Final Report

Double Materiality Assessment

TBS

June 2024

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Introduction

About TBS

PT TBS Energi Utama TBK (TBS) is Indonesia's leading company developing a thriving innovation ecosystem to energize a safe and just world. The business operations encompass four main segments: coal mining and trading; electricity generation; oil palm plantation; and waste management. With an optimistic vision and a dedication to improving humanity while minimizing environmental impact, TBS launched TBS2030 – "Towards a Better Society 2030" – in November 2022. This initiative serves as a clear, measurable, and transparent roadmap for all stakeholders, underscoring our commitment to progress. Looking ahead to 2025, TBS is committed to further phasing out coal-mining operations and transitioning towards cleaner, more sustainable businesses in renewable power generation, electric vehicles, waste management, and other future-focused business streams.

About this report

This report deep dives into the Double Materiality Assessment for TBS. By conducting a Double Materiality assessment, TBS is able to identify environmental, social, and governance (ESG) risks that may impact our operations. Addressing these risks can enhance resilience and reduce potential liabilities, safeguarding the business against unforeseen disruptions. The findings, insights, and actionable recommendations detailed in this report aim to demonstrate the significance of Double Materiality and how it can be leveraged effectively. It portrays a holistic view of how TBS approaches a Just Transition towards a more sustainable future, with the ambition to set a precedent for others in the wider ecosystem.

About Sustainability Standards

In the global sustainability reporting landscape, organizations strive to enhance their transparency and accountability regarding environmental, social, and governance (ESG) matters. The Global Reporting Initiative (GRI) has long been at the forefront of facilitating this effort, offering a robust framework for sustainability reporting. Beyond the GRI's influence, the European Union has introduced the Corporate Sustainability Reporting Directive (CSRD), representing a significant leap forward in corporate disclosure. This directive seeks to elevate the quality and consistency of sustainability reporting, aligning it with the European Green Deal and the Sustainable Finance Disclosure Regulation (SFDR).

The Global Reporting Initiative (GRI) is an independent international organization that has developed a widely used framework for sustainability reporting. The GRI aims to promote sustainability reporting and disclosure by organizations, helping them measure and communicate their environmental, social, and governance (ESG) performance. The GRI provides guidelines and

standards that organizations can use to report on their sustainability efforts and impacts consistently and transparently. These guidelines cover various aspects of sustainability, such as environmental performance, social impacts, labor practices, human rights, and more. By following the GRI framework, organizations can provide stakeholders, including investors, customers, employees, and the public, with valuable information about their sustainability practices and progress.

The Corporate Sustainability Reporting Directive (CSRD) initiative by the European Union aims to enhance the scope, quality, and consistency of sustainability information reported by companies. It significantly evolved from the existing Non-Financial Reporting Directive (NFRD). It is part of the broader European Green Deal and the Sustainable Finance Disclosure Regulation (SFDR), aiming to integrate sustainability into the corporate governance framework and investment decision-making process.

Adopted in the European Union (EU) in January 2023, the European Commission released a delegated regulation that defines the approach and rules to be observed and followed by companies subject to the CSRD sustainability reporting requirement, called the European Sustainability Reporting Standards (ESRS), These are the standards to ensure CSRD compliance, giving guidance for companies to communicate their impacts. The ESRS mandates that materiality be assessed through a Double Materiality lens, combining the Impact Materiality (social and environmental impact from business activities, operations, and value chain) with the Financial Materiality (impact on financial performance).

The Financial Services Authority of Indonesia (OJK) promotes sustainable finance through Regulation No. 51/POJK.03/2017, in line with the 2022 Financial Services Authority Circular No. 16/SEOJK.04/2021. This regulation mandates accountability and transparency for issuers and public companies regarding their economic, environmental, and social impacts. It encourages adjustments in organizational structures, risk management practices, and governance frameworks to meet market demands and support government policies related to UN Sustainable Development Goals (SDGs). The form and content of Annual Reports for issuers or public companies aim to enforce the preparation of Sustainability Reports according to the Technical Guidelines for the Preparation of Sustainability Reports for Issuers and Public Companies. In summary, these reporting initiatives work together to enhance transparency, accountability, and sustainable performance.

TBS' Approach to Double Materiality

What is a Materiality Assessment?

Materiality is identifying the sustainability topics and issues that impact and influence an organization. Material topics are most essential, relevant to an organization, and related to the most significant risks and opportunities, making them crucial for the company's decision-making and strategy development. It is a critical concept in the world of sustainability strategy and reporting. Companies frequently employ Materiality Assessments to pinpoint the key sustainability challenges they must prioritize. These assessments aid in comprehending how their business operations affect the environment, society, and economy, guiding decisions on handling and communicating these impacts. These regulations on sustainability and Materiality Assessments vary by geography and industry.

What is Double Materiality?

A Double Materiality analysis identifies topics that impact **both** the business value and topics that have a material impact on society and the environment. The concept of Double Materiality acknowledges two interconnected dimensions of materiality:

Sustainability Materiality (Inside-Out Perspective):
This dimension assesses the impact of a company's operations, products, services, and business relationships on the environment and society over the short, medium, and/or long term. It involves identifying and evaluating a company's positive or negative effects on external stakeholders, including the community, environment, employees, and customers. The focus is on the company's contribution to sustainability challenges or opportunities.

Financial Materiality (Outside-In Perspective):
This dimension focuses on how ESG factors and sustainability-related risks and opportunities can affect a company's financial condition, performance, and prospects. It's about understanding and evaluating how climate change, human rights, or corporate governance are expected to influence a company's financial performance, cost of capital, asset values, and, ultimately, the interests of its shareholders and investors over a specific timeframe.

Integrating Double Materiality Assessment outcomes into the business strategy can significantly enhance strategic alignment by addressing sustainability risks and opportunities alongside financial considerations. Unlike traditional Materiality Assessments, this integration is characterized by a more intricate and strategic approach, ensuring that sustainability objectives are seamlessly woven into the organization's overarching strategy. Moreover, in Double Materiality Assessments, the scope of risk management expands beyond traditional financial risks to encompass environmental, social, and governance (ESG) factors. This necessitates adopting a broader risk management framework and utilizing more sophisticated tools and methodologies for risk identification, assessment, and mitigation. Furthermore, due to the dynamic nature of ESG factors and their evolving impacts, ongoing monitoring and regular updating of Double Materiality Assessments are imperative. This ensures that organizations remain responsive to emerging risks, new insights, and evolving stakeholder expectations, thereby maintaining the relevance and effectiveness of their sustainability strategies.

