btg pactual

Sector Policy: Oil and Gas

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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 Oil and Gas Policy ("Policy") establishes the 11 social and environmental aspects relevant to the 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 oil and gas sector, including, but not limited to, those that carry out extraction, transformation, transportation and marketing activities.

3. Notes on the Sector

Sedimentary rock is a product of sediment deposition in ancient oceans and other bodies of water. When layers of sediment are deposited on the ocean floor, the decaying remains of plants and animals are integrated into the rock. This material, called organic material, turns into oil and gas after being exposed to specific temperatures and pressure ranges deep in the earth's crust for millions of years.

These substances composed of a complex combination of hydrocarbons are brought to the surface through a well after drilling into the reservoir rock. Once drilling reaches the reservoir, a hydrocarbon-producing well is built, and fluids are recovered at the surface.

The oil and gas industry is made up of the activities below that go "from the well to the gas station"[1]:

- Prospective research and outline of oil and/or gas reservoirs through the use of geophysical methods, geological models, and drilling of exploratory wells.
- Development involves the drilling of wells and the installation of equipment for the production, processing, injection, storage and transportation of oil, gas, and water. This equipment can be production stations (on land) or platforms (at sea).

[1] Angelo Milani Júnior[I]; José Vitor Bomtempo[II]; Helder Queiroz Pinto Júnior[II]
A indústria do petróleo como uma organização complexa: modelagem de negócios e processo decisório.. Available at:< https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-65132007000100002&lng=pt&nrm=iso>.

- Transportation of oil and/or gas to the refinery. This can be carried by oil pipelines, gas pipelines, ships, barges, rail and road.
- Refining: oil/gas is processed in industrial plants (refineries) for producing by-products (e.g. gasoline, diesel, oil, fuel) to be sold to final consumers both in wholesale and in retail.[2]
- Transportation of refined oil and/or gas to the final consumer. This can be carried by oil pipelines, gas pipelines, ships, barges, rail and road.
- Use of the product by the end consumer or by the distributor of petroleum derivatives. Possible uses: fuel, chemical industry, electricity generation (e.g. oil or gas-fired thermoelectric power plants).

The oil and gas industry has existed for over 150 years, and today one can hardly enter a man-made environment without many manufactured goods whose components are derived from petroleum. Globally, the segment is responsible for about 56% of the energy consumed.[3]

In Brazil, the oil and gas sector rank third among the main economic activities, according to a survey by Ernst & Young published in 2019.[4] In view of the current energy transition, the trend for the sector is a decline in production of oil and an appreciation of natural gas in the short and medium terms. The energy transition is characterized by the replacement of fossil fuels by renewable sources as the primary sources of energy (both fuel and electricity). This substitution is motivated, on one hand, by the need to reduce greenhouse gas emissions, on the other hand, by the gains in efficiency, scale, and cost reduction of some renewable sources.

4. Social and Environmental Aspects

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

4.1. Environmental Impact Studies and Fauna Impacts (Terrestrial and Aquatic)

Resolution 01/1986 of the Brazilian Council for the Environment-CONAMA[5] subjects fossil fuel extraction activities, oil, and gas pipelines to the preparation of an Environmental Impact Study (EIA).

During the social and environmental diligence, the above study must be requested, and the main environmental impacts and their mitigating factors identified (e.g., recovery of degraded environments, reforestation projects, restoration of native species, monitoring of fauna with possible identification of threatened species), as well as confirmed the holding of a public hearing to present the project to the community.[6]

[2] In general, these are the main stages of the oil and gas segment. Possibly t the consumer is a distributor who will sell product to gas stations, which in turn will sell product to the final consumer.
[3] Information from the Publication of the Brazilian Development Bank (BNDES) "Segment Panoramas 2030: Oil and Gas" available at: < https://web.bndes.gov.br/bib/jspui/bitstream/1408/14243/2/Panoramas%20Setoriais%202030%20-%20Petr%C3%B3leo%20e%20G%C3%A1s_P.pdf>.
[4] Available at:< https://www.ey.com/pt_br/news/2019/08/setor-de-petroleo-e-gas-e-a-terceira-principal-atividade-economi>.
[5] CONAMA Resolution 01/1986 available at:< http://www2.mma.gov.br/port/conama/res/res86/res0186.html>.
[6] For more information, access CONAMA Resolution 09/1987 available at:< http://www2.mma.gov.br/port/conama/legiabre.cfm?codlegi=60 >.

Regarding environmental impacts, special attention should be given to impacts on biodiversity[7] and ecosystem services [8] . Non-compliance with these regulations may pose legal risks (fines, compensation for environmental damage) and operational risks (shutdowns resulting from notices for violation).

