

## ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) RISK MANAGEMENT OF PT XYZ INDONESIA (ESG DISCLOSURE APPROACH 2023)

Diva Adisti<sup>1</sup>, Tanti Novianti, Heny Kuswanti Suwarsinah

School of Business, IPB University  
SB IPB Building, Jl. Pajajaran, Bogor 16151, Indonesia

### Article history:

Received  
25 August 2024

Revised  
28 October 2024

Accepted  
4 November 2024

Available online  
31 December 2024

This is an open access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>)



### ABSTRACT

**Background:** PT XYZ Indonesia is a major mining company facing high risks due to various factors impacting operational, regulatory, and reputational aspects within the mining industry. These risks can be addressed through the company's responsibility towards environmental, social, and governance (ESG) aspects. In the ESG Disclosure report of 2023, PT XYZ Indonesia was assessed below industry average in several key issues due to inadequate risk management compared to exposure.

**Purpose:** This study aims to identify, assess, and propose appropriate measures to address ESG risks.

**Methodology:** This research using the risk management framework of SNI ISO 31000:2018, with risk assessment methods by Godfrey (1996) and risk treatment strategies by Flanagan and Norman (1993).

**Results:** The research identified 22 ESG risks categorized into three low-level, 12 medium-level, four high-level, and three extreme-level risks. Each risk will be treated according to four categories: retention, reduction, transfer, and avoidance. Risk treatment efforts focused on four high-level risks and three extreme-level risks at PT XYZ Indonesia, including mitigation and transfer strategies to reduce impact and losses experienced by the company.

**Conclusion:** The potential risk most likely comes from Governance Pillar. The practical implications of these proposed strategies include enhanced operational resilience, improved regulatory compliance, and strengthened stakeholder trust, which together contribute to a more sustainable and socially responsible business model.

**Originality:** This study introduces a comprehensive ESG risk management approach by integrating the SNI ISO 31000:2018 framework with established risk assessment and treatment methods, offering a more effective and systematic process for identifying, prioritizing, and mitigating ESG risks. This integrated approach not only enhances the precision and efficiency of risk management but also provides a scalable model for improving ESG performance across the mining sector.

**Keywords:** risk management, mining, ESG Disclosure, ESG Risks, SNI ISO 31000:2018

### How to Cite:

Adisti D, Novianti T, Suwarsinah H K. 2024. Environmental, Social, and Governance (ESG) Risk Management of PT XYZ Indonesia (ESG Disclosure Approach 2023). *Business Review and Case Studies* 5(3): 498. <https://doi.org/10.17358/brcs.5.3.498>

<sup>1</sup> Corresponding author:

Email: [divaadisti@apps.ipb.ac.id](mailto:divaadisti@apps.ipb.ac.id) [tantinovianti@apps.ipb.ac.id](mailto:tantinovianti@apps.ipb.ac.id)

## INTRODUCTION

PT XYZ Indonesia is one of the largest mining companies in Indonesia, ranking second in terms of production in 2023 (MODI 2023). As a large company, PT XYZ Indonesia strives to advance its operational areas by creating jobs for local communities, empowering communities, providing entrepreneurship training, and other community development-related activities. These efforts are part of PT XYZ Indonesia's corporate responsibility to balance the impact of its activities, especially social and environmental impacts. Supported by Jenkins and Yakovleva (2006), mining companies often face pressure to improve their social and environmental obligations, which can lead to conflicts between business interests and environmental sustainability. Therefore, the mining industry is considered to have high risks due to various factors that can cause exposure to operational, regulatory, and reputational risks (Mitchell and Beifus 2022). These risks can affect investments in the company as investors will consider potential risks and how the company manages those risks.

PT XYZ Indonesia can pay attention to risk management on crucial aspects, namely environmental, social, and governance, or commonly referred to as ESG (Environment, Social, and Governance) to promote sustainability. ESG is a company's performance beyond financial aspects (non-financial) that focuses on three main points to assess sustainability impacts and ethics in investment decision-making, namely Environmental, Social, and Governance (Triyani et al. 2021). With ESG assessments through sustainability reports, stakeholders, especially investors, get a holistic view of the risks and opportunities the company has (Forbes 2023). Therefore, ESG aspects are crucial for the sustainability of the company. Companies that initially implement CSR programs will find it easier to align with ESG principles, thereby reinforcing sustainability aspects. Consequently, investor confidence in such companies is likely to increase.

Findings by Morgan Stanley Capital International (MSCI), which assesses ESG, stated that companies with low ESG performance (bottom quartile) more frequently experience stock price declines (MSCI 2023). This indicates that companies that do not pay attention to ESG are at risk of being exposed to these risks, making investors disinterested in their stocks. This aligns with Aritonang (2018), who stated that

stakeholders prefer to engage with companies that have controlled risks, thus companies need strategies to mitigate risks.

