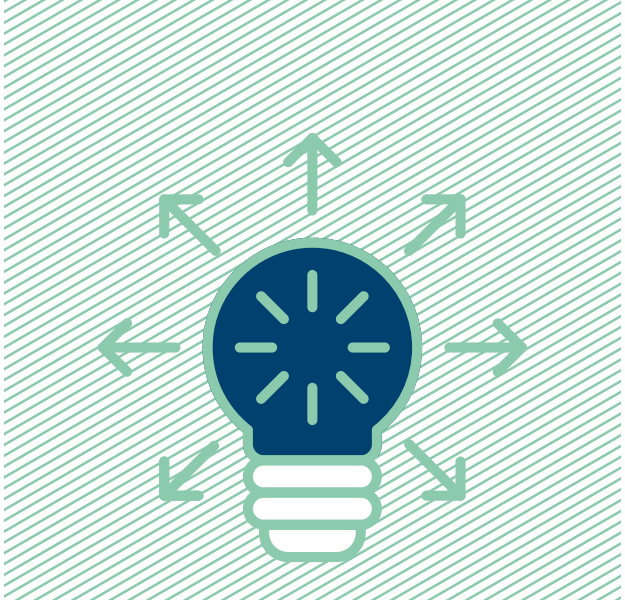
**Figure 3** – Main national and international regulations and standards on the topic of mine closure




Fonte: Alvarez & Marsal (2024)

Over the last few years, good practices for mine closure have gained relevance in the global mining sector, through the publication of specific guides, standards, tools and checklists on the subject, disseminating the importance of planning for mine closure and the responsibilities of mining companies before, during and after the closure of a mine.

The practice of mine closure is therefore a challenging and highly relevant activity for mining companies, regulatory bodies and communities. It is up to Brazilian mining companies to identify and adopt best practices on the subject, aiming at the correct implementation of closure activities in their mining ventures.



# 5 PERFORMANCE INDICATORS

## 5.1 Guideline 1

**Closure planning should begin at the conception of a new mine project**

According to Sánchez et al. (2013), closure planning should begin at the feasibility study phase of the mine, aiming to study project alternatives that make closure viable and consider post-mining use options. Sánchez et al. (2013) states that "terms such as 'designing for closure' or even 'designing for post-closure' have been used to describe the incorporation of this guideline by teams engaged in the feasibility study and development of mine projects." Companies must, therefore, establish practices to plan for mine closure from its conception and design.

**Guideline 1** of the Guide for Mine Closure Planning consists of six good practices, namely:

**1.1** Consider closure planning in the company's strategic planning;

**1.2** Define closure objectives, including future use, together with the analysis of project alternatives;

**1.3** Consider closure objectives when preparing the mine project;

**1.4** Identify and evaluate the socio-environmental impacts of closure when preparing the environmental impact study (EIA);

**1.5** Prepare a study and plan for the prevention of acid drainage, when necessary;

**1.6** Consider different closure scenarios.

For each good practice, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

## GOOD PRACTICE

## 1.1 Consider closure planning in the company's strategic planning

**Indicator:**
**STRATEGIC PLANNING**

Aims to confirm whether mine closure planning is included in the mining company's strategic planning.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | There is no short, medium and long-term corporate strategy that includes mine closure targets and indicators in the company's strategic planning. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish a corporate strategy, aiming to include mine closure targets and indicators in the company's strategic planning. |
| A | There is a short, medium and long-term corporate strategy that includes mine closure targets and indicators. |
| AA | A formal leader and a technical team have been designated to manage closure actions and ensure compliance with established targets and indicators. |
| AAA | Awareness programs for management staff have been implemented, combined with initiatives to train people to work on issues related to mine closure, to disseminate the culture of closure planning within the company. |

## GOOD PRACTICE

### 1.2 Define closure objectives, including future use, together with the analysis of project alternatives

**Indicator:**
**CLOSURE OBJECTIVES IN THE MINE FEASIBILITY STUDY**

It aims to confirm whether general and specific closure objectives are defined in the feasibility study and in the analysis of alternatives for the design of a new mine.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The analysis of alternatives for the project and the feasibility study of the mine meet the requirements of the mining code, regulatory standards and environmental legislation; however, general and specific closure objectives are not defined during the preparation of the documents. |
| B | A process has been partially implemented and/or an action plan has been developed to define general and specific closure objectives and to consider them in the feasibility study and analysis of alternatives for a new mine project. |
| A | General closure objectives are defined and considered in the feasibility study and analysis of alternatives for a new mine project. |
| AA | During the feasibility study and analysis of alternatives for a new mine project, the general closure objectives are broken down into specific objectives, detailing the closure actions required for the context of the project. |
| AAA | The general and specific closure objectives are considered critical elements of analysis during the feasibility study of alternatives for a mine project and are aligned with the objectives of the project itself. |

## GOOD PRACTICE

### 1.2 Define closure objectives, including future use, together with the analysis of project alternatives

**Indicator:**
**STUDY OF ALTERNATIVES FOR FUTURE USE IN A MINE PROJECT**

It aims to confirm whether studies of alternatives for future use are carried out during the analysis of alternatives for a new mine project, taking into account the characteristics of the territory and each structure.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The project alternatives analysis and the mine feasibility study meet the requirements of the mining code, regulatory standards and environmental legislation, however, studies of future use alternatives are not considered during the analysis of alternatives for a new mine project. |
| B | A process has been partially implemented and/or an action plan has been developed to consider studies of future use alternatives during the analysis of alternatives for a new mine project. |
| A | During the analysis of alternatives for a new mine project, studies of future use alternatives are considered, aligned with municipal master plans and urban legislation. |
| AA | During the analysis of alternatives for a new mine project, studies of alternatives for future use are considered, based on basic studies of the aptitudes, potentialities and restrictions of the territory and the mine structures. |
| AAA | During the analysis of alternatives for a new mine project, studies of alternatives for future use are considered, considering consultation processes and joint construction with the community. |

GOOD PRACTICE

## 1.3 Consider closure objectives in the preparation of the mine project

**Indicator:**
**CLOSURE OBJECTIVES IN THE MINE PROJECT**

It aims to confirm whether closure objectives are considered in the strategic decisions of a new mine project, through the definition of premises and closure criteria.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The mine implementation project meets the requirements of the mining code, regulatory standards and environmental legislation, however, closure objectives are not considered in the strategic decisions of the project. |
| B | A process has been partially implemented and/or an action plan has been drawn up to consider closure objectives in the strategic decisions of the project of a new mine. |
| A | During the development of the project of a new mine, closure objectives are considered in the strategic decisions of the project, through the definition of premises and closure criteria to be met. |
| AA | Project alternatives with low potential for meeting the objectives, premises and closure criteria are rejected or revised. |
| AAA | There is a rigorous process to allow successive stages of decision-making on project investment, with mine closure being a fundamental decision factor in choosing the most acceptable alternative, in order to ensure compliance with closure objectives and predictability of future project deactivation costs. |

GOOD PRACTICE

## 1.4 Identify and assess the socio-environmental impacts of closure when preparing the environmental impact study (EIA)

**Indicator:**
**SOCIO-ENVIRONMENTAL IMPACTS OF THE CLOSURE IN THE MINE PROJECT**

It aims to confirm whether the socio-environmental impacts arising from closure are assessed during the preparation of the project's environmental impact study and actions defined to reduce the impacts.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The environmental impact study for the project complies with applicable federal resolutions, laws and decrees; however, the specific socio-environmental impacts resulting from the closure of the mine are not detailed. |
| B | A process was partially implemented and/or an action plan was drawn up to assess the specific socio-environmental impacts resulting from the closure. |
| A | During the preparation of the environmental impact study for the project, the specific socio-environmental impacts resulting from the closure are assessed. Specific programs to be undertaken during the operational phase are defined, with the aim of minimizing the impacts resulting from the closure. |
| AA | Based on the environmental impact study, socio-environmental and closure monitoring parameters are extracted and monitored periodically to confirm compliance with the defined programs. |
| AAA | There is a structured process for programs to be broken down into a detailed schedule and actions to be implemented throughout the mine's life cycle, with the community's participatory engagement. |

GOOD PRACTICE

## 1.5 Prepare acid drainage prevention study and plan, when necessary

**Indicator:**
**ACID DRAINAGE PREVENTION PLAN IN THE MINE PROJECT**

It aims to confirm, when applicable, whether programs to predict, prevent and manage potential acid drainage are developed during the feasibility study of a new mine.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | During the feasibility study of a new mine, environmental programs are developed in compliance with environmental legislation. However, there is no specific program for forecasting, preventing and managing acid drainage potentially generated by the mine. |
| B | A process was partially implemented and/or an action plan was developed so that specific programs for forecasting acid drainage could be developed during the feasibility study of a new mine. |
| A | During the feasibility study of a new mine, specific programs for forecasting acid drainage potentially generated by the mine are developed. |
| AA | In the specific acid drainage forecasting programs, rigorous techniques for active and/or passive treatment of acid drainage are established, ensuring the mitigation and minimization of environmental impacts. |
| AAA | In specific acid drainage forecasting programs, prevention measures are established through methods to minimize their sources or maximize natural neutralization reagents. The company has a structured research process that aims to develop and implement cleaner production methods, minimizing the consumption of materials, energy and the generation of effluents. |

GOOD PRACTICE

## 1.6 Consider different closure scenarios

**Indicator:**
**CLOSURE SCENARIOS IN THE MINE CLOSURE PROJECT AND PLAN**

It aims to confirm whether the mine project and mine closure plan consider different closure scenarios, such as: scheduled closure, premature closure, temporary suspension or shutdown, and define specific actions for each scenario.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The mine project and/or mine closure plan do not consider different closure scenarios and there is no definition of specific actions for each scenario. |
| B | A process has been partially implemented and/or an action plan has been drawn up to consider different closure scenarios and specific actions have been defined for each scenario in the mine project and/or mine closure plan. |
| A | The mine project and/or mine closure plan consider different closure scenarios: scheduled closure, premature closure, temporary suspension or shutdown. |
| AA | The mine project and/or mine closure plan defines and unfolds specific actions for each closure scenario. |
| AAA | Mine closure scenarios are discussed and updated in multidisciplinary technical forums periodically and are part of the regular discussion agenda with the community. |

## 5.2 Guideline 2

# The company must plan for the closure of active mines

According to Sánchez *et al.* (2013), for operating mines, where there was no opportunity for closure planning since the mine project phase, the technical teams and managers responsible for mine planning "may have only partial and incomplete knowledge of the biophysical and socioeconomic environment in which they work." Given that knowledge of the characteristics of an operating mine may be insufficient for closure planning, companies must therefore structure a consistent base of information about the mining enterprise to enable the assertive definition of closure objectives.