TBS Double Materiality Methodology Overview

Step 1:
Harvesting & Aggregating
Context

- Business Model
- Gap Analysis
- Desktop Research

Step 2:
Determining Prospective
Material Topics

- Peer Benchmarking and Case Studies
- Trend and Regulatory Watch

Step 3:
Engaging **Stakeholders** for Data Collection

- Surveys
- Interviews
- Expert Consultations
- Focus Group Discussions
- Leadership Workshops

Step 4:
Analysis of Material Impacts, Risks and Opportunities

- Analysis (Scoring)
- Validation
- Conclusions

Before conducting a Double Materiality Assessment, several key considerations should be considered to ensure its effectiveness and relevance to the organization's strategic objectives. Adopting a one-size-fits-all approach can be misleading, as materiality is inherently context-specific and can vary significantly even within the same industry or geographic region Therefore, the **first step** is to deeply understand the context; harvesting & aggregating various sets of data and information. By incorporating a vast lens initially, we can identify various short and long-term risks and opportunities, such as disruptive technologies and evolving regulatory landscapes connected to climate change; leaving the organization better prepared for unforeseen challenges. Without this broader oversight, focusing solely on direct or current issues; may overlook potential future scenarios. The **second step** is then to determine prospective Material Topics, including those which are emerging.

Once this context and initial determination is done; the **third step** sets in motion an iterative process to Engage Stakeholders and gather data. This step in the methodology must combine both qualitative and quantitative approaches to ensure a comprehensive analysis. Key stakeholders were interviewed, along with a survey, focus groups and workshops with senior leaders, to gather insights into their perceptions of material issues. Thematic analysis techniques were applied to derive common themes and patterns from all sources. Throughout this process, additional research and expert consultations were conducted to supplement and validate findings and provide broader context and relevance to the business. .

Lastly, the **fourth step** consolidates the final analysis of the Material Topics identified; to further define the impact and whether they offer a Risk and/or Opportunity for the organization, using a scoring framework to assess their significance and priority. This includes assessing how severe the impact is; from how widespread it may be geographically, to how consequential the financial implications may be. The likelihood and the time horizon (short-term or long-term) of the related Impact, Risk or Opportunity is also considered.

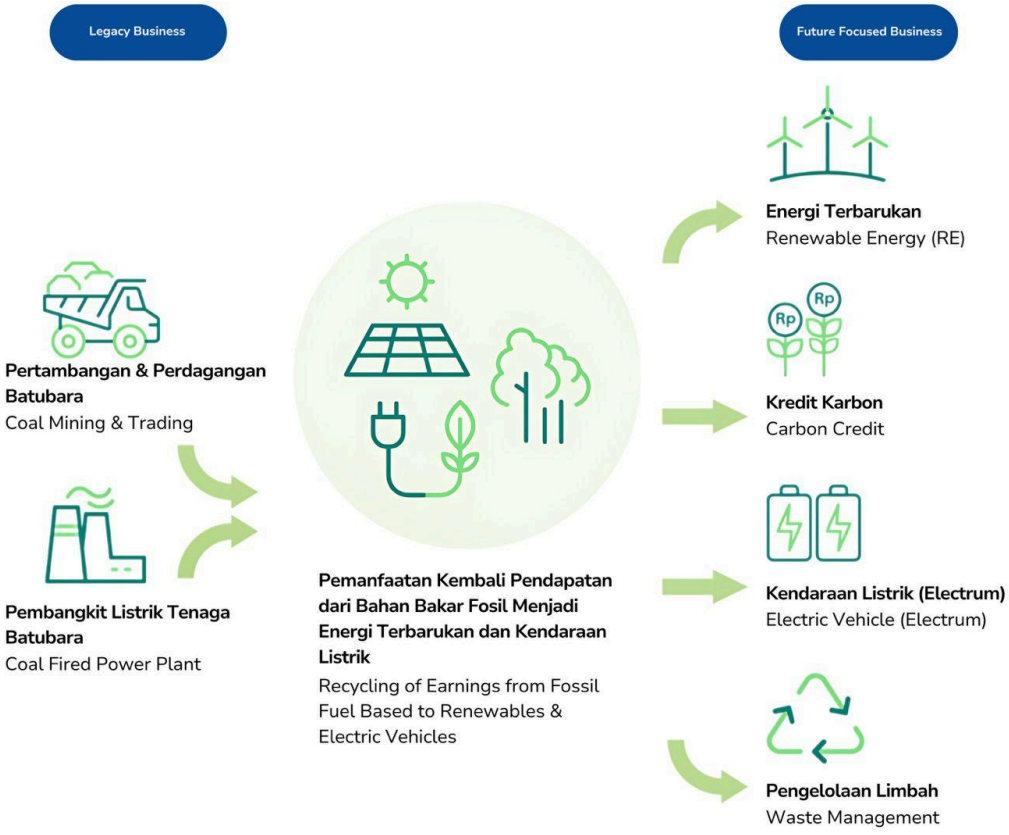
Double Materiality

Report Findings

Step 1: Harvesting & Aggregating Context

Business Model and Desktop Research

In the 2023 Double Materiality Assessment, TBS analyzed all of its operations, and has not yet applied it to its industry verticals. The assessment encompasses all business units, geographic locations, and supply chains within TBS operations. This inclusive scope ensures that the evaluation captures the full spectrum of stakeholders involved or impacted by TBS activities. With this approach, TBS aims to develop a comprehensive understanding of its operations and stakeholder landscape and tailor its strategies accordingly to drive positive outcomes for all stakeholders while enhancing its understanding of the diverse interests, concerns, and expectations relevant to its business activities. Insights were gained into the business model through open sources such as the TBS website, Sustainability Reports, and Annual Report—identifying potential gaps in its sustainability practices, and gaining insight into any shift in business direction towards more sustainable practices.