Environmental, social, and governance risks are aspects that companies need to pay attention to in order to build stakeholder trust and improve ESG ratings in the coming years. Environmental risks are impacts from company activities that cause changes in the shape and function of the surrounding environment (Chapman 2011). Social risks are events or occurrences that can create potential social vulnerabilities borne by individuals, families, groups, or communities due to social, economic, political crises, natural phenomena, and natural disasters, which, if not provided with social assistance, will further deteriorate and not live in a normal condition (Pratama et al. 2022). Governance risks refer to potential non-compliance, failures, or other negative consequences arising from the lack of or ineffective corporate governance systems, resulting in decreased investor trust, reduced company value, conflicts of interest, and financial and reputational losses (Swarte et al. 2020).

Overall, the ESG assessment of PT XYZ Indonesia by MSCI in 2023 placed the company at a BBB rating, in the middle of the five ratings: AAA, AA, A, BBB, BB, and CCC. PT XYZ Indonesia has a strong strategy in managing community-related risks to the coal and energy mining business, although it is still lagging in adopting decarbonization strategies as 81% of its business relies on coal. In the Social pillar, the company excels in managing community relations and community development programs, despite three fatal accident incidents in 2022. In the Governance pillar, the company lags in adopting a strong business ethics framework and anti-corruption policies. This ESG assessment record can serve as a benchmark for PT XYZ Indonesia to strengthen strategies and reduce future risks, aiming for an improved ESG rating in the following year.

Through the 2023 ESG ratings report, it was found that PT XYZ Indonesia is still lagging behind the industry average in environmental aspects, namely carbon emissions; social aspects, namely health & safety; and governance aspects, namely corporate governance. PT XYZ Indonesia has not yet focused on managing risks specifically from ESG assessment indicators, which impacts the company's static ESG scores year by year, as shown in Figure 1.

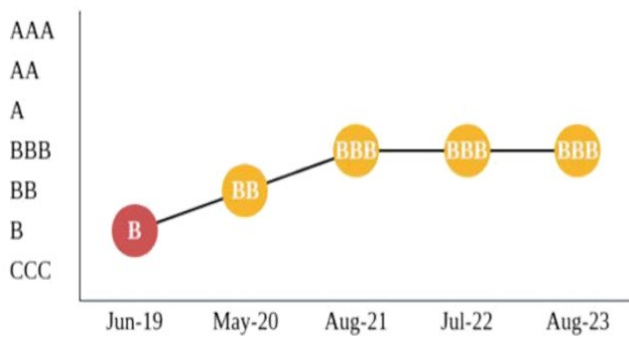


Figure 1. ESG Ratings PT XYZ Indonesia 2019-2023

So far, PT XYZ Indonesia has not implemented risk management in accordance with national or international standards, namely ISO 31000:2018 risk management. SNI ISO 31000:2018 serves as a guideline for carrying out the best risk management processes so that its implementation can be adopted by various types of organizations in Indonesia (BSN 2018). By adopting this standard, PT XYZ Indonesia has the opportunity to enhance its ESG risk management processes, thereby improving its ESG ratings and contributing to long-term sustainability. This study thus explores the application of ISO 31000:2018 to strengthen PT XYZ Indonesia's ESG risk management approach, addressing key risk areas and setting a benchmark for the mining industry in Indonesia.

In risk management, PT XYZ Indonesia has its own framework called enterprise risk management, which involves stages of identifying risk events, identifying causes & impacts, risk assessment, risk treatment, and risk reporting. Therefore, this study will combine the urgency between risk management and improving PT XYZ Indonesia's ESG ratings by conducting environmental, social, and governance risk analysis based on ISO 31000:2018.

The analysis and treatment of ESG risks will help the company develop a risk management system that has been implemented. The framework used for this risk analysis is ISO 31000:2018, which is a standard set by the International Organization for Standardization (ISO). With this, the risk analysis on ESG components is expected to develop the risk management system at PT XYZ Indonesia and improve the ESG disclosure score of PT XYZ Indonesia in 2024 thru the results of analyze and manage ESG risks using the ISO 31000:2018 framework. Based on the background and problem formulation above, the research questions are as follows:

1. What are the risks faced by PT XYZ Indonesia based on the 2023 ESG disclosure?
2. How is the risk assessment faced by PT XYZ Indonesia based on the 2023 ESG disclosure?
3. How is the risk treatment to address the risks faced by PT XYZ Indonesia based on the 2023 ESG disclosure?

## METHODS

This study was conducted at the head office of PT XYZ Indonesia in the CSR Division located at Cyber 2 Tower Building, Kuningan, South Jakarta. The research was carried out from November 2023 to April 2024.