Guideline 2 of the Guide for Mine Closure Planning consists of seven good practices, namely:

**2.1** Gather technical documentation on the mine;

**2.2** Prepare mine history;

**2.3** Consider the mining and industrial heritage when defining closure objectives;

**2.4** Perform or update an accurate socio-environmental diagnosis;

**2.5** Assess the risks of existing structures;

**2.6** Define closure objectives, including future use of the area;

**2.7** Promote the progressive recovery of degraded areas.

For each **GOOD PRACTICE**, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

GOOD PRACTICE

## 2.1 Gather technical documentation on the mine

**Indicator:**
**TECHNICAL DOCUMENTATION OF THE MINE**

It aims to confirm whether the practice of archiving original design documentation or as-built documents of the structures of an operating mine, as well as technical data, has been established.

Os níveis de classificação e Criteria  de avaliação do Indicator são listados no quadro abaixo

| Level | Criteria |
|---|---|
| C | There is no established practice of archiving original design documentation or as-built structures of a mine in operation, and there is no recorded technical data. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of archiving original design documentation or as-built documents for operating mine structures, as well as technical data. |
| A | The practice of archiving original design documentation or as-built documents for operating mine structures, as well as technical data, has been established. |
| AA | A structured process is in place to ensure the systematic archiving of original design documentation or as-built documents for operating mine structures, as well as technical data, and the application of information retrieval methods, such as interviews with employees, requests for documents from design companies and consultation with government agencies. |
| AAA | An external audit was carried out and determined that all requirements of level AA were met. |

## 2.2 Prepare mine history

**Indicator:**
**MINE DOCUMENTARY HISTORY**

It aims to confirm whether the practice of compiling the documentary history of an operating mine has been established, considering the implementation activities, environmental characteristics, changes in land use and the socioeconomic context of the surrounding communities.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The practice of systematically compiling the documentary history of an operating mine has not been established. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of systematically compiling the documentary history of an operating mine. |
| A | The practice of systematically compiling the documentary history of an operating mine has been established. |
| AA | A multidisciplinary team was appointed to coordinate, collect and systematically record relevant information about past and present activities in the mine area, as well as changes in land use that occurred in the surrounding area and socioeconomic changes in the communities. |
| AAA | An external audit was carried out and determined that all requirements of level AA were met. |

GOOD PRACTICE

## 2.3 Consider the mining and industrial heritage when defining closure objectives

**Indicator:**
**HISTORICAL HERITAGE OF THE MINE**

It aims to confirm whether studies are carried out on the historical mining and industrial heritage during the planning for the closure of an operating mine, with a view to identifying opportunities for future use that enhance cultural heritage.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | During the planning for the closure of an operating mine, studies on the historical mining and industrial heritage of the mine are not carried out or considered. |
| B | A process has been partially implemented and/or an action plan has been drawn up to conduct and consider studies on the mine's historical mining and industrial heritage during the planning for the closure of an operating mine. |
| A | During the planning for the closure of an operating mine, studies on the mine's historical mining and industrial heritage are carried out and considered. |
| AA | When preparing studies on the mine's historical mining and industrial heritage, the company does not limit itself to the concession or property area, evaluating neighboring elements of interest that may be connected to the mine and that may be part of a plan for the conservation, valorization and use of the historical mining and industrial heritage. |
| AAA | During studies on the mine's historical mining and industrial heritage, community consultation and participation processes are considered, identifying the interests of different groups that could benefit from potential heritage enhancement initiatives. |

GOOD PRACTICE

## 2.4 Perform or update an accurate socio-environmental diagnosis

**Indicator:**
**SOCIO-ENVIRONMENTAL DIAGNOSIS**

It aims to confirm whether an accurate socio-environmental diagnosis is performed during planning for the closure of an operating mine, to produce data and information that allow for the formulation of future closure scenarios and an understanding of the region's environmental and social dynamics.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | During the planning for the closure of an operating mine, an accurate socio-environmental diagnosis is not carried out to produce data and information for the closure. |
| B | A process has been partially implemented and/or an action plan has been drawn up to carry out an accurate socio-environmental diagnosis to produce data and information during the planning for the closure of the mine. |
| A | During the planning for the closure of an operating mine, an accurate socio-environmental diagnosis is carried out to produce data and information for the closure. |
| AA | There is a systemic process for updating and periodically reviewing the socio-environmental diagnosis. |
| AAA | The socio-environmental diagnosis is periodically monitored by a specialized team and used as a consultation tool during the closure planning process. |

GOOD PRACTICE

## 2.5 Assess the risks of existing structures

**Indicator:**
**STRUCTURAL RISKS**

It aims to confirm whether risk assessments are carried out on the structures of an operating mine, determining risks related to environmental, economic, image and safety issues that may impact future mine closure scenarios.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The company complies with applicable safety standards by managing risks inherent to mining structures and prepares a mine closure plan in compliance with applicable resolutions, standards and regulatory decisions, considering the assessment of risks arising from the closure of the structure and ways to mitigate any damage resulting from the activity. |
| B | The company carries out a systematic assessment of the risks of structures related to environmental, economic, image and safety issues that may impact future mine closure scenarios. |
| A | The risks to structures related to mine closure are widely publicized within the company, reinforcing the preventive strategy to ensure compliance with mine closure objectives. |
| AA | Risk assessments comply with global risk standards and regulations and include the definition of specific risk management or treatment measures. A multidisciplinary team has been designated to systematically monitor risks related to mine closure. |
| AAA | An external audit was carried out and determined that all requirements of level AA were met. |

GOOD PRACTICE

## 2.6 Define closure objectives, including future use of the area

**Indicator:**
**CLOSURE AND FUTURE USE OBJECTIVES ALIGNED WITH THE MINE'S STRATEGIC PLANNING**

It aims to confirm whether closure and future use objectives are considered as premises in the strategic decisions of the production plan of an operating mine.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | During the operation of a mine, closure and future use objectives are not considered as assumptions in the decisions and parameters of the mine production plan. |
| B | A process has been partially implemented and/or an action plan has been developed so that closure and future use objectives are considered as assumptions in the decisions and parameters of the mine production plan. |
| A | During the closure planning of an operating mine, closure and future use objectives are considered as assumptions in the decisions and parameters of the mine production plan. |
| AA | A multidisciplinary team has been designated to facilitate the alignment of the strategic planning of the mine, considering the closure and future use objectives as assumptions in the decisions and parameters of the mine production plan. |
| AAA | A strategic mine planning committee was implemented to integrate the issues and ensure that the objectives for closure and future use are aligned with the mine's short, medium and long-term strategy. |

GOOD PRACTICE

## 2.7 2.7 Promote the progressive recovery of degraded areas

**Indicator:**
**PROGRESSIVE RECOVERY OF DEGRADED AREAS**

It aims to confirm whether the practice of implementing a program for the progressive recovery of degraded areas has been established, contributing to the achievement of the objectives for closure and future use, the reduction of costs during the mine closure phase, the reduction of the period of monitoring and post-closure maintenance and the demonstration of concrete closure results.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | During the planning of the closure of an operating mine, the practice of developing a plan for the recovery of degraded areas is established, in compliance with applicable federal resolutions, laws and decrees. |
| B | The plan for the recovery of degraded areas is implemented systematically through operational procedures and measures aimed at executing the planned activities. |
| A | The operational procedures and implementation measures are accompanied by an accurate program for monitoring and evaluating the results, used as a dissemination tool for external stakeholders. |
| AA | The actions established in the plan for the recovery of degraded areas aim to meet the objectives of closure and future use established. The actions are managed by a multidisciplinary team and are widely disseminated among the operational departments. |
| AAA | Not limited to the plan for the recovery of degraded areas, a process was established for the proactive identification of opportunities for the progressive closure of structures, either total or partial, prior to the deactivation phase of the project, aiming to reduce future costs of the mine closure phase and minimize the accumulation of environmental liabilities in the mine. |

## 5.3 Guideline 3

# Closure planning should engage internal and external stakeholders

According to Sánchez et al. (2013), effective stakeholders engagement enables a better relationship with the community directly affected by the closure and enhances mine closure planning. Regarding the engagement of internal and external stakeholders, Sánchez et al. (2013) states that the process requires "identification and analysis, dissemination of information related to the project, consultation with stakeholders, negotiation and establishment of partnerships, conflict management, engagement in monitoring actions, and accountability reports." Companies should therefore establish the practice of involving internal and external stakeholders during mine closure planning.

Guideline 3 of the Guide for Mine Closure Planning consists of five good practices, namely:

**3.1** Identify external and internal stakeholders;

**3.2** Communicate information about the closure process;

**3.3** Consult external and internal stakeholders;

**3.4** Implement a mechanism for receiving and recording complaints and managing conflicts;

**3.5** Engage stakeholders in post-closure monitoring.

For each **GOOD PRACTICE**, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

GOOD PRACTICE

## 3.1 3.1 Identify external and internal stakeholders

**Indicator:**
**IDENTIFICATION OF THE STAKEHOLDERS**

It aims to confirm that the mine's internal and external stakeholders are identified and updated in a detailed and exhaustive manner, mapping the specific groups or individuals that may be directly affected by the mine closure.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | During mine closure planning, the mine's internal and external stakeholders are not identified and updated in a detailed and exhaustive manner. |
| B | A process has been partially implemented and/or an action plan has been developed to identify and update internal and external mine stakeholders in detail and comprehensively during mine closure planning. |
| A | During mine closure planning, internal and external mine stakeholders are identified and updated in detail and comprehensively. |
| AA | Specific groups or individuals who may be directly impacted by mine closure under different scenarios are mapped. |
| AAA | A dedicated team has been established to monitor and manage relationships with specific groups or individuals who may be directly impacted by mine closure under different scenarios. |

GOOD PRACTICE

## 3.2 3.2 Communicate information about the closure process

**Indicator:**
**CLOSURE COMMUNICATION PLAN**

It aims to confirm whether a specific communication plan has been established regarding the closure of the mine with stakeholders, in order to enable a transparent information channel on possible changes and socio-environmental impacts of the closure, as well as actions that will be implemented to generate compensation, opportunities and recovery of degraded areas.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | No specific mine closure communication plan is in place with stakeholders. |
| B | A process has been partially implemented and/or an action plan has been developed to establish a specific mine closure communication plan with stakeholders. |
| A | A specific mine closure communication plan is in place with stakeholders. |
| AA | A life-of-mine communications planning schedule is in place, tied to mine closure milestones, which intensifies as the mine nears its end of life. |
| AAA | There is a structured process to ensure due access to information, with the establishment of clear indicators of closure results and the dissemination of actions that will be implemented to generate compensation, opportunities and recovery of degraded areas. |