Gap Analysis and Desktop Research

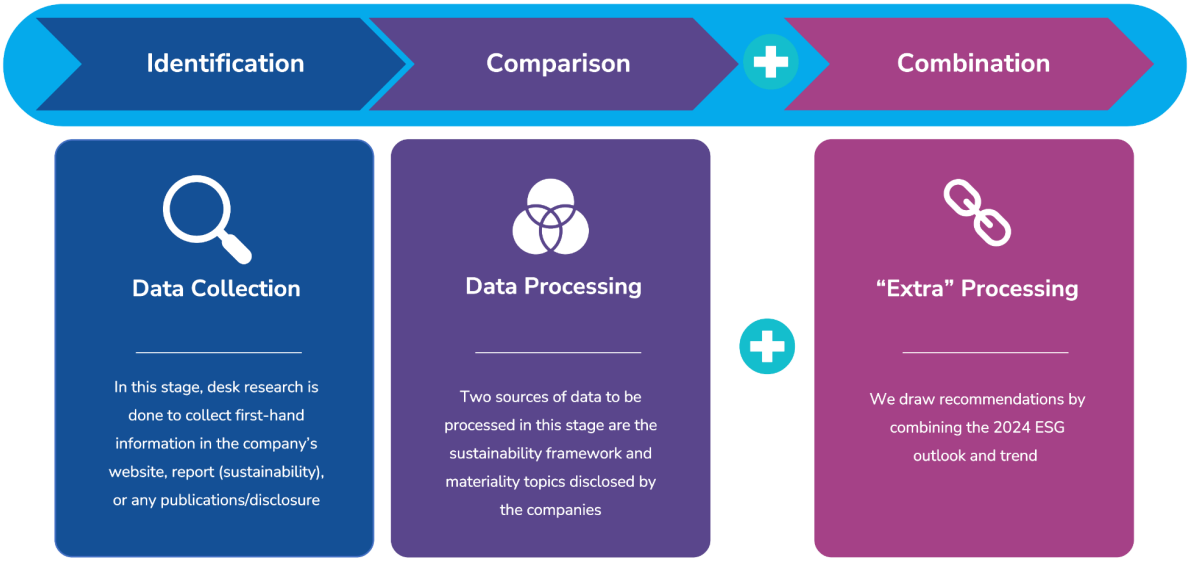
After understanding TBS' business model and processes, a gap analysis was conducted based on the required standards: GRI Standards 2021, GRI 12: Coal Mining 2022, and SEOJK No. 16/2021. An additional gap analysis was performed for the Task Force on Climate-Related Financial Disclosures (TCFD) and the International Financial Reporting Standards (IFRS) S1 and S2. The requirements in IFRS S2 are consistent with the four core recommendations and eleven recommended disclosures published by the TCFD. The TCFD focuses on improving reporting practices regarding organizations impact on global climate issues. Each standard analyzed is categorized into three compliance levels: non-compliant, partially compliant, and compliant. We also provide recommendations on how to achieve compliance with these requirements.

Step 2: Determining Prospective Material Topics

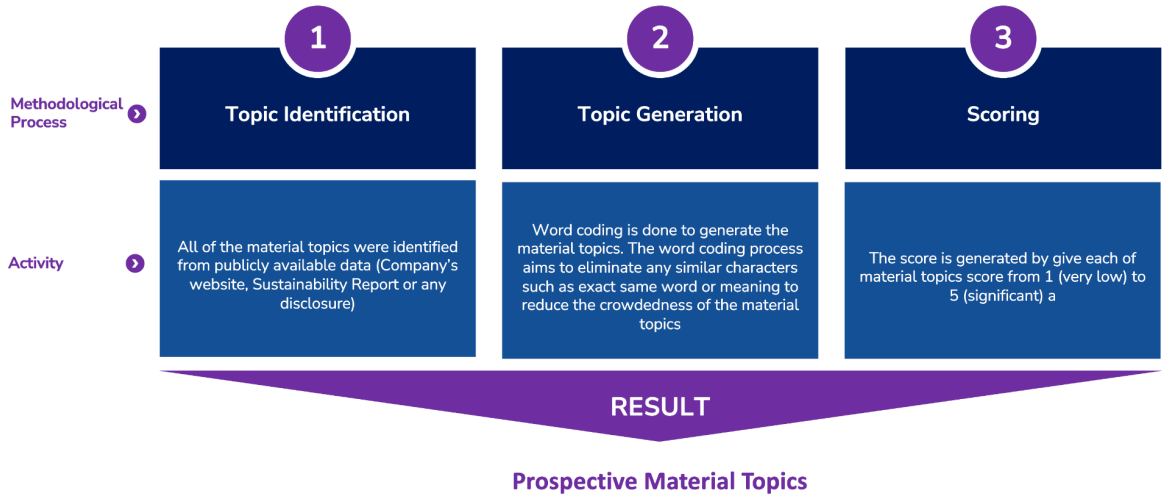
Iterative Desktop Research

During desktop research, pertinent information sources within the industry, the company's peers, the leading international standards, and forthcoming legislation were thoroughly examined. This proactive approach helps identify and address critical sustainability issues, ensuring the company's business aligns with its commitment to sustainability and responsible practices. From this, potentially relevant sustainability topics were shortlisted.