The types of data used in this study are primary and secondary data. The primary data used are company documents, questionnaire results, and in-depth interviews with representatives of ESG Manager, ESG Officer, HSE Section Head, and CSR Section Head of PT XYZ Indonesia. The questionnaire design using closed-ended questionnaire with two stages of questionnaire distribution: validation of risk identification results (yes/no), and determination of risk likelihood and impact levels (Likert scale). Meanwhile, the secondary data used come from company data including the 2022 annual report of PT XYZ Indonesia, the 2022 sustainability report of PT XYZ Indonesia, and the 2023 ESG disclosure, sustainability reports from similar mining companies, scientific articles, journals, books, theses, and other sources.

The sampling method used is non-probability purposive sampling. The criteria for respondents are the key aspects of ESG, namely environment, social, and governance. The determination of respondents is also based on the analysis of the RACI (Responsible, Accountable, Consulted, and Informed) matrix in the company, which serves to outline the roles and responsibilities of each party involved in a business process. Based on the RACI matrix results, only four respondents from three divisions were selected, namely ESG, CSR, and HSE divisions, as they meet the expected criteria. These criteria are divisions that act as key holders of ESG issues in the company. In addition, these three divisions are also responsible (the party that completes a task) and accountable (the party that reviews the work) in PT XYZ Indonesia's business process.

Susilo and Kaho (2018) outline the ISO 31000:2018 (Figure 2) risk management process as follows:

1. Communication and Consultation: Engaging stakeholders to enhance understanding of risks for informed decision-making.
2. Scope, Context, and Criteria: Tailoring the risk management process to specific needs for effective assessment and treatment.
3. Risk Assessment: Involves systematic risk identification, analysis, and evaluation using the best available data.
4. Risk Treatment: Formulating and implementing strategies to address identified risks.
5. Monitoring and Review: Ensuring the effectiveness of the risk management process through regular evaluations at each stage.
6. Recording and Reporting: Documenting and communicating the risk management process and its outcomes to organizational governance for informed decision-making.

The processing and analysis of data are carried out following the ISO 31000:2018 risk management framework, which includes:

1. Establishing the context to gain a deeper understanding of the risk management process by analyzing primary data through in-depth interviews and secondary data such as the 2023 ESG ratings report, 2023 sustainability report, and 2023 annual report of PT XYZ Indonesia.
2. Identifying potential ESG risks in the company, then validating the risks that occur and eliminating those that do not. Data are collected through in-depth interviews and questionnaires, then analyzed using descriptive statistical methods.
3. Risk assessment (identification, analysis, and evaluation) faced by PT XYZ Indonesia. Data are collected through questionnaires and analyzed based on Godfrey's (1996) risk measurement, risk map, and risk acceptance levels. The Godfrey risk measurement can be seen in Figure 3 and Figure 4. The scale used is 1-5 to measure the level of risk to 5 levels (categories) of risk referring to Godfrey (1996). The smaller the number on the scale, the lower the likelihood and risk impact. The risk map is represented in a 5 x 5 grid, with the x-axis representing probability and the y-axis representing impact, allowing for the placement of risks in the format (x,y). Figure 5 shows the Godfrey's (1996) risk map.

4. Designing risk treatment strategies: The company needs to undertake risk mitigation measures for each identified risk. These measures will form the basis for planning preventive and corrective action in risk management, guided by Flanagan and Norman (1993).

## RESULTS

### Company Overview

PT XYZ Indonesia is a company engaged in the mining industry, with coal as its main business, and its operational area is centered in South Kalimantan. PT XYZ Indonesia has built a solid and comprehensive vertically integrated supply chain from exploration to marketing. Throughout the supply chain, PT XYZ Indonesia establishes subsidiaries for vital operations to control product quality, reliability, and cost efficiency, besides leveraging their operational synergies to generate third-party revenue. This upstream to downstream mining integration model is referred to as "Pit-Port-Power." In running its business, PT XYZ Indonesia is guided by its vision and mission. The vision of PT XYZ Indonesia is "to become a leading mining and energy group company in Indonesia," as reflected in its achievement as the second largest coal mining company in Indonesia (MODI 2023).



Figure 2. Risk management process ISO31000:2018



Scale	Description	Guideline	Probability *
1	Improbable	Very rare events	1/100 x
2	Remote	Rare events	1/10 x
3	Occasional	Events that happen sometimes	1 x
4	Probable	Events that happen frequently	10 x
5	Frequent	Events that happen very often	100 x

\* Possibility in a period

Source: Godfrey (1996)

Figure 3. Risk likelihood measurement

Scale	Description	Guideline	Impact *
1	Negligible	Events cause very small and negligible impacts	Rp 1/100
2	Marginal	Events result in small impacts that can be easily overcome	Rp 1/10
3	Serious	The event caused quite a serious impact.	Rp 1
4	Critical	The event has a huge impact so it needs to be transferred to the other side.	Rp 10
5	Catastrophic	The event has a huge impact that must be avoided.	Rp 100