GOOD PRACTICE

## 3.3 Consult external and internal stakeholders

**Indicator:**
**CONSULTATIONS WITH STAKEHOLDERS**

It aims to confirm whether the mine closure communication plan considers the stakeholders consultation process, allowing for an open dialogue between the parties, identifying the different points of view, interests and expectations of the community and other groups and individuals engaged, so that the information collected is considered in the mine closure objectives.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The mine closure communication plan does not consider the process of direct stakeholders consultation. |
| B | A process has been partially implemented and/or an action plan has been developed so that the mine closure communication plan considers the process of direct stakeholders consultation. |
| A | The mine closure communication plan considers the process of direct stakeholders consultation. |
| AA | The process of direct consultation with the community and project stakeholders begins in the early stages of the mine life cycle and/or is ongoing throughout the mine life cycle. |
| AAA | There is a structured process in place to ensure that consultations are documented, archived and analyzed by a specialized team, aiming at the company's social learning to promote a positive legacy in its current and future mining ventures. |

GOOD PRACTICE

## 3.4 Implement a mechanism for receiving and recording complaints and managing conflicts

**Indicator:**
**CONFLICT MANAGEMENT**

It aims to confirm whether a mechanism is established for receiving and recording complaints from the community and stakeholders regarding specific issues of mine closure and recovery of degraded areas, allowing for better resolution of conflicts throughout the mine's life cycle.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | A mechanism for receiving and recording complaints from the community and stakeholders regarding specific issues of mine closure and recovery of degraded areas is not established. |
| B | A process has been partially implemented and/or an action plan has been developed to establish a mechanism for receiving and recording community and stakeholders complaints regarding specific issues of mine closure and reclamation of degraded areas. |
| A | A mechanism for receiving and recording community and stakeholders complaints regarding specific issues of mine closure and reclamation of degraded areas has been established. |
| AA | A methodology has been implemented and tested for resolving and mitigating mine closure conflicts throughout the life of the mine. |
| AAA | There is a structured process to prevent conflicts associated with mine closure, through the establishment of integration and negotiation measures with the community. |

GOOD PRACTICE

## 3.5 Engage stakeholders in post-closure monitoring

**Indicator:**
**ENGAGEMENT OF STAKEHOLDERS IN POST-CLOSURE**

It aims to confirm whether, after the closure of the mine and during the period of post-closure monitoring and maintenance, the practice of stakeholders participation in socio-environmental programs and mitigation measures is established to promote greater engagement and transparency in the implementation of the planned future use scenario.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | After mine closure and during the post-closure monitoring and maintenance period, the practice of stakeholders participation in socio-environmental programs and mitigation measures to promote greater engagement and transparency is not established. |
| B | A process has been partially implemented and/or an action plan has been developed to establish the practice of stakeholders engagement in environmental and social programs and mitigation measures to promote greater engagement and transparency after mine closure and during the post-closure monitoring and maintenance period. |
| A | After mine closure and during the post-closure monitoring and maintenance period, the practice of stakeholders engagement in environmental and social programs and mitigation measures has been established to promote greater engagement and transparency. |
| AA | A dedicated team has been established to engage and manage stakeholders engagement in environmental and social programs and mitigation measures during the post-closure monitoring and maintenance period. |
| AAA | An external monitoring committee was established with the participation of other interested groups, local government, representatives of professional councils, and universities, with the responsibility of producing reports and communications with relevant information about the actions implemented. |

## 5.4 Guideline 4

# The results of the planning should be recorded in closure plans and other related documents

According to Sánchez et al. (2013), the closure plan is a consolidating document that presents the company's strategy regarding the issue and details the programs to be implemented with a view to meeting the closure objectives. The document is, therefore, a means, not the end. Regarding the recording of information about the closure, Sánchez et al. (2013) state that the practice "allows the exploration and reuse of experience acquired in past projects to avoid repeating errors, improve the circulation and communication of information within the company, and enhance individual and organizational learning processes." Companies must therefore record the results of planning in closure plans and other documents.

Guideline 4 of the Guide for Mine Closure Planning consists of five good practices, namely:

**4.1** Record the results of the planning in a Closure Plan;

**4.2** Prepare decommissioning and environmental recovery programs;

**4.3** Prepare contingency plan;

**4.4** Prepare social programs;

**4.5** Assess and manage the risks of closure measures and programs.

For each good practice, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

GOOD PRACTICE

## 4.1 Record the results of the planning in a Closure Plan

**Indicator:**
**PREPARATION OF CLOSURE PLAN AND MONITORING**

It aims to confirm whether the practice of preparing a mine closure plan has been established and to designate an approval and monitoring committee, in order to engage representatives from the company's departments, make decisions and disseminate the closure plan internally.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The practice of preparing a mine closure plan in compliance with applicable resolutions, standards and regulatory decisions has been established. |
| B | A process has been partially implemented and/or an action plan has been drawn up to ensure that the mine closure plan is widely disseminated within the company and is known to the operational departments. |
| A | A process has been established to ensure that the mine closure plan is widely disseminated within the company and is known to the operational departments. |
| AA | A committee has been established to approve, monitor and update the closure plan, involving representatives from all of the company's operational departments. |
| AAA | Senior management participates in the committee that approves, monitors and updates the closure plan to ensure that the company's objectives are aligned with the mine's closure and future use objectives, deliberating on strategic decisions involving mine closure planning. |

GOOD PRACTICE

## 4.2 Prepare decommissioning and environmental recovery programs

**Indicator:**
**ENVIRONMENTAL DECOMMISSIONING AND RECOVERY PROGRAMS**

It aims to confirm whether decommissioning programs for facilities and recovery of degraded areas are considered in mine closure plans, in order to guarantee the correct decommissioning of structures, ensure physical stability and restore part of the ecosystem services lost with the implementation of the mine.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | Programs for deactivating facilities and recovering degraded areas are considered in mine closure plans, in compliance with applicable resolutions, standards and normative deliberations. |
| B | A process has been partially implemented and/or an action plan has been drawn up to ensure that decommissioning and recovery programs are planned to begin prior to mine closure, contributing to reducing environmental liabilities and fostering stakeholders relationships. |
| A | Decommissioning and recovery programs are planned to begin prior to mine closure, contributing to reducing environmental liabilities and fostering stakeholders relationships. |
| AA | There are results indicators established to measure compliance with mine decommissioning and recovery programs. The indicators are monitored by a specialized team. |
| AAA | The results indicators are shared periodically in senior management meetings and in operational department meetings to ensure internal engagement and ensure effective compliance with mine decommissioning and recovery programs. |

GOOD PRACTICE

## 4.3 Prepare contingency plan

**Indicator:**
**CONTINGENCY PLAN**

It aims to confirm whether a contingency plan is drawn up, establishing measures to be taken in critical scenarios of accidents, system failures and production shutdowns, aiming to mitigate impacts and minimize potential obstacles to meeting closure objectives.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | A contingency plan is established, considering critical scenarios of accidents, system failures and production shutdown, in compliance with applicable laws, resolutions, standards and normative deliberations. |
| B | Preventive maintenance and inspection practices are efficiently established, systematically, to ensure that the area remains in a safe and stable condition. |
| A | Mitigation practices of inspections and audits are efficiently established to attest to the condition of the facilities and geotechnical structures and propose the necessary measures to ensure their stability and integrity during the shutdown period. |
| AA | The mine closure plan considers critical scenarios and production shutdowns, presenting the main specific contingency measures to be implemented in the different scenarios. |
| AAA | The practice of identifying direct impacts that may prevent the fulfillment of the objectives of closure and future use of the mine is established. Specific mitigating actions are established to ensure the fulfillment of the objectives and/or the review of the defined objectives. |

GOOD PRACTICE

## 4.4 Prepare social programs

**Indicator:**
**SOCIAL PROGRAMS**

It aims to confirm whether social programs are considered in the mine closure plan, taking into account the degree of socioeconomic dependence of the community, aiming at the implementation of long-term sustainable development initiatives during the mine operation and closure phases.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The practice of preparing a mine closure plan in compliance with applicable resolutions, standards and regulatory decisions has been established. |
| B | A process has been partially implemented and/or an action plan has been drawn up to consider specific social programs to mitigate the impacts of closure in the mine closure plan, detailing the actions to be implemented in the operation and closure phases. |
| A | Specific social programs to mitigate the impacts of closure are considered in the mine closure plan, detailing the actions to be implemented in the operation and closure phases. |
| AA | There are results indicators established to measure compliance with social programs. The indicators are monitored by a specialized team. |
| AAA | Social programs are structured based on community listening processes and their results are reported in the stakeholders communication plan. |

GOOD PRACTICE

## 4.5 Assess and manage the risks of closure measures and programs

**Indicator:**
**MINE CLOSURE RISKS**

It aims to confirm whether specific closure risks are considered in the mine closure plan, including risk assessment and management, in order to minimize threats that may impact closure planning and established closure objectives.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The practice of preparing a mine closure plan with specific closure risks is established, in compliance with applicable resolutions, standards and regulatory deliberations. |
| B | A multidisciplinary team has been designated to systematically monitor risks related to mine closure. |
| A | Specific closure risks are widely publicized within the company through the closure plan, reinforcing the preventive strategy to ensure compliance with mine closure objectives. |
| AA | Risk assessments comply with global risk standards and regulations and include the definition of specific risk management or treatment measures. |
| AAA | An external audit was carried out and determined that all requirements of level AA were met. |

## 5.5 Guideline 5

# The company must estimate all costs associated with the closure of a mine

According to Sánchez et al. (2013), there are several obstacles to the process of obtaining a highly accurate estimate of closure costs, given that most of the expenses related to closure are only incurred after the end of the mine's useful life, over a long period of time. Nevertheless, Sánchez et al. (2013) emphasize that in addition to the practice of establishing a financial provision as an accounting tool, there is an international practice of establishing a financial guarantee in favor of third parties that "must be sufficient to cover all expenses related to closure programs, including those necessary for the post-closure phase". In any case, companies must establish the practice of estimating all costs of implementing mine closure programs.