Peer Benchmarking and Case Studies

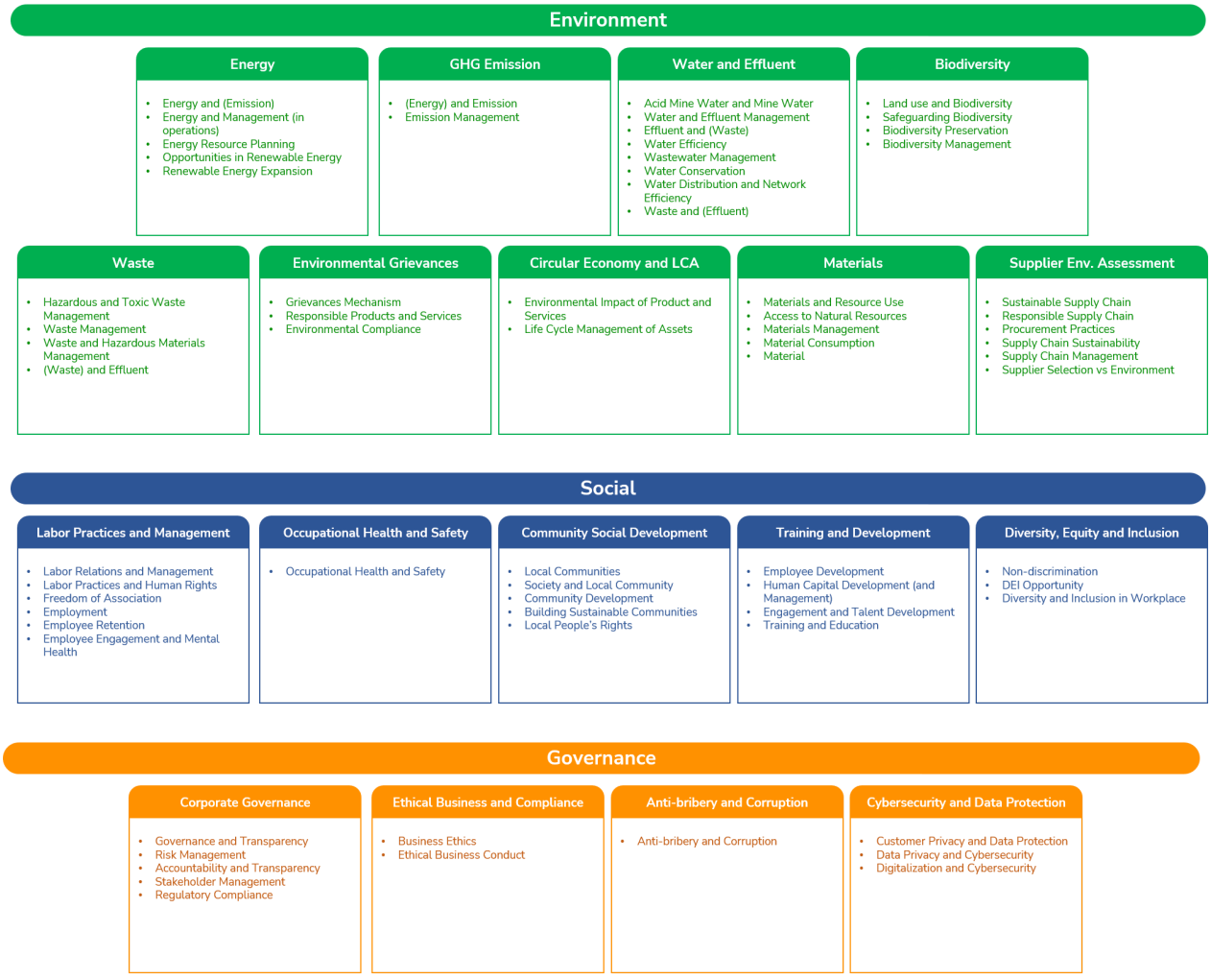


Peer Benchmarking was conducted to ensure the accuracy and relevance of the selected topics for consideration as material. Conducting peer benchmarking with both local and global peers is essential for evaluating performance, identifying industry trends, and gauging competitiveness in the market. We conducted peer benchmarking on 10 local and global companies offering similar services and undergoing sustainable business transformation, and conducted deeper Case Study research into Starkraft, Garanti BBVA Investor Relations, and CLP Group. Case studies can provide valuable insights into practical applications and challenges faced in implementing Double Materiality principles, illustrating how organizations have implemented the concepts of Sustainability and Double Materiality in their operations and reporting. After gathering relevant information and mapping peer profiles most comparable to TBS, we also analyzed the sustainability frameworks they employ and identified material topics relevant to each peer.

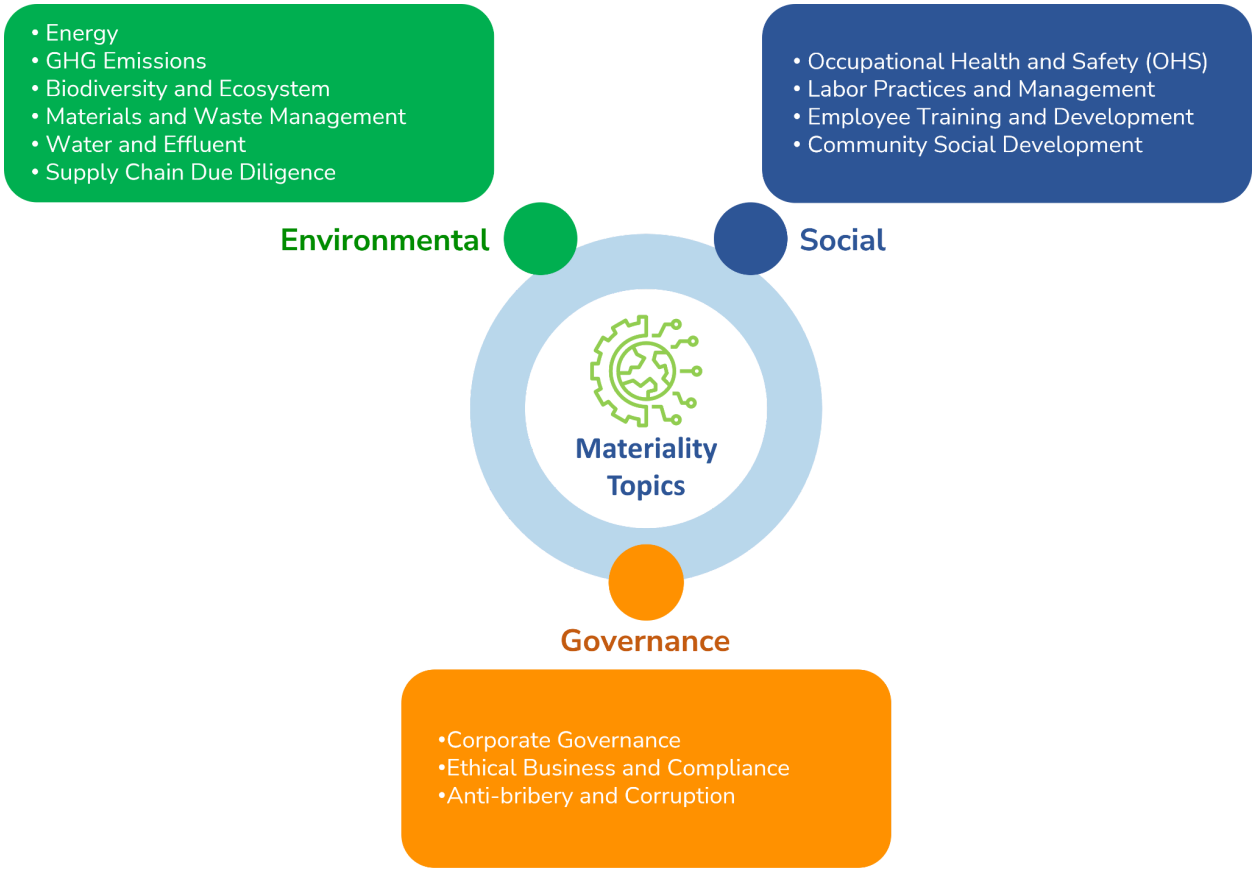


Determining Prospective Material Topics

After collecting all information, the material topics were grouped from each peer using word coding. This process aimed to consolidate similar terms and eliminate redundancy, ensuring a clear and concise list of material topics.