\* Impact/loss in currency units, medium scale as standard

Source: Godfrey (1996)

Figure 4. Risk impact measurement

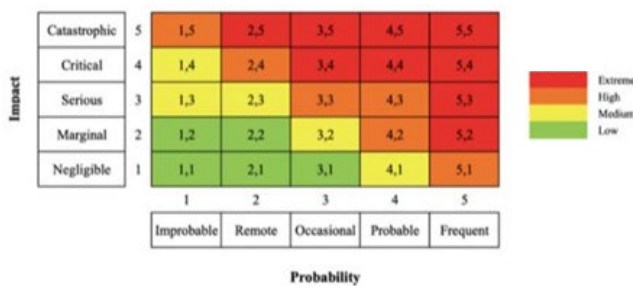


Figure 5. Godfrey's (1996) risk map

PT XYZ Indonesia is led by a president director, assisted by a vice president director. There are also directors who lead and oversee various corporate functions (divisions) of the company. In implementing risk management, PT XYZ Indonesia follows the guidance of OJK No. 21/POJK.04/2015 concerning risk management. The company applies Enterprise Risk Management (ERM) requiring each division to prepare and submit a risk profile to the Board of Directors every month. Each risk is monitored and recorded regularly as data for risk assessment. The risk profile is provided to the Board of Directors and the Risk Management Unit (RMU). The RMU analyzes the risk population for aggregation and consolidation to build a risk profile. This risk profile is then reviewed and assessed by the Board of Directors twice a year to formulate action plans/mitigation strategies for managing each major risk.

## Company Business Processes

The business process identified in this study focuses on the stages of mining activities, starting from the land clearing permit to the closure of the mining area. Of course, this business process involves the aspects of environmental, social, and corporate governance. PT XYZ Indonesia's business process is divided into Pit, Port, and Power stages, which are integrated from the initial land clearing to coal being traded. The following are the business process stages undertaken by PT XYZ Indonesia.

1. Pit: The Pit stage involves exploration and mapping to locate potential coal reserves and assess social impacts. After analysis, the Board of Directors and stakeholders make decisions on mining areas, followed by obtaining necessary permits from the government, environmental agencies, and indigenous communities. Land clearing is conducted according to agreed concessions, with mining operations utilizing heavy machinery and CSR programs empowering the local community.
2. Port: In the Port stage, the mined coal is processed to improve its quality and categorized into specific grades before being sold. The coal is then distributed to domestic and international markets.
3. Power: The Power stage focuses on utilizing coal as an energy source. The coal is marketed and sold, prioritizing domestic needs before export. Evaluation includes monitoring environmental and safety impacts and reclaiming mined land to restore the ecosystem.

## Risk Management Process

### Communication and Consultation

In SNI ISO 31000, this stage aims to ensure that each party understands their capacity and comprehends the reasons why the risk management process must be carried out (BSN 2018). In designing communication and consultation plans, the company can use a tool known as the RACI Matrix (Responsible-Accountable-Consulted-Informed). This is to facilitate the company in determining the roles of each stakeholder in every activity within the risk management process.

Based on RACI Matrix (Table 1), the roles and responsibilities of each section in the business process at PT XYZ Indonesia are outlined. In this business process, the responsibility is generally held by each

division involved in the Sustainability Management Committee: the ESG, HSE, CSR, and HR divisions. The Board of Directors (BOD) is informed and consulted regarding business processes related to ESG, as the BOD has the authority to make decisions. The ESG division functions as the coordinator for each division in the Sustainability Management Committee and directly interacts with the company's ESG rating agency.

### Establishing Context

This research focuses on the management of environmental, social, and corporate governance risks based on the 2023 ESG disclosure of PT XYZ Indonesia. The risks analyzed are those arising from the company's activities in key ESG disclosure issues. The risk context in this study includes internal and external contexts. The internal context is governance, which includes corporate governance and corporate behavior. The external context consists of environmental aspects such as carbon emissions, biodiversity & land use, water stress, and toxic emissions & waste, and social aspects like health & safety, community relations, and labor management.

### Risk Assessment

Risk assessment is divided into risk identification, risk analysis, and risk evaluation.

#### 1. Risk Identification

In this study, risk identification is based on the business processes carried out by PT XYZ Indonesia and the evaluation in the 2023 ESG ratings report. A review of PT XYZ Indonesia's ESG Disclosure identified 43 ESG-related risks. These were then refined through validation by the ESG manager, ESG officer, Head of HSE, and Head of CSR via interviews and questionnaires. Risks were confirmed if three or more respondents agreed or if they had over a 50% response rate. After this process, 22 validated ESG risks remained for PT XYZ Indonesia. The identified risks are presented in Table 2.

#### 2. Risk Analysis

The risk analysis stage serves to measure the level of risk exposure in order to understand the impact of these risks on achieving objectives. This helps the company make decisions and design risk mitigation strategies.