Guideline 5 of the Guide for Mine Closure Planning consists of three good practices, namely:

**5.1** Estimate the costs of programs related to closure;

**5.2** Periodically update the cost estimate of programs related to closure;

**5.3** Make financial provision for closure

For each good practice, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

GOOD PRACTICE

## 5.1 Estimate the costs of programs related to closure

**Indicator:**
**CLOSURE COST ESTIMATION METHOD**

Visa confirmar se são estimados todos os custos de fechamento dos programas considerados no plano de fechamento de mina, a serem implementados nas fases de operação, fechamento e pós-fechamento, utilizando métodos confiáveis de estimativa de custo.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The closure costs of the programs considered in the mine closure plan are estimated in order to comply with the applicable resolutions, standards and normative deliberations. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of verifying the accuracy of cost estimates at the end of the mine's useful life, comparing the estimated budget with the budget as executed. |
| A | The practice of verifying the accuracy of cost estimates at the end of the mine's useful life has been established, comparing the estimated budget with the budget as executed and implementing measures to continually improve the accuracy of the cost estimation methods adopted. |
| AA | Reliable cost estimation methods are used, based on methodologies from reference engineering cost institutions. |
| AAA | An external audit was carried out and determined that all requirements of level AA were met. |

GOOD PRACTICE

## 5.2 Periodically update the cost estimate of programs related to closure

**Indicator:**
**DETAILING AND ACCURACY OF CLOSURE COSTS**

t aims to confirm that the closure costs considered in the closure plan are updated and reviewed periodically and detailed as the mine life approaches the end.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The closure costs considered in the closure plan are updated and reviewed to ensure minimum compliance with applicable resolutions, standards and regulatory decisions. |
| B | A process has been partially implemented and/or an action plan has been drawn up so that the closure costs considered in the closure plan are updated periodically and whenever there are substantial changes in the mine context. |
| A | The closure costs considered in the closure plan are updated periodically, considering a complete review of the quantities and costs of the closure actions, whenever there are substantial changes in the mine context. |
| AA | There is a structured process to ensure that closure costs are detailed and refined progressively throughout the mine life cycle, aiming for a smaller margin of error. |
| AAA | The estimated closure cost documented in the closure plan is highly accurate and is used as a budget reference for the execution of scheduled closure actions. |

GOOD PRACTICE

## 5.3 Make financial provision for closure

**Indicator:**
**FINANCIAL PROVISION FOR CLOSURE**

It aims to confirm whether the practice of constituting a financial provision for closure, audited by an independent company, is established, aiming to cover all foreseeable expenses related to closure and subsidize the fulfillment of the closure objectives established in the closure plan.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The practice of establishing a financial provision for closure has not been established. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of establishing a financial provision for closure, based on methodologies from reference institutions and good market practices. |
| A | The practice of establishing a financial provision for closure is established, based on methodologies from reference institutions and good market practices. |
| AA | The financial provision is updated every 1 to 3 years. |
| AAA | The financial provision for closure is audited periodically by an independent company. |

## 5.6 Guideline 6

# The company must follow local socioeconomic development

According to Sánchez et al. (2013), a mining venture has great potential to promote economic growth in surrounding communities. However, to ensure a positive legacy, in addition to promoting economic growth, the mining company must foster the economic sustainability of the community, so that it continues to develop after the mining activity ends. Regarding the role of the company in the community, Sánchez et al. (2013) highlight the importance of implementing initiatives "that promote the conversion of a local asset – the non-renewable natural resource – into another local asset of a different nature, that is, human and social capital." Companies must, therefore, align strategic objectives with community development plans, from the initial stages of the mine project to the closure stage.

Guideline 6 of the Guide for Mine Closure Planning consists of four good practices, namely:

**6.1** Analyze the local and regional socioeconomic context;

**6.2** Monitor development and quality of life indicators;

**6.3** Develop programs that promote the diversification of the local production base;

**6.4** Implement programs aimed at community development.

For each good practice, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

GOOD PRACTICE

## 6.1 Analyze the local and regional socioeconomic context

**Indicator:**
**SOCIOECONOMIC CONTEXT**

It aims to confirm whether a survey or periodic update of the analysis of socioeconomic data is carried out during mine closure planning, through the diagnosis of information on demographic aspects, economic dynamics, infrastructure, public finances and sociopolitical organization, aiming to support the mine closure phase and update the alternatives for closure and future use according to the community context.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | There is no periodic review or update of socioeconomic data analysis during mine closure planning. |
| B | A process has been partially implemented and/or an action plan has been developed to conduct a periodic review or update of socioeconomic data analysis during mine closure planning. |
| A | A periodic review or update of socioeconomic data analysis is conducted during mine closure planning. |
| AA | A process is in place to ensure that closure and future use alternatives are updated in line with the results and changes obtained through the analysis of socioeconomic data from the mine. |
| AAA | The periodic review or update of socioeconomic data analysis during mine closure planning considers the process of consultation and co-construction with the community. |

GOOD PRACTICE

## 6.2 Monitor development and quality of life indicators

**Indicator:**
**SOCIOECONOMIC DEVELOPMENT INDICATORS**

Visa confirmar se é estabelecida a prática de definir e acompanhar Indicatores sociais e econômicos de desenvolvimento da comunidade, para subsidiar o planejamento do fechamento da mina, monitorando mudanças e resultados dos programas de fechamento e permitindo análises comparativas e de tendências da situação social e econômica local.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The practice of defining and monitoring social and economic indicators of community development to support mine closure planning is not established. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of defining and monitoring social and economic indicators of community development to support mine closure planning. |
| A | The practice of defining and monitoring social and economic indicators of community development to support mine closure planning is established. |
| AA | A specialized team was established to conduct comparative analyses and mapping of trends in the local social and economic situation of the mine on a periodic basis. |
| AAA | There is a structured process for reporting indicators at leadership meetings and evaluating the results of programs to mitigate the socioeconomic impacts of mine closure. |

GOOD PRACTICE

## 6.3 Develop programs that promote the diversification of the local production base

**Indicator:**
**PROGRAMS FOR DIVERSIFICATION OF THE LOCAL PRODUCTION BASE**

It aims to confirm whether programs for diversifying the local production base are considered during mine closure planning, with a view to promoting economic and social development and new employment alternatives.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | Local production base diversification programs are not considered during mine closure planning |
| B | A process has been partially implemented and/or an action plan has been drawn up to consider local production base diversification programs during mine closure planning. |
| A | Local production base diversification programs are considered during mine closure planning, prioritizing regions with a high degree of socioeconomic dependence on mining. |
| AA | There are results indicators established to measure compliance with local production base diversification programs. The indicators are monitored by a specialized team. |
| AAA | Local production base diversification programs are structured based on community listening processes and their results are reported in the stakeholders communication plan. |

GOOD PRACTICE

## 6.4 Implement programs aimed at community development

**Indicator:**
**COMMUNITY DEVELOPMENT PROGRAMS**

It aims to confirm whether community development programs are considered during mine closure planning, fostering the community's technical skills and capabilities, stimulating the beneficiaries' self-confidence so that the community is sustainable in the long term, considering the post-mining scenario.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | Community development programs are not considered during mine closure planning. |
| B | A process has been partially implemented and/or an action plan has been developed to consider community development programs during mine closure planning, prioritizing vulnerable and disadvantaged groups. |
| A | Community development programs are considered during mine closure planning, prioritizing vulnerable and disadvantaged groups. |
| AA | Outcome indicators are established to measure the achievement of community development programs. The indicators are monitored by a specialized team. |
| AAA | Community development programs are structured based on community listening processes and report their results in the stakeholders communication plan. |

## 5.7 Guideline 7

**The closure plan must be updated whenever there are substantial changes in the mine project or surrounding conditions**

According to Sánchez et al. (2013), multiple internal and external changes are observed throughout the operation of a mine, such as: changes in the mining plan, identification of new reserves, changes in management, fluctuations in the price of ore, regulatory and legislative changes, and changes in community expectations. Sánchez et al. (2013) states that "the review and updating of the closure plan must, naturally, reflect the main changes, but it is not enough to update the plan, it is necessary to keep an active system that alerts to the need for updating or review." Companies must, therefore, establish mechanisms to monitor changes that impact the mine closure strategy and record them in the closure plan.

Guideline 7 of the Guide for Mine Closure Planning consists of seven good practices, namely:

**7.1** Update the assessment of environmental and social impacts;

**7.2** Monitor regulatory changes that may influence the closure objectives;

**7.3** Keep stakeholders mapping up to date;

**7.4** Consider closure objectives in investments in research and technological development and in innovation management;

**7.5** Consider closure in the information management system;

**7.6** Provide systematic treatment to uncertainties inherent in mine closure planning;

**7.7** Update the Closure Plan periodically or when necessary.

For each good practice, performance indicators were established, which should be assessed for compliance, according to the existing classification levels.

GOOD PRACTICE

## 7.1 Update the assessment of environmental and social impacts

**Indicator:**
**UPDATE OF SOCIAL AND ENVIRONMENTAL IMPACTS**

It aims to confirm whether the assessment of the mine's environmental and social impacts is periodically updated during closure planning, as a result of changes that occur during the operation phase, in order to document changes in the mine closure plan.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The assessment of the mine's environmental and social impacts is not periodically updated during closure planning, considering changes that occur during the operating phase. |
| B | A process has been partially implemented and/or an action plan has been drawn up to periodically update the assessment of the mine's environmental and social impacts during closure planning, taking into account changes that have occurred during the operational phase. |
| A | The assessment of the mine's environmental and social impacts is periodically updated during closure planning, taking into account changes that have occurred during the operational phase. |
| AA | An environmental management system has been implemented that complies with global environmental standards and norms, with tools that enhance the quality of updates in the assessment of environmental and social impacts. |
| AAA | There is a structured process to ensure that environmental aspects and impacts and environmental programs are updated according to results and changes identified in the environmental impact assessment and reflected in the mine closure plan. |

GOOD PRACTICE

## 7.2 Monitor regulatory changes that may influence the closure objectives

**Indicator:**
**MONITORING REGULATORY CHANGES**

It aims to confirm whether the practice of monitoring the regulatory changes on issues related to the protection of environmental and cultural resources, land use, energy and climate change, which may impact mine closure, is established.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | There is no established practice of monitoring regulatory changes that may impact mine closure. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of monitoring regulatory changes that may impact mine closure. |
| A | The practice of monitoring regulatory changes that may impact mine closure has been established. |
| AA | A specialized team has been established to conduct comparative analyses and monitor the regulatory situation of the mine. |
| AAA | A systematic regulatory compliance process has been established, aiming to ensure efficiency in fulfilling all regulatory requirements and obligations of the mine and to guarantee the achievement of closure objectives. |

GOOD PRACTICE

## 7.3 Keep stakeholders mapping up to date

**Indicator:**
**UPDATING STAKEHOLDERS MAPPING**

It aims to confirm whether the practice of updating stakeholders mapping has been established, whenever there is any change or important alteration in the project, social conditions, programs and social projects implemented, in order to document the changes in the mine closure plan.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | There is no established practice of updating stakeholders mapping to document changes to the mine closure plan. |
| B | A process has been partially implemented and/or an action plan has been developed to establish the practice of updating stakeholders mapping to document changes to the mine closure plan. |
| A | The practice of updating stakeholders mapping to document changes to the mine closure plan is established. |
| AA | A structured process is in place to ensure that the stakeholders communication plan is updated as changes are identified in the mapping. |
| AAA | A dedicated team has been established to monitor and manage relationships with specific groups or individuals who may be directly impacted by mine closure. |