As for impacts on fauna, in addition to conducting an Environmental Impact Assessment (EIA), environmental agencies may require the inclusion of the actions in the Basic Environmental Programs (BEP) of the environmental licenses' conditions, such as biodiversity protection measures, conservation projects for Brazilian species and ecosystems (including endangered species), and environmental education initiatives aimed at raising awareness for the protection of local biodiversity. The due diligence will assess the implementation of the programs outlined in the BEP, including the technical team's capacity, effectiveness, and compliance with the relevant licenses.

The good practices are: (i) support for projects focused on species conservation; and (ii) development of technological solutions and methodologies for continuous improvement in environmental management and mitigation of impacts caused to the environment - especially to fauna.

4.2. Gas Emissions

The main pollutants found in the gases emitted by compressors and reciprocating engines are nitrogen oxides, sulfur oxides, carbon monoxide and particulate matter.

During the social and environmental diligence, verifications is made whether the negative impacts have been measured and programs have been designed to prevent or mitigate these impacts. Checking the compliance with regulatory standards is required, such as COANAMA Resolution 436/2011, which establishes gas emission standards for the activity.

They present as good practices:

- Use of technologies to reduce carbon dioxide emissions:
  - Heavy vehicles powered by biofuels.
  - Efficient logistics.
  - Electrification and energy efficiency in upstream operations, for example, with more electric motors replacing turbines.
- Specification on gas consumption should be considered when selecting/purchasing new equipment.
- Minimize flame rise and/or flame licking.
- Operational extension to control odor and visible smoke emissions.
- Reduction of gas in torches in refineries.
- Location of flare at safe distance from local communities and workers.
- Monitoring fugitive methane emissions, preferably in real time (telemetry from tanks, drones, satellites).

[7]Convention on Biological Diversity defines biodiversity as the diversity of life in all its forms – the diversity of species, of genetic variations within a species, and of ecosystems. The importance of biological diversity to human society is difficult to overstate. It is estimated that 40% of the global economy is based on biological products and processes.
[8]Glossary of Guia Exame de Sustentabilidade defines ecosystem services as benefits that people obtain from ecosystems. Unlike biodiversity or natural capital, which represent the stock within the ecosystem, ecosystem services refer to the flows from which human beings' benefit.

- Pneumatic systems replacing process control and natural gas chemical injection systems.
- Reduction of sulfur content in fuel oil production.

4.3. Climate Change

According to a study by the Climate Accountability Institute published in 2019, a group of 20 companies (largest producers of oil, natural gas, and coal) has been responsible for more than a third of greenhouse gas emissions since 1965.[9]

The social and environmental diligence will require analysis of inventories of greenhouse gas emissions, reports and plans for mitigating the impacts of climate change. As a means of consultation, the Carbon Disclosure Program platform can be used. No engagement on the topic and/or provision of information represents a legal (carbon tax), reputational (climate litigation) and operational risk to the segment.[10]

Examples of good practice include:

- Preparation of an annual report, with an inventory of greenhouse gas emissions.
- Decarbonization of production processes, especially in energy generation in upstream operations. Alternatives also involve efficient logistics in fleets, as well as more efficient heavy vehicles and vessels.
- Electrification and energy efficiency in facilities. Regarding electrification, natural gas turbines can be replaced by electric motors (provided that the electricity comes from renewable sources).
- Reduction of natural gas flaring as indicated in the recent report from the International Energy Agency (Net Zero by 2050[11]). The alternatives involve: (i) compressing and transporting the natural gas produced, (i) reinjecting the natural gas (NG) into the well to improve oil production, or (iii) using the NG for heat and power generation within the production facility itself.
- Definition and disclosure of CO_2 emissions reduction targets, covering all three scopes, and the reduction and eventual elimination of routine flaring.
- Elimination of fugitive and vented methane emissions through advanced monitoring of tanks and pipelines, and predictive, preventive, and corrective maintenance for corrosion.
- Diversification through investments in renewable energy businesses.[12]
- Development of actions to reduce CO_2 emissions in the transportation segments (road/maritime/air).

4.4. Consumption of Natural Resources and Environmentally Appropriate Disposal

[9]For more information, access: <https://www.bbc.com/portuguese/geral-49992174>.
[10]Climate litigation can be used to facilitate climate regulation and hold policymakers to account - or it can be used to oppose or weaken climate regulation." provisions the international climate order, therefore "the litigation appears to have had a constructive influence so far"
For more information, access: < https://www.migalhas.com.br/depeso/287354/litigancia-climatica-e-o-marco-legal-brasileiro>.
[11] Report available at:< https://www.iea.org/reports/net-zero-by-2050 >.
[12]Examples: according to its latest Sustainability Report, Petrobrás invested 98MM in the development of research in renewable energy businesses (focus on wind energy).

