btg pactual

Sector Policy: Mining

December 2023

Table of Contents

1. Policy's Purpose

BTG Pactual drafted this Policy with several policies to identify the social, environmental and climate risks of its many operating segments, complying with the principles and grounds outlined in its Social, Environmental and Climate Responsibilities Policy.

To prepare each Sector Policy, a detailed analysis was carried out of the social and environmental issues involving BTG Pactual's many operating segments during all stages of its production processes, i.e., from opening new areas and obtaining raw materials, throughout the production, distribution and closing of all business activities. To this end, reports and documents were consulted from the sector's main players, such as IFC guidelines, international references for social and environmental risk analysis and technical knowledge of BTG Pactual's internal team.

The Mining Policy ("Policy") establishes the 11 social and environmental aspects relevant to the mining sector and classifies them according to their relevance regarding risks and opportunities for this economic segment. This policy will be reviewed periodically within a period no longer than 3 (three) years.

2. Application Scope

This Policy must be applied by the ESG team, considering the relevance and proportionality principles in all segments of BTG Pactual worldwide that have entered or intend to enter into a relationship with legal entities and/or individuals in the mining sector, including but not limited to those that carry out research, mining, processing, transformation and commercialization activities.

3. Notes on the Sector

The economic exploration of mineral resources involves the geology stage, mining, and mineral transformation[1]. According to a survey by the Correio Braziliense newspaper, the mining sector has a 16.8% share of the Industrial GDP with the main products being iron ore, bauxite, phosphate, manganese, and aluminum.[2]

4. Social and Environmental Aspects

Below, we list the 11 most relevant topics in this sector that BTG Pactual will analyze.

4.1. Project Interference in Indigenous Areas

During the social and environmental due diligence, the proximity of the project area to indigenous territories and traditional communities must be checked, as close proximity may generate operational

[1]According to a survey by Banco do Brasil, the segment can be divided into mine size so that:
1.Large size: iron ore, limestone, and crushed rocks
2.Medium size: underground mines, mainly coal
3.Small size: wide range of non-metallic minerals supply aimed at serving the domestic civil construction industry
[2] Article available at:< https://www.correiobraziliense.com.br/app/noticia/economia/2019/05/10/internas_economia,754198/apesar-de-tragedias-mineracao-e-vital-para-a-economia.shtml>.

risks (shutdowns as a result of indigenous demands) and reputation risks. In cases of direct or indirect interference in areas or territories of traditional communities, the company and its suppliers are liable for conducting the necessary impact studies on the communities, in accordance with state and federal licensing agencies. If necessary, in view of state omission or high operational risk, Free, Prior, and Informed Consultation (FPIC) should be carried out in accordance with International Labour Organization Convention 169, respecting the communities' right to free choice.

The Brazilian Constitution determines that research and mining of mineral wealth in indigenous territories may be carried out after passing the Brazilian Congress' and provided that the affected communities are heard[3]. Failure to obtain these authorizations, when necessary, will represent a legal risk.

4.2. Change in Landscape, Flora, and Fauna

The main form of mineral extraction in Brazil is through open-pit mines. Their installation begins with removing the vegetation and all the fertile soil from the region to be mined, which causes a great impact on the habitats of a series of species (biodiversity).[4]

Regarding visual impacts and no vegetation, mining projects can also cause changes in the color of the water and visual pollution with the installation of dumps, equipment, and structure for the operation of mines.

During the social and environmental verification, Social and Environmental Impact Studies (verification of impacts on critical areas or protected species) must be requested, as well as the programs designed and in progress for the mitigation and prevention of general impacts (PBA), without prejudice to all environmental licenses/authorizations issued for the project. The lack of these documents will represent legal and operational risks.

Best practices include:

- Avoid or minimize the creation of barriers to wildlife or endangered migratory species routes (creating alternative migration routes when impact cannot be avoided).
- Implement soil conservation measures.
- When topsoil is pre-removed, it should be stored for future on-site rehabilitation activity.
- Manage vegetation growth along access roads, remove invasive plant species and replant native species.
- For aquatic species: maintain natural drainage paths, a catchment area of water bodies equal or comparable to pre-development conditions.
- Regarding visual impacts, prepare Degraded Areas Recovery Plan (DARP) and consulting local communities about possible land uses after the mine closure, incorporating visual impact assessment in the recovery process of the areas of these mines.