Next, the materiality topics were assessed by scoring each one based on its relevance and the proximity of the peer's business model to that of TBS. We combined these scores to accurately identify and recommend the most pertinent material topics for TBS. The recommended materiality topics are detailed below.



The information gathered from the various sources was evaluated and synthesized into key findings and common themes, emerging trends, gaps in knowledge, and areas for further research or exploration. This resulted in a preliminary list of Prospective Material Topics.

Trend and Regulatory Watch Overview

Anticipating and preparing for future risks and opportunities requires constant Trend and Regulatory Watch. Identifying external factors and prospective developments crucial for business, entails staying abreast of industry trends, (especially ESG trends within Indonesia's energy sector), regulatory shifts, political landscapes, and evolving societal concerns.

The trend analysis revealed that while there have been positive strides in regulations pertaining to energy efficiency and renewable energy in Indonesia, numerous revisions have caused uncertainty for investors and developers. A clearer and more assertive regulatory framework is needed to support the country's clean energy transition. Key findings indicate this is central to achieving Indonesia’s clean energy transition, and challenges from regulatory revisions can cause uncertainty for investors and developers, hindering progress in electricity market development and renewable electricity projects.

Clearer regulatory frameworks are needed for electricity market development, including more transparent negotiations for power purchase agreements (PPAs). Improvements in renewable energy procurement regulations and alignment of policies with international best practices are essential for a more transparent, competitive, and sustainable energy sector in Indonesia, and to stimulate investment and market growth.

While efforts to enhance energy efficiency by various players have been implemented, challenges persist in enforcement, compliance, and market coverage. Initiatives to expand energy efficiency regulations and encourage investment are underway, including labeling programs and stricter enforcement. However, hurdles in the energy services market remain, necessitating regulatory reforms and incentives to bolster market participation.

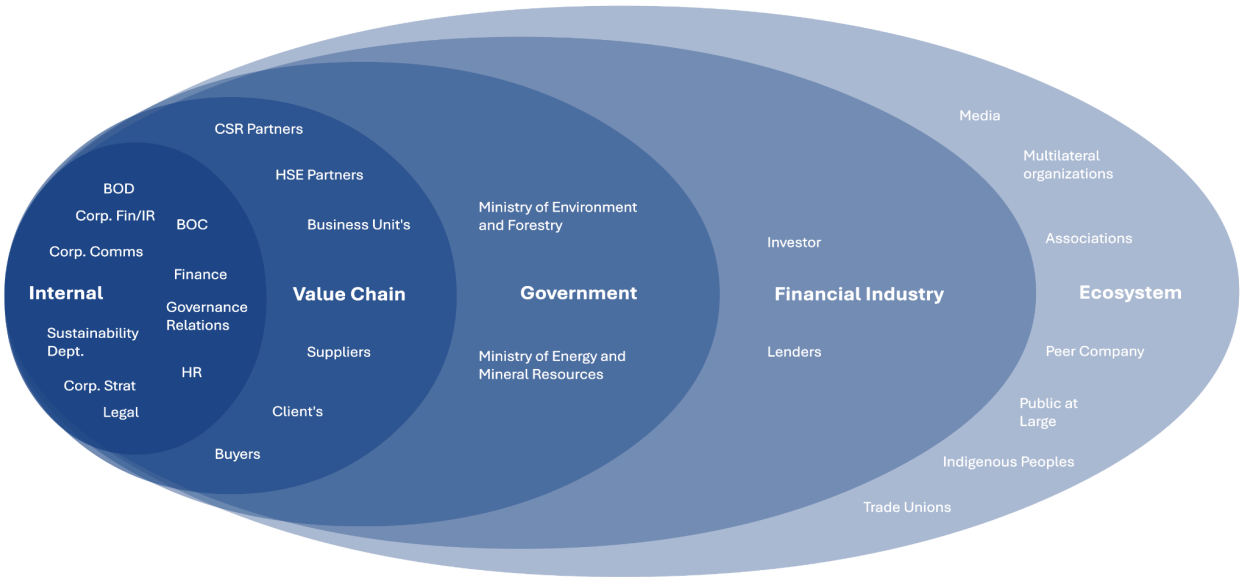
Recommendations for players such as TBS include working closely with stakeholders to foster more collaboration and partnerships; to support in strengthening energy performance standards and energy efficiency initiatives, (such as the facilitating of adoption of renewables and innovation) standardizing power purchase agreements (PPAs), encouraging transparent implementation to address regulatory gaps in the energy services market, and adopting industry enforcement measures. Aligning with renewable energy and energy efficiency policies will be crucial for future system flexibility and cost-effectiveness, and adopting international best practices will foster a more competitive and sustainable energy sector to attract investment.

Step 3: Engaging Stakeholders for Data Collection

Stakeholder Mapping

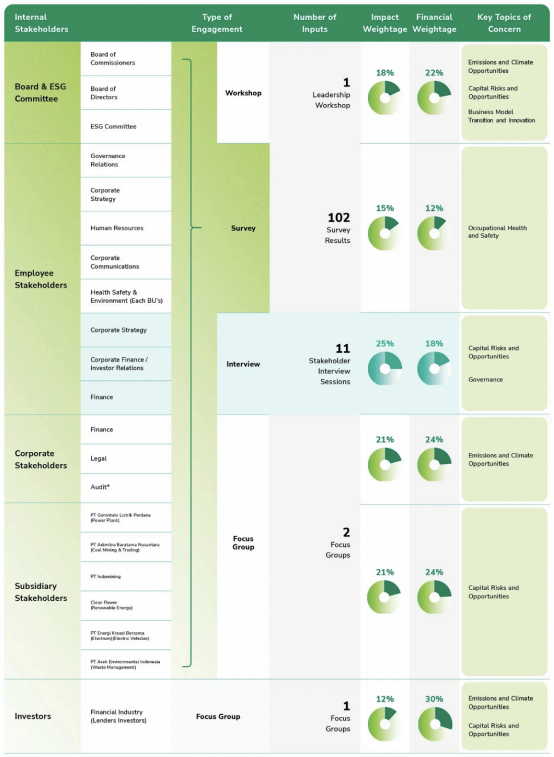
Scaling stakeholders is essential to effectively manage relationships and allocate resources based on their influence, interest, and relevance to the organization. Stakeholders who are currently and/or potentially influenced by the company, and/or who have an impact on/or could influence the company play a pivotal role in the Double Materiality Assessment.