In general, the oil and gas sector uses water in production process units, value generation, refrigeration, production and processing of oil, gas, and derivatives. Consequently, this industry generates a significant amount of effluents.

During the social and environmental diligence, verifications is made whether the region in which the project will be developed is known for its water scarcity and the counterparty has prepared studies (e.g. water availability and water basin vulnerabilities studies) and plans to mitigate these risks (e.g.: water resilience actions at the facilities).

Regarding effluents/waste, the ESG team will verify the existence of: (i) information records on the use (catchment and disposal) of water resources, including authorizations/grants necessary for this, (ii) management plans; (iii) training on these topics; and (iv) teams responsible for carrying out management and training.

Best practices include:

- Development of technologies for water reuse.
- Identification of alternative sources of supply.
- Reduction of water catchment.
- Minimization of solid waste generation.

4.5. Environmental Emergencies

During the social and environmental diligence, the preparation of an Environmental Emergency Plan must be verified, in addition to the performance of periodic simulations/trainings on the subject (verify target audience, frequency), the existence of a responsible team to deal with these subjects and the control of leaks and other emergency events, with any action plans adopted. Environmental accidents can generate legal (fines, indemnities), operational and reputational risks.

Best practices include:

- Installation of automatic and manual fire and/or environmental emergency alarm systems to allow a quick and effective response.
- Evacuation exercises and training for leaving the facilities under different weather conditions.
- Annual simulated exercises with the implementation of equipment.
- Single document containing emergency response procedures (response details, equipment location) for alarm and communication and evacuation systems.
- Establishment of precautionary measures to protect wells.

4.6. Service Provider

Generally speaking, companies in the oil and gas segment do not have their own drilling equipment. These companies generally hire companies to drill their wells and carry out maintenance activities for those wells (e.g., cementing, casing, drilling) over the course of their operation.

Another relevant item linked to service providers in this segment is related to transportation activities. According to the IFC, accidents related to terrestrial transportation are one of the leading causes of

fatalities in the industry. Accidents occurring during the transportation of substances inherent to this sector can cause legal risks such as payment of indemnity for environmental damage resulting from leakage during transport.

During the social and environmental diligence, the existence of selection and monitoring criteria for suppliers involving environmental issues, as well as the teams responsible for carrying out these actions and training with commercial partners must be verified. For transport, for example, good practice is to develop management in road safety, training drivers in safety, along with obtaining the licenses and authorizations necessary to carry out the activities.

4.7. Abandonment of Oil Stations and Decommissioning

When the well drilling activity does not find a commercially viable quantity of hydrocarbons, the well is classified as a dry hole and the wells are abandoned.

In April 2020, the Brazilian Agency for Petroleum, Natural Gas and Biofuels (ANP) issued a Resolution to address the decommissioning (deactivation) of oil and natural gas exploration and production facilities.[13]

During the social and environmental diligence, the preparation of decommissioning plans and programs must be verified. The absence of plans may represent a legal risk (non-compliance with the resolution) and, depending on the decommissioning price, may represent a credit risk.

4.8. Occupational Health and Safety

The social and environmental diligence must verify the existence of processes for initial and continuous assessment of the impacts generated on the health and safety of workers (request for ERPP and OMHCP[14]) and teams dedicated to dealing with this issue. Below are the main risks and mitigants.

	Risk	Mitigators
1	Fire and Explosion	-Facilities must be classified in hazardous areas according to the probability of release of flammable liquid gases. -Providing fire protection to prevent spread. -Development of projects and anti-explosion walls. -Proper grounding to avoid static electricity buildup and lightning hazard. -Installation of automatic fire alarm systems. -Procedure considering the type of fire and the assessment of the impact of the fire (fixed foam system, fixed water system, CO2, extinguishing system and portable equipment, fire extinguishers). -All fire systems must be located in a safe installation area, protected from fire. -Systems to prevent smoke from entering the accommodation area. -Security systems for product loading and unloading in transportation systems. -Preparing adequate fire responses and training in fire safety.
2	Air quality	-Gas detection devices must be used to authorize entry and operations in enclosed spaces. -Supply of personal gas detectors to workers in places with high risk of exposure, in addition to emergency devices (with oxygen supply). -Providing adequate ventilation in buildings to prevent gas build-up.