[3]Article 231. Indigenous people are recognized for their social organization, customs, languages, beliefs, and traditions, and for their original rights over the lands they traditionally occupy, and the Union must define the boundaries, protect and ensure respect for all their assets.
Paragraph 3 The use of water resources, including energy potential, research, and mining of mineral wealth in indigenous lands can only be carried out when passing the Brazilian Congress, after hearing the affected communities, and they are guaranteed participation in the mining results, in the form of law. Brazilian Constitution available at: < http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm>.
[4]For example, mining operations may affect the marine environment (offshore mining, port construction). Major impacts may include habitat disturbance and destruction, change in temperature and water quality)

4.3. Atmospheric Emissions

The main sources of atmospheric pollution linked to mining are working the mineral deposit, dust (movement of vehicles – trucks, buses, cars) and mud, which can affect the health of nearby communities[5] or their workers.

During the social and environmental verification, a study of atmospheric emissions and respective monitoring reports must be requested, as well as the programs developed and in progress to mitigate the effects on communities close to the mine and workers, if any.

Examples of good practice:

- Dust Suppression Techniques for Inland Roads
- Vehicle speed reduction (internal roads)
- Transportation for dusty materials must be covered

4.4. Consumption and Contamination of Water Resources

The mining sector impacts water resources for high water consumption and issues associated with mineral extraction, which can lead to groundwater depletion and compromise aquifer recharge (which may affect regional biodiversity). Additionally, there is the risk of contamination of water bodies[6].

In addition to requesting authorizations for water use, the social and environmental diligence will verify the management of the use of water resources and the treatment of wastewater, plans to mitigate the risk of contamination of water bodies, as well as the risk of lowering the water table.

Best practices include:

- Developing a sustainable water supply management plan to minimize impacts on natural systems and avoid depletion of aquifers.
- Implementing developments in water reuse, recycling, and treatment techniques.
- Meeting with stakeholders to understand all the conflicting demands of water use and communities' dependence on water resources.

4.5. Waste Management and Tailings Dam

The sector generates a large amount of waste, among which we can mention: (i) leaching waste[7]; (ii) scraps from the workshop; (iii) oils used in the maintenance of machines/vehicles; (iv) chemical and

[5]According to a survey by Bruno Milanez:
"In the specific case of Itabira, Santi, Suzuki and Oliveira (2000) carried out an air quality survey between 1997 and 1999. The survey showed repeated violations of the limits defined by Conama Resolution 3/1990. In another study, Braga et al. (2007) concluded the air pollution in Itabira would be equivalent to large urban centers. Information provided by Datasus (2016) suggests a worsening in air quality in Itabira in recent years. The city reduced hospitalizations for respiratory diseases between 1998 and 2006, but throughout the second half of the 2000s, coincidentally during a period of increased mineral extraction, hospitalizations rose again"
For more information, access: < https://www.ufjf.br/poemas/files/2014/07/Milanez-2017-Minera%c3%a7%c3%a3o-ambiente-e-sociedade.pdf>.
[6]Bruno Milanez brings an example of rivers such as Tubarão, Urussanga and Mãe Luiza contaminated by mineral extraction in SC and RS.
"This charcoal is impregnated by metallic sulfides which, deposited in the form of waste or sterile, come into contact with the moisture in the air and are converted into acids. This starts the process known as Acid Mine Drainage (AMD), which significantly increases the acidity of water bodies; in addition, the reduction in pH intensifies the solubilization of heavy metals present in residues from mineral activities in the region." (ipea regional, urban and environmental bulletin | 16 | Jan.-Jun. 2017 97)
For more information, access: < https://www.ufjf.br/poemas/files/2014/07/Milanez-2017-Minera%c3%a7%c3%a3o-ambiente-e-sociedade.pdf>.
[7]Leaching is the extraction or solubilization of chemical constituents of a rock, mineral, soil, sedimentary deposit, among others, through percolating fluid.

hazardous waste; and (v) rock waste If waste management is not performed in an environmentally sound manner, there is a risk of soil and water contamination.