Table 1. RACI Matrix of PT XYZ Indonesia

Business Process	BoD	Director	ESG	HSE	CSR	HR	Legal	Operations
Exploration and mapping	C/I	A						R
Decision-making on mining area	C/A	R						I
Land clearing permit	C/I	A					R	
Recruitment of local labor	C/I	A				R		
Training and SOP K3	C/A	A		R				
Educating on code of ethics, culture, and company regulations	C/I	R	R	R	R	R	R	R
Coal extraction and purification	C/I	A						R
Planning and implementing CSR programs	C/I	A	I		R			
Program approval and funding	R/A	I	I		I			
Open communication with the community	C/I	I			R			
Water management for production	C/I	A		R				
Waste, pollution, and carbon emissions management	C/I		I	R				
Reclamation	C/I	A	I	R				
Evaluation and reporting in board meetings	R/A	C	I	I	I	I	I	I
Designing Sustainability Report	C/I	A	R	I	I	I	I	I

Notes: R = Responsible; A = Accountable; C = Consulted; I = Informed

Table 2. ESG Risk Identification of PT XYZ Indonesia

Risk Area	Risk Code	Risk Identification	Potential Risk Impact
Environmental	R01	Maximum carbon emissions limit	Financial penalties or suspensions that the company must pay
	R02	Dynamic government regulation changes (related to exploration & exploitation)	Delays in operational processes and productivity
	R03	Inadequate land reclamation quality	Incomplete reclamation and quality not meeting expected standards
	R04	Inability to protect endangered species	Endangered species facing extinction
	R05	Loss of natural vegetation at the site	Natural site vegetation dies and cannot regrow
	R06	Disruption of water-dependent production processes	Decreased production yield
	R07	Environmental pollution & damage	Costs for repairing damage and pollution
Social	R08	Accidents during operational activities	Serious injury or death
	R09	Community demonstrations & conflicts	Company operational activities are disrupted
	R10	Social changes	Social inequality occurs
	R11	Failure to comply with standards in new land opening	Community losses not matching previous calculations
	R12	Poor local labor qualifications	Dependence on non-local labor, tension with the community
	R13	Violence against local communities	Legal demands, bad reputation, community condemnation
	R14	Non-compliance with Human Rights Standards	Human rights violations and legal sanctions
Governance	R15	Business climate changes	Inability to adjust strategies quickly
	R16	Weak diversification	Reduces the board's ability to anticipate and solve problems creatively and holistically
	R17	Violations of company code of ethics	Confidential information leaks, decreased stakeholder trust
	R18	Abuse of power	Fraudulent practices and ethical violations
	R19	Whistleblower safety	Threats to whistleblowers' careers, opportunities, or lives
	R20	Internal conflicts	Disrupts employee productivity
	R21	Significant corporate legal violations	Internal company damage
	R22	Employee legal burdens	Company reputation to fines for the company

#### a) Risk Measurement

It is carried out by analyzing the likelihood of the risk occurring and the level of impact on the company if the risk occurs. Risk levels are measured using a Likert scale ranging from 1 to 5. A rating of 1 indicates the lowest potential risk, while a rating of 5 indicates the highest potential risk. Identified risks are analyzed considering their probability level, following the approach introduced in Godfrey's theory (1996). The results of the risk likelihood and impact levels are shown in Figures 7 and 8.

#### b) Risk Mapping

After risk measurement, risk mapping is conducted into four categories: low, medium, high, and extreme, based on Godfrey (1996). Low-risk levels are represented by green boxes, medium-risk levels by yellow, high-risk levels by orange, and extreme-risk categories by red boxes. The risk mapping results of PT XYZ Indonesia can be seen in Figure 9.