GOOD PRACTICE

## 7.4 Considering closure objectives in investments in research and technology development and innovation management

**Indicator:**
**TECHNOLOGICAL DEVELOPMENT AND INNOVATION MANAGEMENT**

It aims to confirm whether closure objectives are considered in initiatives and investments in research and technological development and innovation management, in order to facilitate the achievement of mine closure objectives.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | Closure objectives are not considered in initiatives and investments in research and technological development and innovation management. |
| B | A process has been partially implemented and/or an action plan has been drawn up so that closure objectives are considered in initiatives and investments in research and technological development and innovation management. |
| A | Closure objectives are considered in initiatives and investments in research and technological development and innovation management. |
| AA | A multidisciplinary team has been appointed to enhance initiatives and investments in research and technological development and innovation management within the scope of mine closure. |
| AAA | Initiatives and investments in research and technological development and innovation management in the context of mine closure are highly prioritized, reinforcing the commitment of senior leadership to integrate mine closure considerations into the company's strategic objectives. |

GOOD PRACTICE

## 7.5 Consider closure in the information management system

**Indicator:**
**INFORMATION MANAGEMENT SYSTEM**

It aims to confirm whether an information management system is established that includes studies, information and activities developed during the mine's operational phase, in order to systematically support the management of information that can be used to update the existing mine closure plan.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | An information management system has not been established that includes studies, information and activities developed during the mine operation phase that could support the updating of the existing mine closure plan. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish an information management system that includes studies, information and activities developed during the mine's operational phase. |
| A | An information management system has been established that includes studies, information and activities developed during the mine's operational phase that can support the updating of the existing mine closure plan. |
| AA | The information management system is structured to allow the filtering of information of interest in the context of mine closure, enabling the creation of a specific repository for the topic. |
| AAA | The information management system is widely used by the mine closure technical team, covering all the information necessary to update the mine closure plan. |

GOOD PRACTICE

## 7.6 Provide systematic treatment of the uncertainties inherent in mine closure planning

**Indicator:**
**UNCERTAINTY MANAGEMENT**

It aims to confirm whether an approach is established to deal with uncertainties inherent in mine closure planning, with a view to proactively determining actions to reduce the mapped uncertainties.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | An approach to identify uncertainties inherent in mine closure planning has not been established. |
| B | A process has been partially implemented and/or an action plan has been developed to establish an approach to identify uncertainties inherent in mine closure planning. |
| A | An approach to identify uncertainties inherent in mine closure planning has been established. |
| AA | A multidisciplinary team has been designated to manage uncertainties inherent in mine closure planning. |
| AAA | A structured approach specifically developed to consider uncertainties in closure planning, map their causes and define treatment strategies has been implemented. |

GOOD PRACTICE

## 7.7 Update the Closure Plan periodically or when necessary

**Indicator:**
**UPDATE OF THE MINE CLOSURE PLAN**

It aims to confirm whether the mine closure plan is updated and detailed throughout the mine's useful life, considering relevant changes that occur during the operating phase, aiming at the continuous construction of a detailed plan with refined information and definitions regarding mine closure planning.

The classification levels and assessment criteria for the indicator are listed in the table below.

| Level | Criteria |
|---|---|
| C | The mine closure plan is updated to comply with applicable resolutions, standards and normative deliberations. |
| B | A process has been partially implemented and/or an action plan has been drawn up to establish the practice of progressively updating and detailing the mine closure plan at the conceptual, basic and detailed levels. |
| A | The practice of progressively updating and detailing the mine closure plan at the conceptual, basic and detailed levels has been established, not limited to the Yesple periodic updating required in the applicable resolutions, standards and normative deliberations. |
| AA | A specialized team has been appointed to monitor and coordinate the actions to update or detail the closure plan. The mine closure plan is widely disseminated within the company and is known to the operational departments. |
| AAA | There is an established process to ensure that the mine closure plan is in line with the community and is the subject of consultation for strategic decision-making regarding mine planning. An external audit is contracted to evaluate successive versions of the plan. |

# ANNEX 1 - FREQUENTLY ASKED QUESTIONS

## WHAT IS THE MINE CLOSURE PLAN?

Document that consolidates the set of procedures for the decommissioning of a mining area after the end of mining activities, involving the demobilization of temporary structures to support mining and processing operations, the physical-chemical stabilization of permanent structures and their monitoring, as well as the eligibility of the area for new mineral developments or other future uses.

## WHAT ARE CLOSURE OBJECTIVES?

Future condition that is intended to be achieved after the closure of a mine.

## WHAT IS PROGRESSIVE RECOVERY OF DEGRADED AREAS?

Activities to restore ecosystems to a healthy and functional state, where biodiversity, nutrient cycles, water and other natural resources are restored. This process may include replanting native species, building structures to contain erosion, managing water resources, among other actions. When done progressively, throughout the mine's useful life and prior to the deactivation phase, it promotes the reduction of future closure costs and the demonstration of effective results in reducing environmental impacts.

## WHAT IS POST-CLOSURE?

Period after the complete implementation of deactivation measures, in which actions such as monitoring, maintenance and social programs are carried out, aiming to achieve the closure objectives.

# ANNEX 2 – GLOSSARY

- **Strategic planning**
  Process of creating, structuring and executing a strategy to achieve a set of organizational objectives. It includes everything from defining goals and indicators to decision-making and effective actions to achieve the proposed goals with a focus on business success.

- **Acid drainage**
  A severe problem arising from mining activities that causes degradation of the quality of surface and groundwater, soil and sediments. Acid drainage is generated especially by the oxidation of sulfide minerals and has a high capacity to leach elements present in the ore and in the rocks surrounding the mined area.

- **Community**
  A group or set of social groups that occupy a geographically delimited area, whose members maintain reciprocal relationships, share values and the same cultural and historical heritage, with primary social contacts predominating.

- **Structures**
  Components of a mine that were implemented for its operation, such as pits, underground mines, waste rock piles, tailings dams, leaching piles and others. Also called assets.

- **Financial guarantee**
  Instrument used in various commercial areas that guarantees compliance with a contractual obligation. For mine closure, it allows public entities to execute the programs provided for in the Closure Plan in the event of default by the company. Different financial instruments may be accepted as collateral, such as surety bonds, bank guarantees or funds blocked in a reserve account, depending on the regulations of each jurisdiction.

- **Accounting provision**
  These are financial amounts recognized as a cost in a given fiscal year based on the expectation or certainty of a future obligation. The provision does not imply the immediate availability of the financial resource, only its accounting entry, and should not be confused with a guarantee, which is enforceable by third parties. Capital market regulations in some countries require that environmental remediation costs be provisioned and reported to the market.

- **Social license**
  A concept that denotes the acceptance of a company and its activities in a community, resulting in a lower risk of conflict and the resolution of differences through negotiation. It does not refer to any government authorization and has no relation to the environmental license. The license or social acceptance is always precarious, in the sense that it can be "withdrawn" if there is no longer any trust. Nor does it imply unanimous acceptance by different groups in the host community.

- **Stakeholders**
  Stakeholders include all individuals or groups that may be directly or indirectly affected by a project or activity, positively or negatively, in addition to those who have some interest or influence over its results. They include local communities, representatives of local and regional government, civil society organizations, political and religious leaders, class representatives, vulnerable social groups, among others.

- **Conflict management**
  Management that deals directly with the administration and management of situations in which there is a divergence or incompatibility of interests between individuals or communities in relation to a project or undertaking. Conflict management

uses different techniques, practices and processes that may engage consultation, mediation and negotiation in order to reach an agreement.

- **Stakeholders engagement**
  A broad and inclusive process that takes place between the company and individuals or groups potentially affected positively or negatively by the project, encompassing a set of participatory activities, methods and approaches, which extends throughout the life of a project.

- **Information management system**
  All the components that collect, manipulate and disseminate data or information in an organization. It typically includes hardware, software, people, communication systems such as telephone lines, and the data itself. Activities engaged include inputting data, processing the data into information, storing both, and producing knowledge, such as management reports.

- **Audit**
  An audit is a formal, systematic and documented examination of the conformity of a given method. Audits assess and report the degree of conformity to stipulated criteria, based on the systematic and documented collection of relevant evidence. Audits entail some degree of judgment, but are not designed to determine the root cause of deficiencies, or to evaluate the effectiveness of the management system.

# ANNEX 3 – SELF-ASSESSMENT FORM

**Cabeçalho:**

| | | | |
|---|---|---|---|
| Mine Identification | | Company Name | |
| Evaluator | | Evaluation Date | |

**Supporting Documents and Evidence:**

| Document Name | Responsible Department | Storage Location |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

**Interviewees:**

| Interviewee Name | Department | Position |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

## Indicator: **STRATEGIC PLANNING**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| STRATEGIC PLANNING | C | Is there a short, medium and long-term corporate strategy that includes mine closure targets and indicators in the company's strategic planning? | | | | |
| | B | Has a process been partially implemented and/or an action plan been drawn up to establish a corporate strategy, aiming to include mine closure targets and indicators in the company's strategic planning? | | | | |
| | A | Is there a short-, medium- and long-term corporate strategy that includes mine closure targets and indicators? | | | | |
| | AA | Has a formal leader and technical team been designated to manage the closure actions and ensure compliance with the established targets and indicators? | | | | |
| | AAA | Have awareness-raising programs been implemented for management, associated with initiatives to train people to work on issues related to mine closure, to disseminate the culture of closure planning within the company? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: CLOSURE OBJECTIVES IN THE MINE FEASIBILITY STUDY

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CLOSURE OBJECTIVES IN THE MINE FEASIBILITY STUDY | C | Do the project alternatives analysis and mine feasibility study meet the requirements of the mining code, regulatory standards and environmental legislation? | | | | |
| | B | Has a process been partially implemented and/or an action plan been developed to define general and specific closure objectives and consider them in the feasibility study and analysis of alternatives for a new mine project? | | | | |
| | A | Are general closure objectives defined and considered in the feasibility study and analysis of alternatives for a new mine project? | | | | |
| | AA | During the feasibility study and analysis of alternatives for a new mine project, are the general closure objectives broken down into specific objectives, detailing the closure actions required for the context of the project? | | | | |
| | AAA | Are the general and specific closure objectives considered critical elements of analysis during the feasibility study of the mine project alternatives and are they aligned with the objectives of the project itself? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: STUDY OF ALTERNATIVES FOR FUTURE USE IN A MINE PROJECT