After undertaking the stakeholder mapping, five distinct stakeholder categories were identified : Internal, Value Chain, Government, Financial Industry, and the Ecosystem. The Stakeholder Mapping aims to identify and prioritize stakeholders involved or impacted by TBS operations, discerning their influence, interest, and relevance to the organization. It also aims to evaluate its existing relationships with stakeholders, analyzing factors such as levels of trust, communication channels, and areas of alignment or conflict. This approach ensures strategic alignment and maximizes engagement impact. We analyze stakeholders by categorizing them, understanding their roles, grouping them, and mapping their impact and interest.

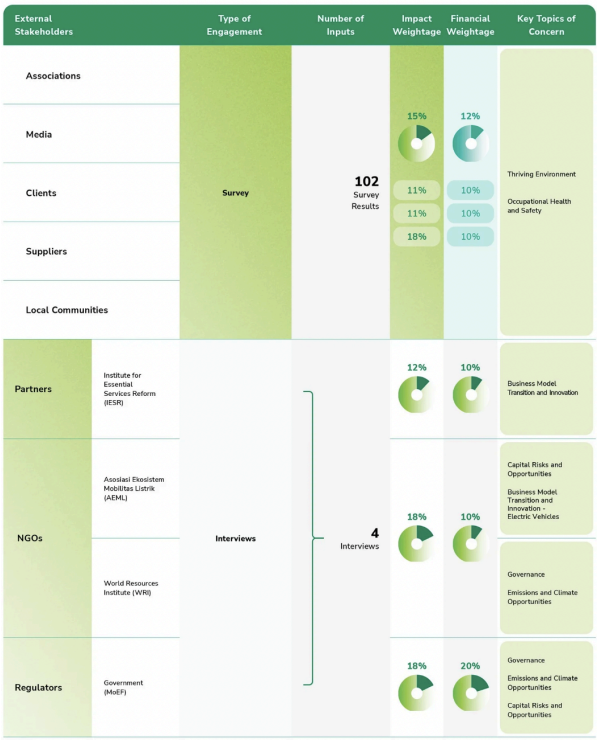


Stakeholder Weighing

Internal Stakeholders



External Stakeholders



Collecting Data

For each topic under consideration, there is a detailed description of the effects it may have, the potential risks it poses, and the opportunities it presents. These impacts encompass both positive and negative aspects and actual and potential effects, spanning short-term and long-term implications throughout the company's operations. The risks and opportunities pertain to the capacity to sustainably acquire and utilize the necessary resources for the business processes, as well as to cultivate and maintain essential relationships under favorable terms. These considerations encompass various forms of capital, including financial, manufactured, intellectual, human, social and relationship, and natural capital. The interviews, focus group discussions, and workshop aimed to assess financial risks and opportunities by gathering approximately 350 key data points. Topic and sectoral experts were consulted for market analysis and trend likelihood, including the identification and assessment of environmental and social factors affecting financial performance.

102 survey results	9 Stakeholder Interview Sessions	11 Stakeholders	3 Focus Group Discussions	7 Senior Leadership Workshop

Survey

A survey was distributed to stakeholders to gather insights on the most important themes. The survey was conducted using Google Forms over a two-week period, eliciting responses from 102 stakeholders: 90 of them were employees, 2 Industry Associations, 3 Local Communities, 1 Media, 1 NGO, 1 Partner, 1 Shareholder/Investor, and 1 Subsidiary. However, it's important to note that the survey's focus primarily on employees may introduce bias and not fully encompass all stakeholder perspectives.

Interviews

The next step was to conduct interviews with both internal and external stakeholders. General questions were asked to all stakeholders as well as a separate set of questions specifically for external stakeholders who are professionals in their fields. 9 interviews were conducted in total with 11 stakeholders.

Focus Group Discussions (FGD)

The focus groups, comprising both internal and external sustainability experts, aimed to delve into the organization's impact and facilitate stakeholder dialogue on areas of improvement. Each discussion, lasting around 60 minutes, was moderated to ensure balanced participation and adherence to relevant metrics. The primary objective was to pinpoint material topics essential for TBS, considering both impact and financial perspectives, and refine them into a comprehensive set of data metrics. These topics were identified based on desk research, surveys, and interviews. Each of the three focus groups tailored questions to their specific expertise areas: environment, social matters, and governance.

Step 4: Analysis of Material Impacts, Risks and Opportunities

Analysis (Scoring)

Once all prospective Material Topics are identified and collated into groups and sub-topics, and corresponding data and insights are collected, the information was then analyzed into data points based on the methodology criterion and scored to determine the significance and priority. The findings were iteratively validated through additional layers of research, peer benchmarking, deeper stakeholder engagement clarifications, based on the variable matrices.

It's important to note analysis for each severity criterion was determined by both quantitative collection (where possible) and qualitative discernment. If certain scoring data points weren't available, multiple imputation techniques were used to draw inferences from the data; informed by the quality and integrity, stakeholder validation and interpretation, context and established scientific consensus.

- Scope
- Scale
- Magnitude
- Likelihood
- Time Horizon

Prioritization Matrix

Once the data set is scored; a matrix is created to prioritize identified topics and sub-topics which are plotted to visualize both the Sustainability Impact (Society and Environment; y-axis, outward-looking) and the Financial Impact (Business; x-axis, inward-looking).

Validation

Senior Leadership Workshop

After the first results of the Double Materiality Matrix were produced, the senior management was engaged in a **Senior Leadership Workshop** to ensure their insights and expertise were integrated into the process effectively. The Double Materiality matrix was presented to the senior leadership in a workshop setting which allowed senior management to collectively review and refine the initial findings. This collaborative approach fosters consensus-building, ensures a holistic understanding of the material issues, and support from senior leadership to validate information.

Senior Leadership Engagement
Strategic Alignment: Senior management's input helps ensure the identified material issues align with the organization's strategic goals and priorities.
Risk Assessment: Senior management's experience and knowledge allow for a deeper assessment of the risks associated with each material issue.
Stakeholder Expectations: Senior management often has direct contact with key stakeholders, including investors, customers, employees, and regulators.