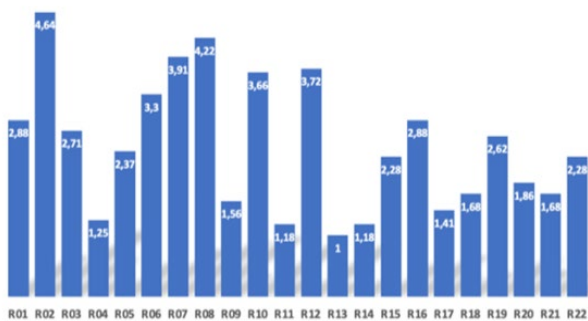


Figure 7. Risk likelihood levels

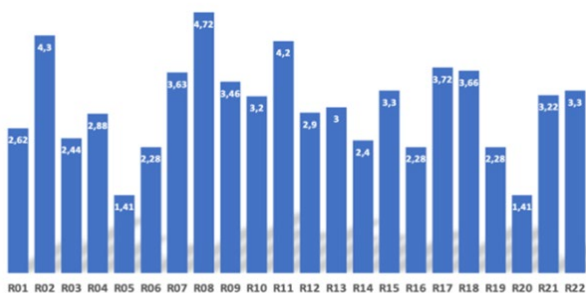


Figure 8. Risk impact levels

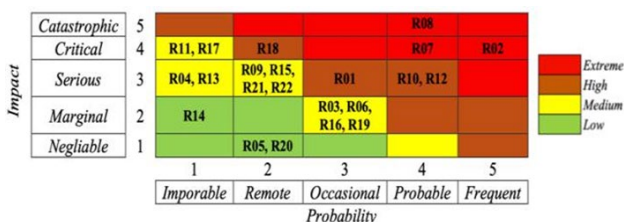


Figure 9. PT XYZ Indonesia ESG Risk Map

### Risk Evaluation

The risk evaluation stage is a process to determine which risks require further treatment or are included in the risk treatment process (BSN 2018). Risk evaluation is carried out by comparing the results of the risk analysis activities with the established risk criteria. These risk criteria refer to Godfrey's (1996) risk acceptance, which includes negligible risks, acceptable risks, undesirable risks, and unacceptable risks. The risk evaluation results for PT XYZ Indonesia revealed three negligible risks, 12 acceptable risks, four undesirable risks, and three unacceptable risks. Referring to Godfrey (1996), as the risk level increases, the company's acceptance of risk decreases. The results of this risk acceptance level analysis can serve as a reference for the company in making risk treatment decisions.

### Risk Treatment

Risk treatment aims to select and implement risk handling options. The risk treatment for PT XYZ Indonesia can be seen by measuring the level of risk acceptance for each risk. Referring to Flanagan and Norman (1993), risk management can be categorized into four (4) approaches: (1) risk retention to respond to risks with negligible acceptance levels, (2) risk reduction to address risks with acceptable acceptance levels, (3) risk transfer to address risks with undesirable acceptance levels, and (4) risk avoidance to address risks with unacceptable acceptance levels. The risk treatment results for PT XYZ Indonesia are shown in Table 3.

Risk treatment efforts are carried out on high and extreme-level risks to reduce the likelihood and impact levels of these risks. The risk management efforts are as follows:

1. Dynamic government regulation changes (related to exploration & exploitation) (extreme)
  - a. Conduct comprehensive regulatory analysis to understand potential future legal changes and green energy regulations.
  - b. Build advocacy and stakeholder engagement through active dialogue to influence policymaking by participating in industry forums, drafting alternative policy proposals, or supporting relevant advocacy campaigns.
  - c. Develop specific relationships with the government by establishing a government relations division.
2. Environmental pollution & damage (extreme)
  - a. Implement an Environmental Management System (EMS) for structured environmental protection following national standards, namely ISO 14001.
  - b. Treat waste through pH treatment ponds and metal parameter treatment. Reuse recycled water to reduce freshwater intake and consumption and limit the impact of discharged water.
  - c. Prepare a budget for damage and pollution repair costs above the actual design (2x the previous design).



Table 3. ESG Risk Treatment of PT XYZ Indonesia

Risk Code	ESG Risk	Risk Acceptance	Risk Response
R02	Maximum carbon emissions limit	Unacceptable	Avoidance
R07	Dynamic government regulation changes (related to exploration & exploitation)	Unacceptable	Avoidance
R08	Inadequate land reclamation quality	Unacceptable	Avoidance
R01	Inability to protect endangered species	Undesirable	Transfer
R10	Loss of natural vegetation at the site	Undesirable	Transfer
R12	Disruption of water-dependent production processes	Undesirable	Transfer
R18	Environmental pollution & damage	Undesirable	Transfer
R03	Accidents during operational activities	Acceptable	Reduction
R04	Community demonstrations & conflicts	Acceptable	Reduction
R06	Social changes	Acceptable	Reduction
R09	Failure to comply with standards in new land opening	Acceptable	Reduction
R11	Poor local labor qualifications	Acceptable	Reduction
R13	Violence against local communities	Acceptable	Reduction
R15	Non-compliance with Human Rights Standards	Acceptable	Reduction
R16	Business climate changes	Acceptable	Reduction
R17	Weak diversification	Acceptable	Reduction
R19	Violations of company code of ethics	Acceptable	Reduction
R21	Abuse of power	Acceptable	Reduction
R22	Whistleblower safety	Acceptable	Reduction
R05	Internal conflicts	Negligible	Retention
R14	Significant corporate legal violations	Negligible	Retention
R20	Employee legal burdens	Negligible	Retention

3. Accidents during operational activities (extreme)

- a. Observe operational areas supported by historical data, field inspections, and employee feedback to identify areas prone to accidents and injuries since operational employees are the ones who recognize the characteristics of these areas.
- b. Develop safety SOPs for field operations by tightening operational access.
- c. Monitor and evaluate work regularly to identify trends and patterns of work accidents and analyze the causes. Through employee initiatives in identifying and evaluating potential hazards, recommend corrective actions, and monitor their implementation.
- d. Regularly check and maintain machines and tools before their lifespan ends.
- e. Conduct quarterly work evaluations to ensure up-to-date information and adapt quickly.
- f. Partner with insurance companies.