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| STUDY OF ALTERNATIVES FOR FUTURE USE IN A MINE PROJECT | C | Do the project alternatives analysis and mine feasibility study meet the requirements of the mining code, regulatory standards and environmental legislation? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to consider studies of alternative future uses during the analysis of alternatives for a new mine project? | | | | |
| | A | During the analysis of alternative future uses for a new mine project, are studies of alternative future uses considered, in line with municipal master plans and urban legislation? | | | | |
| | AA | During the analysis of alternative future uses for a new mine project, are studies of alternative future uses considered, based on basic studies of the aptitudes, potentialities and restrictions of the territory and mine structures? | | | | |
| | AAA | During the analysis alternatives for a new mine project, are studies of alternatives for future use considered, considering consultation processes and joint construction with the community? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: CLOSURE OBJECTIVES IN THE MINE PROJECT

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CLOSURE OBJECTIVES IN THE MINE PROJECT | C | Does the mine implementation project meet the requirements of the mining code, regulatory standards and environmental legislation? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to consider closure objectives in strategic decisions for the design of a new mine? | | | | |
| | A | During the design of a new mine, are closure objectives considered in the strategic decisions of the project, through the definition of premises and closure criteria to be met? | | | | |
| | AA | Are project alternatives with low potential for meeting the objectives, premises and closure criteria rejected or revised? | | | | |
| | AAA | Is there a rigorous process to allow successive stages of decisions on project investment, with mine closure being a fundamental decision factor for choosing the most acceptable alternative, in order to ensure compliance with closure objectives and predictability of future costs of decommissioning the project? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: SOCIO-ENVIRONMENTAL IMPACTS OF THE CLOSURE IN THE MINE PROJECT

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| SOCIO-ENVIRONMENTAL IMPACTS OF CLOSURE IN THE MINE PROJECT | C | Does the environmental impact study of the project comply with applicable federal resolutions, laws and decrees? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to assess the specific socio-environmental impacts arising from the closure? | | | | |
| | A | During the preparation of the environmental impact study of the project, are the specific socio-environmental impacts arising from the closure assessed? Are specific programs defined to be undertaken during the operation phase that aim to minimize the impacts arising from the closure? | | | | |
| | AA | Based on the environmental impact study, are socio-environmental monitoring and closure parameters extracted and monitored periodically to verify compliance with the defined programs? | | | | |
| | AAA | Is there a structured process for programs to be broken down into a detailed schedule and for actions to be implemented throughout the mine's life cycle, with the community's participatory engagement? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: ACID DRAINAGE PREVENTION PLAN IN THE MINE PROJECT

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| ACID DRAINAGE PREVENTION PLAN IN MINE PROJECT | C | During the feasibility study of a new mine, are environmental programs developed in compliance with environmental legislation? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been developed to develop specific acid drainage prediction programs during the feasibility study of a new mine? | | | | |
| | A | During the feasibility study of a new mine, are specific programs developed to predict acid drainage potentially generated by the mine? | | | | |
| | AA | Are rigorous active and/or passive acid drainage treatment techniques established in specific acid drainage prediction programs, ensuring the mitigation and minimization of environmental impacts? | | | | |
| | AAA | Are specific acid drainage forecasting programs establishing prevention measures, using methods to minimize their sources or maximize natural neutralization reagents? Does the company have a structured research process that aims to develop and implement cleaner production methods, minimizing the consumption of materials, energy and the generation of effluents? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: CLOSURE SCENARIOS IN THE MINE PROJECT

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CLOSURE SCENARIOS IN THE MINE PROJECT | B | Has a process been partially implemented and/or an action plan been drawn up to consider different closure scenarios and specific actions defined for each scenario in the mine project and/or mine closure plan? | | | | |
| | A | Do the mine project and/or mine closure plan consider different closure scenarios: scheduled closure, premature closure, temporary suspension or shutdown? | | | | |
| | AA | Do the mine project and/or mine closure plan define and outline specific actions for each closure scenario? | | | | |
| | AAA | Are mine closure scenarios discussed and updated in multidisciplinary technical forums periodically and are they part of the regular discussion agenda with the community? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: TECHNICAL DOCUMENTATION OF THE MINE

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| TECHNICAL DOCUMENTATION OF THE MINE | B | Has a process been partially implemented and/or an action plan been drawn up to establish the practice of archiving original design documentation or as-built documents of operating mine structures, as well as technical data? | | | | |
| | A | Is the practice of archiving original design documentation or as-built documents of operating mine structures, as well as technical data, established? | | | | |
| | AA | Is there a structured process in place to ensure the systematic archiving of original design documentation or as-built documents of operating mine structures, as well as technical data, and the application of information retrieval methods, such as interviews with employees, requests for documents from design companies and consultation with government agencies? | | | | |
| | AAA | Has an external audit been performed and determined that all AA level requirements have been met? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: MINE DOCUMENTARY HISTORY

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| MINE DOCUMENTARY HISTORY | B | Has a process been partially implemented and/ or an action plan been drawn up to establish the practice of systematically compiling the documentary history of an operating mine? | | | | |
| | A | Has the practice of systematically compiling the documentary history of an operating mine been established? | | | | |
| | AA | Has a multidisciplinary team been designated to coordinate, collect and systematically record relevant information on past and present activities in the mine area, as well as changes in land use that have occurred in the surrounding area and socioeconomic changes in the communities? | | | | |
| | AAA | Has an external audit been performed and determined that all AA level requirements have been met? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: HISTORICAL HERITAGE OF THE MINE

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| HISTORICAL HERITAGE OF THE MINE | B | Has a process been partially implemented and/or has an action plan been drawn up to conduct and consider studies on the mine's historical mining and industrial heritage during the planning for the closure of an operating mine? | | | | |
| | A | During the planning for the closure of an operating mine, are studies on the mine's historical mining and industrial heritage conducted and considered? | | | | |
| | AA | When preparing studies on the mine's historical mining and industrial heritage, does the company not limit itself to the concession or property area, assessing neighboring elements of interest that may be connected to the mine and that may be part of a plan for the conservation, valorization and use of the mining and industrial historical heritage? | | | | |
| | AAA | During studies on the mine's historical mining and industrial heritage, are community consultation and participation processes considered, identifying the interests of different groups that could benefit from potential heritage enhancement initiatives? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: ENVIRONMENTAL DIAGNOSIS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| ENVIRONMENTAL DIAGNOSIS | B | Has a process been partially implemented and/or an action plan been drawn up to conduct an accurate socio-environmental diagnosis to produce data and information during mine closure planning? | | | | |
| | A | During the planning for the closure of an operating mine, is an accurate socio-environmental diagnosis conducted to produce data and information for closure? | | | | |
| | AA | Is there a systemic process for updating and periodically reviewing the socio-environmental diagnosis? | | | | |
| | AAA | Is the socio-environmental diagnosis periodically monitored by a specialized team and used as a consultation tool during the planning process for closure? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **STRUCTURAL RISKS**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| STRUCTURAL RISKS | C | Does the company comply with applicable safety standards by managing risks inherent to mining structures and prepare a mine closure plan in compliance with applicable resolutions, standards and regulatory decisions, considering the assessment of risks arising from the closure of the structure and ways to mitigate any damage resulting from the activity? | | | | |
| | B | Does the company carry out a systematic assessment of structural risks related to environmental, economic, image and safety issues that may impact future mine closure scenarios? | | | | |
| | A | Are the risks of structures related to mine closure widely disclosed within the company, reinforcing the preventive strategy to ensure compliance with mine closure objectives? | | | | |
| | AA | Do risk assessments comply with global risk standards and regulations and include the definition of specific risk management or treatment measures? Has a multidisciplinary team been designated to systematically monitor risks related to mine closure? | | | | |
| | AAA | Has an external audit been performed and determined that all AA level requirements have been met? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: CLOSURE AND FUTURE USE OBJECTIVES ALIGNED WITH MINE PRODUCTION PLANNING

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CLOSURE AND FUTURE USE OBJECTIVES ALIGNED WITH MINE PRODUCTION PLANNING | B | Has a process been partially implemented and/or an action plan been developed to ensure that closure and future use objectives are considered as assumptions in the decisions and parameters of the mine production plan? | | | | |
| | A | During closure planning for an operating mine, are closure and future use objectives considered as assumptions in the decisions and parameters of the mine production plan? | | | | |
| | AA | Has a multidisciplinary team been designated to facilitate alignments of the mine's strategic planning, considering closure and future use objectives as assumptions in the decisions and parameters of the mine production plan? | | | | |
| | AAA | Has a mine strategic planning committee been implemented to integrate issues and ensure that closure and future use objectives are aligned with the mine's short, medium and long-term strategy? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: PROGRESSIVE RECOVERY OF DEGRADED AREAS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| PROGRESSIVE RECOVERY OF DEGRADED AREAS | C | When planning the closure of an operating mine, is it established to develop a plan for the recovery of degraded areas, in compliance with applicable federal resolutions, laws and decrees? | | | | |
| | B | Is the plan for the recovery of degraded areas implemented systematically through operational procedures and measures aimed at executing the planned activities? | | | | |
| | A | Are the operational procedures and implementation measures accompanied by an accurate program for monitoring and evaluating the results, used as a dissemination tool for external stakeholders? | | | | |
| | AA | Do the actions established in the degraded areas recovery plan aim to meet the established closure and future use objectives?<br>Are the actions managed by a multidisciplinary team and widely disseminated among the operational departments? | | | | |
| | AAA | Not limited to the degraded areas recovery plan, has a process been established for the proactive identification of opportunities for the progressive total or partial closure of structures, prior to the deactivation phase of the project, aiming to reduce future costs of the mine closure phase and minimize the accumulation of environmental liabilities in the mine? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: IDENTIFICATION OF THE STAKEHOLDERS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| IDENTIFICATION OF THE STAKEHOLDERS | B | Has a process been partially implemented and/or an action plan been developed to identify and update internal and external mine stakeholders in detail and comprehensively during mine closure planning? | | | | |
| | A | Are internal and external mine stakeholders identified and updated in detail and comprehensively during mine closure planning? | | | | |
| | AA | Are specific groups or individuals who may be directly impacted by mine closure under different scenarios mapped? | | | | |
| | AAA | Has a dedicated team been established to monitor and manage relationships with specific groups or individuals who may be directly impacted by mine closure under different scenarios? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **CLOSURE COMMUNICATION PLAN**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CLOSURE COMMUNICATION PLAN | B | Has a process been partially implemented and/or an action plan been developed to establish a specific mine closure communications plan with stakeholders? | | | | |
| | A | Is a specific mine closure communications plan in place with stakeholders? | | | | |
| | AA | Is there a life-of-mine communications planning schedule in place, tied to mine closure milestones, which intensifies as the mine's life approaches? | | | | |
| | AAA | Is there a structured process to ensure due access to information, with the establishment of clear indicators of closure results and the dissemination of actions that will be implemented to generate compensation, opportunities and recovery of degraded areas? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: CONSULTATIONS WITH STAKEHOLDERS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CONSULTATIONS WITH STAKEHOLDERS | B | Has a process been partially implemented and/or an action plan been developed so that the mine closure communication plan takes into account the process of direct stakeholder consultation? | | | | |
| | A | Does the mine closure communication plan take into account the process of direct stakeholder consultation? | | | | |
| | AA | Does the process of direct consultation with the community and project stakeholders begin in the early stages of the mine life cycle and/or is it ongoing throughout the mine life cycle? | | | | |
| | AAA | Is there a structured process in place to ensure that consultations are documented, archived and reviewed by a specialized team, aiming at the company's social learning to promote a positive legacy in its current and future mining ventures? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **CONFLICT MANAGEMENT**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CONFLICT MANAGEMENT | B | Has a process been partially implemented and/or an action plan been developed to establish a mechanism for receiving and recording community and stakeholder complaints regarding specific issues of mine closure and reclamation of degraded areas? | | | | |
| | A | Is a mechanism established for receiving and recording community and stakeholder complaints regarding specific issues of mine closure and reclamation of degraded areas? | | | | |
| | AA | Is there a methodology in place and tested for resolving and mitigating mine closure conflicts throughout the life of the mine? | | | | |
| | AAA | Is there a structured process to prevent conflicts associated with mine closure, through the establishment of integration and negotiation measures with the community? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: ENGAGEMENT OF STAKEHOLDERS IN POST-CLOSURE