[13] Resolution 817 of ANP available at:< https://www.in.gov.br/web/dou/-/resolucao-n-817-de-24-de-abril-de-2020-254001378>.
[14] ERPP: Environmental Risk Prevention Program and OHMCP: Occupational Health Medical Control Program

4.9. Community

During the social and environmental diligence, verification is made whether a study/survey of potential impacts on the local community (for example: noise, flares close to the communities) has been prepared, in addition to the respective mitigation factors. Recommendation is to verify engagement and participation mechanisms with the communities and the existence of a structure within the company to address these demands, as well as communication channels (complaint and reporting), which will be evaluated according to their dissemination, access, confidentiality, non-retaliation towards the complainant, and transparency of treatment and response procedures. Communication/engagement failures can pose a reputation risk.

The following are good practices of engagement actions: (i) information dissemination programs in favor of the safe use of domestic cylinders and their components; (ii) exchanges of expired or out-of-date LPG installation kits for new kits.

During the social and environmental verification, special attention must be given to the possible existence of fishing communities close to the project. Possibly the oil and gas extraction activities carried out at the site may alter local fishing activity. In addition to identifying the impacts on this community (for example, through a project for the socioeconomic characterization of fishing and the assessment of cumulative impacts), plans for social communication and community service, compensation for fishing activities and indemnification for activities must be verified. Good practice for companies and their suppliers is to respect the broader social, economic and cultural rights of communities directly affected by their operations, including the right to clear, objective and continuous information, the right to health and an adequate standard of living, always in accordance with the Human Rights. Failure to adopt these measures could present legal and reputational risks.

4.10. Human Rights

According to International Conventions[15], 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, health.

During the social and environmental diligence, verifications is made on due diligence carried out 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; (iv) promote transparency and accountability about the company's commitments on respect for human rights in the workplace, along the supply chains and in the surrounding communities.[16]

[15]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.
[16]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>.
Observe Decree 9571/2018 that establishes national guidelines on business and human rights. Access at:< http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/Decreto/D9571.htm>.

4.11. Non-Conventional Resources

Unconventional hydrocarbon reserves occur in reservoirs where the rock pores are not well connected and/or difficult to access, requiring the application of special technologies for their production. This definition mainly includes shale gas, but also covers natural gas in other low permeability reservoirs (tight gas), coalbed methane (CBM), natural gas hydrates and oil and gas exploration in the Arctic[17].

The exploration of these resources involves technologies such as the combination of hydraulic fracturing (fracking) and horizontal drilling. These techniques, if carried out without good engineering practices, can lead to undesirable effects on the integrity of reservoirs, connecting them to aquifers and contaminating other layers, which can lead to socio-environmental impacts on the surface, such as, limiting access to clean water. Furthermore, excessive water demand, intense truck traffic and high well density for this type of exploration can result in sensitive surface impacts.

Recommendation is the companies in the sector develop and demonstrate experience in implementing these techniques. Caution regarding the reservoir model, monitoring production conditions and their impacts and the composition of injected fluids is a sign of commitment to sustainable practices. However, importantly to note that several financial institutions, cities, states, and countries[18] have restrictions on unconventional resources, especially shale gas and Arctic exploration, due to public perception of them being higher risk.

[17] Conventional oil and natural gas are found in geological formations that are easier to access through traditional exploration and production techniques. An example of this is the onshore oil from most of the Middle East, produced in vertical wells, at an average cost of US$31/barrel. Unconventional hydrocarbons are found in formations where its removal is difficult, either due to access to reservoirs and the risks involved (such as in the Arctic), or due to the geology of the formation, which makes production using conventional methods, such as shale gas, unfeasible. For more information: Muther, T., Qureshi, H.A., Syed, F.I. et al. Unconventional hydrocarbon resources: geological statistics, petrophysical characterization, and field development strategies. J Petrol Explor Prod Technol 12, 1463– 1488 (2022). https://doi.org/10.1007/s13202-021-01404-x

[18] Public. Government will launch a notice to encourage fracking in Brazil. Available at: < https://apublica.org/2022/06/governo-lancara-edital-to-stimulate-fracking-in-brazil/>. Accessed on 10/25/22.

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

Risks	Description	Category
Social Risk	Consolidated assessment	High
	Slave labor	Irrelevant
	Child labor	Irrelevant
	Occupational health and safety	Medium
	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	Medium
	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	Medium
	Adverse weather conditions	Medium
	Long-term changes	Low
	Other factors	Low
Climate Transition Risk	Consolidated assessment	High
	Public policies/Legislation	High
	Technology	High
	Markets/Consumers	High
	Other factors	High