4. Maximum carbon emissions limit (high)

- a. State carbon emission reduction targets in the sustainability report as part of the carbon emission reduction initiative. As done by CMOC Group Limited (2023), stating carbon emission reduction targets divided into three plans: Short-term goals (2041-2050): 67% carbon emission reduction and achieving carbon neutrality; Medium-term goals (2030-2040): 38%-60% carbon emission reduction; Long-term goals (2041-2050): 67% carbon emission reduction and achieving carbon neutrality by 2050.
- b. Outsource to experts such as environmental consultants to reduce carbon emissions. By conducting a comprehensive carbon emission assessment and drafting the best carbon emission reduction plan.
- c. Reduce carbon emissions by utilizing FABA (fly ash and bottom ash) into environmentally friendly construction materials. FABA utilization is recommended by the Ministry of Environment and Forestry (KLHK) as it plays a role in reducing CO<sup>2</sup> emissions and power plant waste reduction.

5. Social changes (high)

- a. Conduct regular social impact assessments to understand community dynamics.
- b. Involve the FKPK “*Forum Komunikasi Pemangku Kepentingan*” in the mining operational area. FKPK will act as a formal representative to receive community aspirations.
- c. Apply communication principles of Free Prior and Informed Consent (FPIC) in the context of community consultation and participation in PT XYZ Indonesia’s projects.
- d. Form partnerships and community engagement through CSR programs and collaborative projects tailored to the specific needs identified within the community.

6. Poor local labor qualifications (high)

- a. Special local recruitment by prioritizing candidates from communities around the company’s operational areas.
- b. Partner with local educational institutions such as secondary schools, universities, and vocational training centers to develop educational programs that meet industry needs.
- c. Manage performance and human resources through regular work evaluations and feedback every three months.
- d. Conduct training and skill development programs by HR development institutions involving skilled experts and instructors from outside to provide relevant training.

7. Abuse of power (high)

- a. Implement term limits for the board of directors with a duration adjusted by the company. Following OJK governance guidelines (2014), independent

commissioners have a maximum term of 9 years or three terms.

- b. Refresh board diversity. PT XYZ Indonesia should increase gender diversification (at least 30% female directors) and expertise within the board.
- c. Be open to recommendations and changes arising from active dialogue with shareholders to listen to and respond to their concerns regarding the structure and performance of the board.
- d. Accept and respond to recommendations from ESG research or independent assessments related to corporate governance and the board. Then be willing to make necessary changes and adjustments to improve board performance and integrity.

After conducting the risk management process from risk assessment to designing risk treatment strategies, the company can implement them in facing risks. It is expected that there will be changes in the company’s risk map with reduced likelihood and impact levels of risks after treatment. The expected risk map forenvironmental, social, and governance risks can be seen in Figure 10.

In Figure 10, it can be seen that the risks of environmental pollution & damage (R07) and accidents during operational activities (R08) can be reduced in likelihood by implementing the designed strategies. The risks of the maximum carbon emissions limit (R01), dynamic government regulation changes (related to exploration exploitation) (R02), social changes (R10), poor local labor qualifications (R12), and abuse of power (R18) can be reduced in impact by internal company controls over the risks faced. Therefore, PT XYZ Indonesia can implement risk treatment strategies to reduce the likelihood and impact levels of risks to achieve company goals in improving ESG scores in the following year.