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| ENGAGEMENT OF STAKEHOLDERS IN POST-CLOSURE | B | Has a process been partially implemented and/or an action plan been developed to establish the practice of stakeholder participation in environmental and social programs and mitigation measures to promote greater engagement and transparency after mine closure and during the post-closure monitoring and maintenance period? | | | | |
| | A | After mine closure and during the post-closure monitoring and maintenance period, is the practice of stakeholder participation in environmental and social programs and mitigation measures established to promote greater engagement and transparency? | | | | |
| | AA | Has a specialized team been established to engage and manage stakeholder participation in environmental and social programs and mitigation measures during the post-closure monitoring and maintenance period? | | | | |
| | AAA | Has an external monitoring committee been established with participation from other interested groups, local government, representatives of professional councils, universities, with the responsibility of producing reports and communications with relevant information on the actions implemented? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: PREPARATION OF CLOSURE PLAN AND MONITORING

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| PREPARATION OF THE CLOSURE PLAN AND APPROVAL AND MONITORING COMMITTEE | C | Is the practice of preparing a mine closure plan in compliance with applicable resolutions, standards and regulatory decisions established? | | | | |
| | B | Has a process been partially implemented and/or an action plan been drawn up to ensure that the mine closure plan is widely disseminated within the company and is known to the operational departments? | | | | |
| | A | Is a process established to ensure that the mine closure plan is widely disseminated within the company and is known to the operational departments? | | | | |
| | AA | Has a committee been established to approve, monitor and update the closure plan, involving representatives from all of the company's operational departments? | | | | |
| | AAA | Is there senior leadership participation in the committee for approving, monitoring and updating the closure plan, to ensure that the company's objectives are aligned with the mine's closure and future use objectives, deliberating on strategic decisions involving mine closure planning? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: ENVIRONMENTAL DECOMMISSIONING AND RECOVERY PROGRAMS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| PREPARATION OF THE CLOSURE PLAN AND APPROVAL AND MONITORING COMMITTEE | C | Are deactivation programs for facilities and recovery of degraded areas considered in mine closure plans, in compliance with applicable resolutions, standards and regulatory decisions? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to ensure that deactivation and recovery programs are planned to begin prior to mine closure, contributing to reducing environmental liabilities and fostering relationships with stakeholders? | | | | |
| | A | Are deactivation and recovery programs planned to begin prior to mine closure, contributing to reducing environmental liabilities and fostering relationships with stakeholders? | | | | |
| | AA | Are there results indicators established to measure compliance with mine deactivation and recovery programs? Are the indicators monitored by a specialized team? | | | | |
| | AAA | Are the result indicators shared periodically in senior management meetings and in operational department meetings, to ensure internal engagement and ensure effective compliance with the mine's deactivation and recovery programs? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **CONTINGENCY PLAN**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CONTINGENCY PLAN | C | Is a contingency plan established, considering critical scenarios of accidents, system failures and production shutdown, in compliance with applicable legislation, resolutions, standards and normative deliberations? | | | | |
| | B | Is preventive maintenance and inspection practices established efficiently, systematically, to ensure that the area remains in a safe and stable condition? | | | | |
| | A | Is mitigating inspections and audits established efficiently to attest to the condition of facilities and geotechnical structures and propose the necessary measures to ensure their stability and integrity during the shutdown period? | | | | |
| | AA | Does the mine closure plan consider critical scenarios and production shutdown scenarios, presenting the main specific contingency measures to be implemented in the different scenarios? | | | | |
| | AAA | Is there a practice established to identify direct impacts that may prevent the fulfillment of the objectives of closure and future use of the mine? Are specific mitigating actions established to ensure fulfillment of the objectives and/or the review of the defined objectives? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **SOCIAL PROGRAMS**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| SOCIAL PROGRAMS | C | Is the practice of preparing a mine closure plan in compliance with applicable resolutions, standards and regulatory decisions established? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to consider specific social programs to mitigate the impacts of closure in the mine closure plan, detailing the actions to be implemented in the operation and closure phases? | | | | |
| | A | Are specific social programs considered to mitigate the impacts of closure in the mine closure plan, detailing the actions to be implemented in the operation and closure phases? | | | | |
| | AA | Are there results indicators established to measure compliance with social programs? Are the indicators monitored by a specialized team? | | | | |
| | AAA | Are social programs structured based on community listening processes and are their results reported in the stakeholder communication plan? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: MINE CLOSURE RISKS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| MINE CLOSURE RISKS | C | Is it established practice to prepare a mine closure plan with specific closure risks, in compliance with applicable resolutions, standards and regulatory decisions? | | | | |
| | B | Has a multidisciplinary team been designated to systematically monitor risks related to mine closure? | | | | |
| | A | Are specific closure risks widely publicized within the company, through the closure plan, reinforcing the preventive strategy to ensure compliance with mine closure objectives? | | | | |
| | AA | Do risk assessments comply with global risk standards and regulations and include the definition of specific risk management or treatment measures? | | | | |
| | AAA | Has an external audit been performed and determined that all AA level requirements have been met? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: CLOSURE COST ESTIMATION METHOD

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| CLOSURE COST ESTIMATION METHOD | C | Are the closure costs of the programs considered in the mine closure plan estimated in order to comply with the applicable resolutions, standards and normative deliberations? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to establish the practice of verifying the accuracy of cost estimates at the end of the mine's useful life, comparing the estimated budget to the executed budget? | | | | |
| | A | Is the practice of verifying the accuracy of cost estimates at the end of the mine's useful life established, comparing the estimated budget to the executed budget and implementing measures to continually improve the accuracy of the cost estimation methods adopted? | | | | |
| | AA | Are reliable cost estimation methods used, based on methodologies from reference institutions for engineering costs? | | | | |
| | AAA | Has an external audit been performed and determined that all AA level requirements have been met? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: DETAILING AND ACCURACY OF CLOSURE COSTS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| DETAILING AND ACCURACY OF CLOSURE COSTS | C | Are the closure costs considered in the closure plan updated and reviewed to ensure minimum compliance with applicable resolutions, standards and regulatory decisions? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up so that the closure costs considered in the closure plan are updated periodically and whenever there are substantial changes in the mine context? | | | | |
| | A | Are the closure costs considered in the closure plan updated periodically, considering a complete review of the quantities and costs of the closure actions, whenever there are substantial changes in the mine context? | | | | |
| | AA | Is there a structured process to ensure that the closure costs are detailed and refined progressively throughout the mine life cycle, aiming for a smaller margin of error? | | | | |
| | AAA | Is the estimated closure cost documented in the closure plan highly accurate and is it used as a budget reference for the execution of the scheduled closure actions? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **FINANCIAL PROVISION FOR CLOSURE**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| FINANCIAL PROVISION FOR CLOSURE | B | Has a process been partially implemented and/or has an action plan been drawn up to establish the practice of setting up a financial provision for closure, based on methodologies from reference institutions and good market practices? | | | | |
| | A | Is the practice of setting up a financial provision for closure established, based on methodologies from reference institutions and good market practices? | | | | |
| | AA | Is the financial provision updated every 1 to 3 years? | | | | |
| | AAA | Is the financial provision for closure audited periodically by an independent company? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **SOCIOECONOMIC CONTEXT**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| SOCIOECONOMIC CONTEXT | B | Has a process been partially implemented and/or an action plan been developed to conduct a periodic review or update of socioeconomic data analysis during mine closure planning? | | | | |
| | A | Is a periodic review or update of socioeconomic data analysis conducted during mine closure planning? | | | | |
| | AA | Is there a process in place to ensure that closure and future use alternatives are updated in line with the results and changes obtained through the analysis of the mine's socioeconomic data? | | | | |
| | AAA | Does the periodic review or update of socioeconomic data analysis during mine closure planning consider the process of consultation and co-construction with the community? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: SOCIOECONOMIC DEVELOPMENT INDICATORS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| SOCIOECONOMIC DEVELOPMENT INDICATORS | B | Has a process been partially implemented and/or an action plan been developed to establish the practice of defining and monitoring social and economic indicators of community development to support mine closure planning? | | | | |
| | A | Is the practice of defining and monitoring social and economic indicators of community development to support mine closure planning established? | | | | |
| | AA | Has a specialized team been established to conduct comparative analyses and mapping of trends in the local social and economic situation of the mine on a periodic basis? | | | | |
| | AAA | Is there a structured process for reporting indicators at leadership meetings and evaluating the results of programs to mitigate the socioeconomic impacts of mine closure? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: PROGRAMS FOR DIVERSIFICATION OF THE LOCAL PRODUCTION BASE

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| PROGRAMS FOR DIVERSIFICATION OF THE LOCAL PRODUCTION BASE | B | Has a process been partially implemented and/or has an action plan been drawn up to consider local production base diversification programs during mine closure planning? | | | | |
| | A | Are local production base diversification programs considered during mine closure planning, prioritizing regions with a high degree of socioeconomic dependence on mining? | | | | |
| | AA | Are there results indicators established to measure compliance with local production base diversification programs? Are the indicators monitored by a specialized team? | | | | |
| | AAA | Are local production base diversification programs structured based on community listening processes and are their results reported in the stakeholder communication plan? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: COMMUNITY DEVELOPMENT PROGRAMS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| COMMUNITY DEVELOPMENT PROGRAMS | B | Has a process been partially implemented and/or an action plan been developed to consider community development programs during mine closure planning, prioritizing vulnerable and disadvantaged groups? | | | | |
| | A | Are community development programs considered during mine closure planning, prioritizing vulnerable and disadvantaged groups? | | | | |
| | AA | Are there outcome indicators established to measure the achievement of community development programs? Are the indicators monitored by a specialized team? | | | | |
| | AAA | Are community development programs structured around community listening processes and reported on their results in the stakeholder communication plan? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: UPDATE OF SOCIAL AND ENVIRONMENTAL IMPACTS