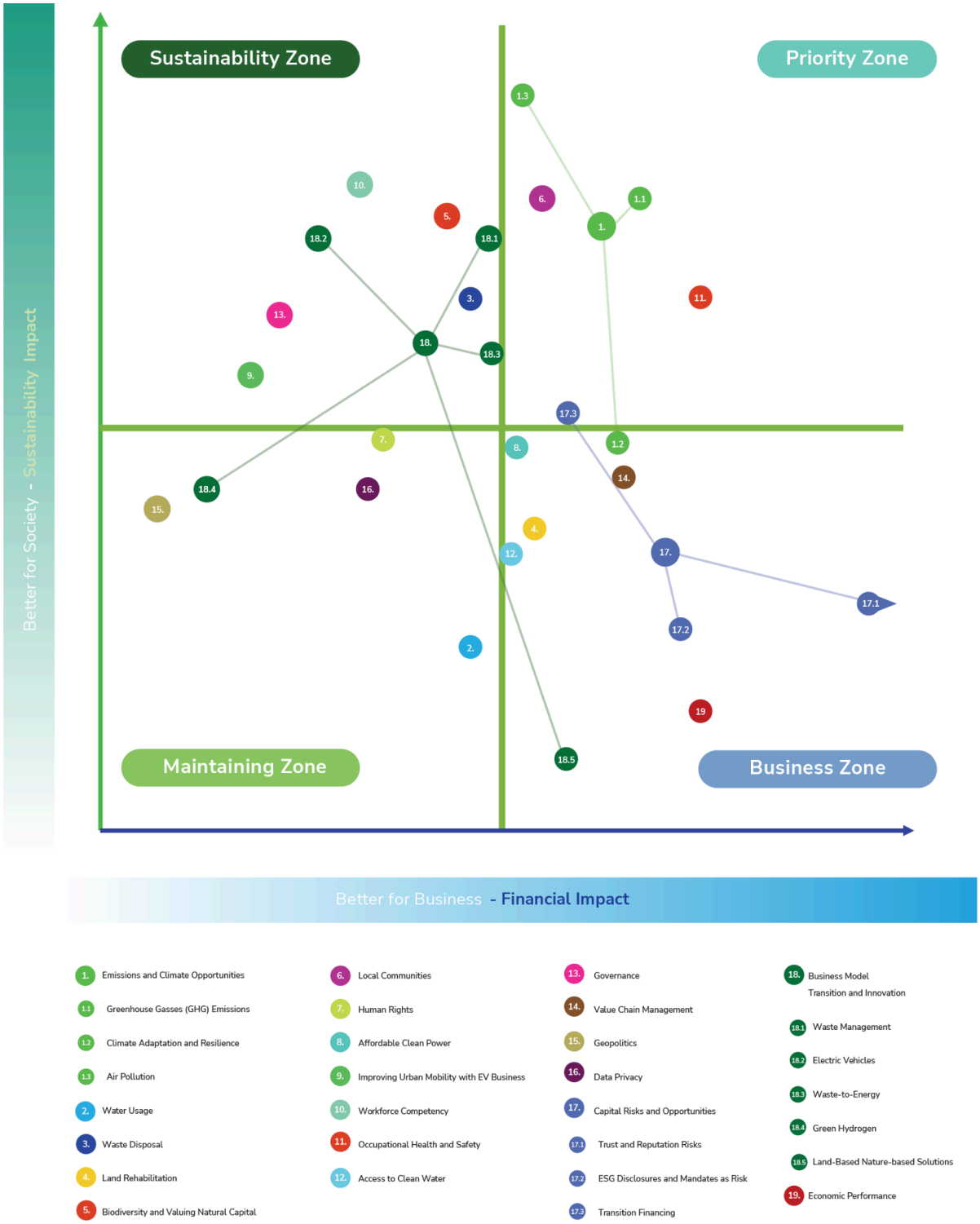
Matrices Overview

As the results were amalgamated, the Matrix visualization was created to represent and highlight the information most critical for stakeholders. 3 subgroup topics are highlighted to fully emphasize the key concerns to be addressed with impetus, including:

- Emissions & Climate Opportunities.
- Capital Risks & Opportunities.
- Business Model Transition & Innovation.

Materiality Matrix

The results of the findings are presented in the matrix below:



Connected Systems

The key relationships and conclusions drawn from the data:

Land Rehabilitation & Environmental Concerns

- Land Rehabilitation & Climate Change Mitigation: Land rehabilitation post-mining activities are crucial for restoring disturbed areas and mitigating environmental impacts. Strategies like revegetation and innovative land use can enhance water quality, reduce emissions, and contribute positively to the environment.
- Community Engagement & Social Impact: Engaging with local communities near mining areas is essential for addressing social tensions, promoting sustainable job creation, and ensuring harmonious corporate-community relationships. Inclusive practices like community-based projects can benefit both the company and local residents.

Human Rights & Energy Transition

- Human Rights in Business Operations: Upholding human rights is fundamental in business operations, especially in sectors like renewable energy transition. Ensuring fair opportunities for local communities, promoting sustainable lifestyles, and addressing misconceptions about environmental risks are vital for sustainable governance practices.
- Affordability & Clean Energy Transition: Balancing affordability, reliability, and sustainability in energy transition poses challenges but is crucial for clean energy adoption. Providing clean energy at affordable prices while considering economic conditions is essential for driving sustainability efforts.

Governance & Sustainability

- Governance for Sustainability: Stable politics and regulations are essential for long-term investments in sustainability efforts. Companies must align with ESG standards, disclose progress transparently, comply with local & international frameworks, and integrate governance practices that prioritize environmental, social, and economic sustainability.
- Regulatory Compliance & Accountability: Compliance with regulations on emissions, sustainable finance, carbon markets, and sustainable reporting is critical. Companies face reputational risks, loss of investor confidence, litigation risks, and potential sanctions if they fail to meet ESG standards or disclose sustainability efforts transparently.

Waste Management, EV & Diversification

- Waste Management and EV as Diversification: The need for diversification strategies has led to the adoption of waste management solutions within the company, such as acquiring waste management businesses to address waste-related challenges. Together with EV as a growth area, is the strongest among the diversification strategies (vs. green hydrogen, solar PV, etc)
- Financial Impact & Legal Considerations: Waste management initiatives can reduce costs, transportation burdens, and potential hazards. However, companies must pay attention to legality, understand regulations, and ensure compliance to avoid risks associated with acquisitions and operational practices. For EVs, the biggest concerns are the pre-investment in infrastructure, the price tariffs of renewable energy and the lack of a secondary market.