During the socio-environmental verification, solid waste management plans should be analyzed. Regarding the tailings dam, in addition to the declaration of dam stability and other documentation required by the National Mining Agency (which depend on the type of dam), the existence of continuous monitoring (whether carried out by an independent party or by the company itself) of the dam structure (with monitoring of infiltrations and severity degree) and the Environmental Emergency Plan (reviews, training carried out with workers and surrounding communities) and Risk Management Plan must be verified.

Examples of good industry practices:

- Dry stacking of waste.
- Reduction in water use.
- Economic use of mining tailings.
- If the tailings mine and/or dam is located in an area where there is a risk of high seismic loads, an independent review must be carried out periodically, reporting to the institution's senior management.
- Environmental and social impact assessment of all waste management alternatives.
- Audit by the mining company of the landfills where its waste is sent.
- Use of secondary containment and thick walls in critical locations regarding hazardous waste and materials.

4.6. Occupational Health and Safety and Environment Area

During the social and environmental assessment, the company should be verified as to teams responsible for environmental and health and safety issues at work, whether this area is subordinate to the production segment or it has a separate structure, in addition to its composition (number and training of professionals) and responsibilities.

4.7. Climate Change

The sector is highly exposed to climate change, for physical risks and the risks associated with the transition to a low-carbon economy. In the context of transition, greenhouse gas emissions and market and/or regulatory changes pose risks to the sector. Direct emissions caused by mining activities mostly come from the burning of fuels in machines and vehicles and mineral processing. Indirect emissions primarily stem from the transportation and use of goods produced, such as coal.

During the social and environmental diligence, the company should be questioned as to materiality matrix and an inventory of greenhouse gas emissions, performs studies on extreme weather events (present/future), climate risk analysis, and climate issue governance.

The following are good practices:

- Emission reduction targets
- Offsetting emissions in alignment with a transition plan

- Top management engagement on the topic
- Development of low-carbon technologies, such as carbon capture and storage (CCS) and biofuels for large machines and ships, as highlighted by the recent International Energy Agency (Net Zero by 2050[8])'s report

4.8. Occupational Health and Safety

During the social and environmental diligence, the structure and management regarding work safety must be verified. In addition to verifying compliance with the regulatory standards of the Labor Department (main topics below) and the presentation of the OMHCP and ERPP [9](which deal with the identification of risks and mitigating factors to work safety and periodic occupational health assessments based on exposure to risk), specialized team on the subject (size, to which reporting area, functions), training (scope, frequency), and control and monitoring system should be checked as to the compliance with the standards and/or other internal requirements proposed by the company.

	Risk	Mitigators
1	Handling of hazardous substances.	-Work areas must have adequate ventilation and dust/smoke extraction systems. -Washing systems must be available in places where there is the possibility of chemical contamination by workers and the need for rapid treatment.
2	Use of explosives in blasting activities. Risks from an accidental explosion and poor coordination/communication in blasting activities.	- Appointment of certified specialists in the use of explosives to carry out explosions - Adoption of consistent blasting schedules, minimizing changes in blast time. -Installation of specific warning devices (horns, lights) before each blast to alert direct and indirect employees in addition to the community living close to the mine. -Specific training for the activity of using explosives. - Blasting locations must be checked after blasting by qualified technicians.
3	Mudslides, landslides in mining environments.	-Additional levels of security must be applied in areas exposed to extreme weather events. -Site safety assessment against rockfall and/or periodic mudslide with special attention after weather events (heavy rain, seismic events after blasting activities). 3.Monitoring stability
4	Noise and vibrations (machines and vehicles).	-Ensure that large equipment (excavator, wagon drills) is equipped with a soundproof cabin -Wearing individual hearing protection. -Exposure to hand-arm vibrations must be adequately controlled, and equipment controling the standards of exposure to occupational vibrations must be provided to employees.

4.9. Community

Mining ventures may cause the removal of a population from the project area, leading to legal and reputational risks, especially if there are problems with the payment of compensation. In addition, mining can cause changes in water and air quality and increased noise (as to excavation, transport, crushing).

Socio-environmental due diligence will assess the existence of community engagement channels, displacement plans for the population, and specific plans for vulnerable populations. Communication channels will be evaluated based on their dissemination, accessibility, confidentiality, non-retaliation against the complainant, and transparency of treatment and response procedures. Adequate

[8] Report available at:< https://www.iea.org/reports/net-zero-by-2050>.
[9]Occupational Health Medical Control Program (OMHCP) - NR 7
Environmental Risk Prevention Program (ERPP) - NR 9

communication with the community can reduce risks stemming from misinformation, manage expectations, and foster a relationship of trust with the local population.