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| UPDATE OF SOCIAL AND ENVIRONMENTAL IMPACTS | B | Has a process been partially implemented and/or an action plan been drawn up to periodically update the assessment of the mine's environmental and social impacts during closure planning, considering changes that occurred during the operational phase? | | | | |
| | A | Is the assessment of the mine's environmental and social impacts periodically updated during closure planning, considering changes that occurred during the operational phase? | | | | |
| | AA | Is there an environmental management system in place that meets global environmental standards and norms, with tools that enhance the quality of updates in the assessment of environmental and social impacts? | | | | |
| | AAA | Is there a structured process to ensure that the environmental aspects and impacts assessment and environmental programs are updated in accordance with the results and changes identified in the environmental impact assessment and reflected in the mine closure plan? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: MONITORING REGULATORY CHANGES

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| MONITORING REGULATORY CHANGES | B | Has a process been partially implemented and/or an action plan been developed to establish the practice of monitoring regulatory changes that may impact mine closure? | | | | |
| | A | Is there a practice of monitoring regulatory changes that may impact mine closure? | | | | |
| | AA | Has a specialized team been established to conduct comparative analyses and monitor the regulatory situation of the mine? | | | | |
| | AAA | Is there a systematic regulatory compliance process in place to ensure efficiency in meeting all regulatory requirements and obligations of the mine and to ensure that closure objectives are met? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: UPDATING STAKEHOLDERS MAPPING

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| UPDATING STAKEHOLDERS MAPPING | B | Has a process been partially implemented and/ or an action plan been developed to establish the practice of updating the stakeholders mapping to document changes to the mine closure plan? | | | | |
| | A | Is there an established practice of updating the stakeholders mapping to document changes to the mine closure plan? | | | | |
| | AA | Is there a structured process in place to ensure that the stakeholders communication plan is updated as changes are identified in the mapping? | | | | |
| | AAA | Has a dedicated team been established to monitor and manage relationships with specific groups or individuals who may be directly impacted by the mine closure? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: TECHNOLOGICAL DEVELOPMENT AND INNOVATION MANAGEMENT

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| TECHNOLOGICAL DEVELOPMENT AND INNOVATION MANAGEMENT | B | Has a process been partially implemented and/or an action plan been developed to ensure that closure objectives are considered in initiatives and investments in research and technological development and innovation management? | | | | |
| | A | Are closure objectives considered in initiatives and investments in research and technological development and innovation management? | | | | |
| | AA | Has a multidisciplinary team been designated to enhance initiatives and investments in research and technological development and innovation management in the context of mine closure? | | | | |
| | AAA | Are initiatives and investments in research and technological development and innovation management in the context of mine closure highly prioritized, reinforcing the commitment of senior leadership to integrate mine closure considerations into the company's strategic objectives? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: INFORMATION MANAGEMENT SYSTEM

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| INFORMATION MANAGEMENT SYSTEM | **B** | Has a process been partially implemented and/or an action plan been drawn up to establish an information management system that includes studies, information and activities developed during the mine's operational phase? | | | | |
| | **A** | Has an information management system been established that includes studies, information and activities developed during the mine's operational phase that can support the updating of the existing mine closure plan? | | | | |
| | **AA** | Is the information management system structured to allow the filtering of information of interest in the context of mine closure, enabling the creation of a specific repository for the topic? | | | | |
| | **AAA** | Is the information management system widely used by the mine closure technical team, covering all the information necessary to update the mine closure plan? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: **UNCERTAINTY MANAGEMENT**

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| UNCERTAINTY MANAGEMENT | **B** | Has a process been partially implemented and/or an action plan been developed to establish an approach to identify uncertainties inherent in mine closure planning? | | | | |
| | **A** | Has an approach been established to identify uncertainties inherent in mine closure planning? | | | | |
| | **AA** | Has a multidisciplinary team been designated to manage uncertainties inherent in mine closure planning? | | | | |
| | **AAA** | Has a structured approach been implemented specifically designed to consider uncertainties in closure planning, map their causes and define treatment strategies? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. In case levels B and A receive the answer "No", rate the company as level C. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

## Indicator: UPDATE OF THE MINE CLOSURE PLAN

| Indicator | Level | Question | Yes | No | N/A | Description and evidences |
|---|---|---|---|---|---|---|
| UPDATE OF THE MINE CLOSURE PLAN | C | Is the mine closure plan updated to comply with applicable resolutions, standards and regulatory decisions? | | | | |
| | B | Has a process been partially implemented and/or has an action plan been drawn up to establish the practice of progressively updating and detailing the mine closure plan, at the conceptual, basic and detailed levels? | | | | |
| | A | Is the practice of progressively updating and detailing the mine closure plan, at the conceptual, basic and detailed levels, established, not limited to the simple periodic updating required in the applicable resolutions, standards and normative deliberations? | | | | |
| | AA | Has a specialized team been designated to monitor and coordinate the actions to update or detail the closure plan? Is the mine closure plan widely disseminated within the company and is it known to the operational departments? | | | | |
| | AAA | Is there an established process to ensure that the mine closure plan is in line with the community and is the subject of consultation for strategic decision-making regarding mine planning?<br>Is an external audit contracted to evaluate successive versions of the plan? | | | | |

To assess the performance of the indicator, consider the highest level at which the company obtained the answer "Yes" in its entirety. To meet a higher level, the company must also meet the immediately previous level.

Evaluated Performance of the Indicator: Level _____

# ANNEX 4 – ACTION PLAN MODEL

The action plan model should be used by companies that aim to address the weaknesses identified, aiming to obtain a better classification level for the indicators with low performance.

| | |
|---|---|
| **Indicator** | |
| **Level Achieved** | |
| **Level Desired** | |
| **Corrective Action Plan** | |
| **Responsible Department** | |
| **Planned Implementation Date** | |
| **Actual Implementation Date** | |
| **Status** | |
| **Results Achieved** | |

# ANNEX 5 – LIST OF OPEN CONSULTATION PARTICIPANTS

## Support Team

- Carolina Marques
- Marcus Camargo
- Victor Carneiro
- Gustavo Migani
- Kassia Tiba Rodrigues

## Environmental Impact Mitigation Working Group

- Adão Silva
- Alberto Bernardo
- Aldo Souza
- Alessandro Nepomuceno
- Alexandre Matos
- Alexandre Melo
- Aline Nunes
- Alisson Alves
- Andre Cirilo Germani
- Andre Germani
- André Silva
- Anita Marques Andrade Silva
- Anna Gastmaier
- Carlos Rodrigues
- Cassandro Matos
- Ernesto Filho
- Fernanda Narciso Barcellos
- Flavio Medeiros
- Franklin Costa
- Gabriel Mendonça
- George Magalhaes
- Guilherme Pimenta Resende
- Guilherme Silvino
- Gustavo Batista
- Isabela Nogueira Araujo Diniz
- Italo Alves
- João Maciel
- Jucieny Barros
- Jussara Januario
- Lucia Santos
- Luiz Eduardo Andrade
- Luiz Felipe Campos
- Marailza Felix
- Marcelo Dultra
- Marcio Flavio Leôncio
- Marina Magalhães
- Patrícia Mesquita de Oliveira
- Rayssa Souza
- Richardson Costa Faria
- Rosana Silva
- Silvia Cirelli
- Susiele Tavaes
- Thiago Amaral
- Tiago Alves
- Uandilei Gonçalves
- Vagno Silva
- Vitor Cabral

## In-Person Workshop with Representatives of Mining Companies

- Adriano Viana Espeschit
- Alison Frederico Ferreira
- Ana Carolina Matias
- Ana Paula Silva
- André Cirilo Germani
- Benane Silva
- Bruno Medeiros
- Christian Andrade
- Cinthia Rodrigues
- Cláudia Franco de Salles Dias
- Claudiana Souza
- Cristiano Parreiras
- Cynthia Aguiar Guimarães
- Daniel Pires
- Deyse Fernandes de Souza
- Elyssa Cardoso Morinigo
- Evelize Lago Nishiyamamoto
- Fabio Abdala
- Fábio Uchôa de Moura
- Fernanda Guabiroba
- Fernanda Narciso Barcellos
- Fernando Figueiredo
- Fernando Cláudio
- Flávia de Faria Tavares
- Gabriele Martins Gontijo
- Glauco Angeli
- Guilherme Augusto Freitas
- Guilherme Augusto de Souza Freitas
- Heitor Lobo Coutinho
- Heloisa Ruggeri
- Isabela Nogueira Araújo Diniz
- Isabella Boaventura Resende
- Julia Paula de Miranda
- Julio Cesar Nery
- Luana de Fátima Pereira
- Maria Gabriela Barbosa
- Maria Tereza Alves
- Regina Rodrigues Silva
- Rodrigo Dutra Amaral
- Rogério Santana da Cruz
- Rosane Santos
- Sander Gomes Dib
- Sílvia Romualdo Rossi
- Thatyane Aguiar Viana
- Tiago Alves
- Yash Rocha Maciel

## Virtual Workshop with Regulatory and Academic Bodies

- Afonso Henrique Ribeiro
- Alice Helena Alfeu
- Aline Nunes
- Ana Paula Lima Vieira
- Ayla Margie de Leão
- Cinthia Rodrigues
- Cláudia Franco de Salles Dias
- Daniel dos Santos Gonçalves
- Davi Silva
- Deyse Grazielle Fernandes
- Douglas Brunelli Andrade
- Frederico José Abílio
- Gabriele Martins Gontijo
- Giani Aparecida Santana
- Isabella Resende
- Jacques Demajorovic
- Josemir Luiz Dias
- Julio Cesar Nery
- Larissa Guimarães da Silva
- Leila Moreira
- Leonardo André Gandara
- Luana Anjos
- Lucas Alves Correa
- Maíra dos Santos Reis
- Patricia Rocha Fernandes
- Pedro Henrique Costa
- Rodrigo Silva Barreto
- Rogerio Santana da Cruz
- Sonielle Pereira Paro
- Thais Helena Porfirio
- Thayná Guimarães Silva
- Tiago Mozart Gonçalves
- Veronica Costa Rodrigues
- Viviane Barbosa

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