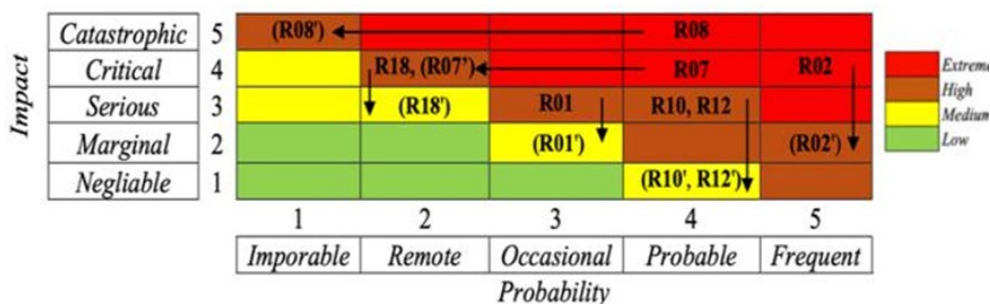


Figure 10. Expected risk map

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

Based on the analysis conducted, it is identified that PT XYZ Indonesia has 22 ESG risks. The risk assessment results show that there are three low-level risks, 12 medium-level risks, four high-level risks, and three extreme-level risks. Treatment is designed for the identified 22 ESG risks, focusing only on high-level risks by transferring some or all of the risks and extreme-level risks by avoiding risks. Meanwhile, efforts for low and medium risks can apply mitigation strategies to retain and reduce the likelihood and impact of risks. Risk treatment efforts are focused on addressing the high and extreme-level ESG risks at PT XYZ Indonesia, primarily through mitigation and transfer strategies designed to reduce impact and potential losses. The practical implications of these proposed strategies include enhanced operational resilience, improved regulatory compliance, and strengthened stakeholder trust, which together contribute to a more sustainable and socially responsible business model. This approach not only aims to bolster PT XYZ Indonesia's ESG performance but also serves as a model for similar companies seeking to address ESG risks effectively in the mining sector. This research is limited to environmental, social, and governance (ESG) risks faced by PT XYZ Indonesia, not covering all aspects of the organization.

### Recommendations

Additionally, this research is limited to internal respondents, so future research can involve external respondents such as communities, regulators, and investors, especially ESG assessors of a company, to obtain risk identification results that complement this research.

**FUNDING STATEMENT:** This research did not receive any specific grant from funding agencies in the public, commercial, or not - for - profit sectors.

**CONFLICTS OF INTEREST:** The author declares no conflict of interest.

## REFERENCES

- Aritonang FA. 2018. The Influence Of Environmental, Social And Governance (ESG) Disclosure On Firm Risk [tesis]. Semarang: Universitas Diponegoro
- [AEI] Adaro Energy Indonesia. 2022. Sustainability Report. <https://www.adaro.com/pages/read/10/42/Annual%20Report>. Ali, H. E., Abdellatif, O. A., 2015. [2024 Feb 28].
- [BSN] Badan Standarisasi Nasional. 2018. *Manajemen risiko berbasis SNI ISO31000*. Jakarta: BSN.
- Chapman RJ. 2011. Simple Tools and Techniques for Enterprise Risk Management. Wiley. <https://doi.org/10.1002/9781118467206>
- Flanagan R, Norman G. 1993. *Risk Management and Construction*. Oxford: Blackwell Scientific.
- [Forbes] Forbes Advisor. 2024. Environmental, Social And Governance: What Is ESG Investing?. <https://www.forbes.com/advisor/investing/esg-investing/> [2024 Feb 4].
- Godfrey PS. 1996. *Control of Risk: A Guide to The Systematic Management of Risk from Construction*. London: CIRIA.
- [ISO] International Organization for Standardization. 2018. Risk management ISO31000. <https://www.iso.org/publication/PUB100426.html>. [2024 Mar 20].
- Jenkins H, Yakovleva N. 2006. Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. *Journal of Cleaner Production* 14(3–4):271–284. <http://dx.doi.org/10.1016/j.jclepro.2004.10.004>.
- Mitchell P, Beifus A. 2022 Okt 11. Top 10 business risks and opportunities for mining and metals in 2024. [https://www.ey.com/en\\_us/mining-metals/risks-opportunities](https://www.ey.com/en_us/mining-metals/risks-opportunities) [2024 Feb 9].
- [MODI] (Minerba One Data Indonesia). 2023. Realisasi Produksi & Penjualan Batubara. <https://modi.esdm.go.id>. [2023 Nov 25].
- MSCI. 2023. ESG and Financial Performance: Research Overview. <https://www.msci.com/research-and-insights/esg-integration-research-overview>. [2023 Nov 25].
- Pratama RA, Fasa MI, Suharto S. 2022. Sosialisasi Penyaluran Bantuan Sosial (Bansos) Pada Era New Normal Di Desa Ciamis Kecamatan Sungkai Utara Kabupaten Lampung Utara. *Jurnal Pengabdian Masyarakat* 3(1):107-118. <http://dx.doi.org/10.32815/jpm.v3i1.1183>.

- [OJK] Otoritas Jasa Keuangan. 2014. ROADMAP Tata Kelola Perusahaan Indonesia. <https://ojk.go.id/id/data-dan-statistik/ojk/Documents/> [2024 Maret 23].
- Swarte W, Lindrianasari L, Prasetyo TJ, Sudrajat S, Darma F. 2020. Pengaruh Struktur Kepemilikan Dan Tata Kelola Perusahaan Terhadap Pengungkapan Manajemen Risiko. *Ekuitas (Jurnal Ekonomi Dan Keuangan)* 3(4):505. <http://dx.doi.org/10.24034/j25485024.y2019.v3.i4.4205>
- Triyani A, Setyahuni SW, Makwuna FD. 2021. Pengaruh kinerja non keuangan (environmental, social, governance) terhadap resiko investasi perusahaan. *JURNAL AKUNTANSI DAN BISNIS: Jurnal Program Studi Akuntansi* 7(2):155–165. <http://dx.doi.org/10.31289/jab.v7i2.5602>.