In cases where populations and their residences must be relocated (even if occupied irregularly), the evaluation will examine how the relocation process was performed (e.g. payment of compensation, assistance with moving, post-relocation management/monitoring, assistance in maintaining means of subsistence) whether there is a team responsible for carrying out such relocation. Additionally, mechanisms for complaints from displaced persons will be established, with a commitment to resolving complaints and reports through an impartial, transparent, and predefined process, including analysis, investigation, closure, and feedback on each issue. Special attention must be given to cases involving the relocation of vulnerable populations and the establishment of specific procedures for this group.

4.10. Human Rights

According to International Conventions[10], human rights include rights to work, free choice of employment, fair and favorable working conditions, no type of forced labor, effective abolition of slave labor, property, and health.

Due to the displacement of workers, many of whom are male and without ties to the project's land, mining projects can cause a series of impacts on human rights, such as:[11]

- Overload on public services (health care, education and social assistance, public safety, Child, and Adolescent Guardianship Councils).
- Increased cases of sexual exploitation of children and adolescents in the vicinity of the worksites.
- Increased rates of Sexual Transmitted Diseases (STD) rates, domestic violence against women and early pregnancy.
- Increased rate of school failure and dropout (in the case of relocation of families to other cities).

During the social and environmental diligence, the counterparty must be checked on carrying out any due diligence on human rights, which includes (i) assessment of risks and impacts to human rights in its business; (ii) support the effective adoption of prevention and control measures; (iii) monitor new risks and the effectiveness of the control measures adopted; and (iv) promote transparency and accountability about the company's commitments for respect for human rights in the workplace, along the supply chains and in the local communities.[12]

4.11. Decommissioning

[10]Human rights are those mentioned in (i) UN Universal Declaration of Human Rights – United Nations; (ii) Declaration on Fundamental Principles and Rights at Work of the International Labour Organization; (iii) UN International Covenant on Economic, Social and Cultural Rights (iv) UN International Covenant on Civil and Political Rights.
Brazilian Decree 9571 of November 21, 2018 establishes the Brazilian Guidelines on Companies and Human Rights.
[11]Most of these examples came from the Human Rights Impact Assessment Guide prepared by FGV with the NGO Childhood details how DD in human rights can be done. Guide available at: <https://www.childhood.org.br/publicacao/Guia_de_avaliacao_de_impacto_em_direitos_humanos.pdf>.
[12]Human Rights Impact Assessment Guide prepared by FGV with the NGO Childhood details how DD in human rights can be done. Guide available at: <https://www.childhood.org.br/publicacao/Guia_de_avaliacao_de_impacto_em_direitos_humanos.pdf>.

Recommendation is the decommissioning and post-commissioning activities are considered when planning mining projects. Costs related to these activities should be included in the financial feasibility analyses.

Examples of good practice include developing a Mine Rehabilitation and Closure Plan considering post-site use and post-closure care. Recommendation is this study to be prepared from the collection of data on the needs of stakeholders. This plan can be updated regularly in any change in mine development and operational planning.

Annex: Sector Categorization Matrix - Social, Environmental and Climate Risk Document

Risks	Description	Category
Social Risk	Consolidated assessment	High
	Slave labor	Low
	Child labor	Irrelevant
	Occupational health and safety	High
	Damage to populations or communities	High
	Other factors	Low
Environmental Risk	Consolidated assessment	High
	Energy: use and conservation	Low
	Water: use and conservation	Medium
	Water: pollution	High
	Waste: management and disposal	High
	Air: pollution	Low
	Biodiversity and natural resources: use and conservation	High
	Hazardous materials: disasters	High
	Soil: contamination	High
	Other factors	Irrelevant
Physical Climate Risk	Consolidated assessment	Low
	Adverse weather conditions	Low
	Long-term changes	Low
	Other factors	Irrelevant
Climate Transition Risk	Consolidated assessment	Medium
	Public policies/Legislation	Medium
	Technology	Medium
	Markets/Consumers	Medium
	Other factors	Medium