Insights & Recommendations

The following section presents the identified impacts, risks and opportunities associated with the material topics, offering valuable insights into potential challenges and avenues for growth.

Top Materiality Topics by Concern Zone Recommendations

Other Top Materiality Topics Recommendations

1. Increasing stakeholder pressure and global regulation updates, means that **Emissions and Climate Opportunities** should be addressed with impetus. Earning the trust of all stakeholders; and reducing the risk of negative sentiment from disingenuous messaging must take precedence.
2. Leadership should actively stay informed on new opportunities to seek access to capital though emerging tools such as Transition Finance and consider the increased risk of financial institutions divesting from stigmatized sectors such as coal to inform strategic business decisions.
3. The Transition to a low carbon future cannot happen without working with the **Local Communities**; and local communities need the transition to a better society. Ensure to mitigate arising issues by fostering close partnerships with all stakeholders in the entire value chain.
4. Safeguarding nature and ensuring Good Governance must advance through continued measurement and monitoring to maintain headway in tackling issues. New opportunities are emerging by preserving **Biodiversity and Valuing Natural Capital**, while business risks caused by poor management of water resources in operations prevails.

Our Material Topics

Pillar	Topic	Sub-Topic
Thriving Environment	Emissions and Climate Opportunities	GHG Emissions
		Climate Adaptation and Resilience
		Air Pollution
	Water Usage	
	Waste Disposal	
	Land Rehabilitation	
	Biodiversity and Valuing Natural Capital	
Empowered People	Local Communities	
	Human Rights	
	Access to Clean Water	
	Improving Urban Mobility with EV Business	
	Affordable Clean Power	
	Workforce Competency	
	Occupational Health and Safety	

Pillar	Topic	Sub-Topic
Trusted Partner	Governance	
	Value Chain Management	
	Geopolitics	
	Data Privacy	
	Capital Risks and Opportunities	Trust and Reputational Risks
		ESG Disclosures and Mandates as Risk
		Transition Financing
	Business Model Transition and Innovation	Waste Management
		Electric Vehicle (EV)
		Waste-to-Energy
		Green Hydrogen
		Land-based Nature-based Solutions
	Economic Performance	

Thriving Environment

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Emissions and Climate Opportunities	GHG Emissions	**Financial risk:** Evolving net-zero policies in Indonesia may push TBS to accelerate its coal assets closure, forcing it to bear transition costs (e.g.: decommissioning, asset write-downs) ahead of schedule.	■	■			■	■
		Financial risk: Increased carbon pricing mechanisms (e.g.: carbon tax) could raise operational costs and decrease profitability particularly for the coal-based assets.	■			■	■	
		Financial risk: Difficulty accessing financing due to investor pressure on high-emitting companies.	■			■	■	
		Financial opportunity: Investments into renewable energy projects and electric vehicles to meet increasing demand for low-carbon solutions, hence increased market share and investment attraction, and support TBS' long-term decarbonization targets.	■			■	■	
Emissions and Climate Opportunities	Climate Adaptation and Resilience	**Financial risk:** Physical risks to the company's mining assets, power plants and renewable energy infrastructure resulting from climate change, including extreme weather events, droughts, flooding, and wildfires.	■				■	
		Financial risk: Disruption in supply chains due to climate-related disasters.		■	■		■	
		Financial risk: Potential for legal liabilities arising from climate-related damages.	■				■	
		Impact risk: The company's assets and operations are vulnerable to physical climate risks, which can lead to damage, disruption, and negative impacts on local communities and ecosystems.	■		■		■	■

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Emissions and Climate Opportunities	Climate Adaptation and Resilience	**Financial opportunity:** Cost savings through proactive investment in climate-resilient infrastructure.	■				■	
		Financial opportunity: Deploying climate risk assessment and advanced technologies to improve monitoring of climate-related risks and support climate adaptation across assets.	■				■	
		Impact opportunity: Incorporating climate resilience into the company's strategies and operations can help protect communities, ecosystems, and infrastructure from climate-related impacts.	■		■		■	■
	Air Pollution	**Financial risk:** Failing to manage air pollutants, including high emissions of nitrogen oxides (NOx), sulfur oxides (SOx), particulate matter (PM) from coal operations could result in regulatory penalties and public health concerns.			■		■	
		Financial opportunity: Investments in air emissions control systems and technologies to meet increasingly stringent air quality regulations and stakeholder expectations.	■					■
Water Usage		**Financial risk:** Water scarcity exacerbated by climate change could disrupt the company's operations, particularly in water-stressed regions, leading to reduced production capacity and revenue losses.	■				■	
		Impact risk: The company's coal mining and power generation operations may contribute to water stress in local watersheds, competing with community water needs and damaging aquatic ecosystems.	■	■	■		■	■
		Financial opportunity: Investing in water treatment and efficiency technologies can improve the company's water management, lowering costs and ensuring business continuity in the face of growing water risks.	■				■	

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Water Usage		**Impact opportunity:** Implementing water conservation and recycling measures across operations can reduce the company's water footprint, mitigating negative impacts on local water resources and communities.						
Waste Disposal		**Financial risk:** Non-compliance with waste management regulations and standards can result in substantial fines, legal liabilities, and reputational damage, affecting the company's financial performance and license to operate.						
		Impact risk: Improper disposal of waste from the company's mining, power generation, and waste management operations can contaminate soil, water, and air, harming ecosystems and human health in surrounding communities.						
		Financial opportunity: Developing innovative waste management solutions and technologies, especially within the waste management business entities, can create new revenue streams, reduce disposal costs, and enhance the company's competitive advantage in the market.						
		Impact opportunity: Implementing circular economy principles, such as waste reduction, reuse, and recycling, can minimize the company's environmental footprint and contribute to sustainable resource management.						
Land Rehabilitation		**Financial risk:** Inadequate land rehabilitation can result in regulatory penalties, increased environmental liabilities, and damage to the company's reputation, affecting its social license to operate and access to resources.						
		Financial risk: Increased operational cost due to disruptions caused by soil erosion or water scarcity.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Land Rehabilitation		**Impact risk:** Failure to properly rehabilitate land disturbed by mining and power generation activities, both coal-based and renewable, can lead to long-term ecological damage, loss of biodiversity, and degradation of ecosystem services.						
		Financial opportunity: Effective land rehabilitation can reduce long-term environmental liabilities, demonstrate responsible stewardship, and improve the company's relationships with stakeholders, securing access to resources and markets.						
		Impact opportunity: Implementing best practices in land rehabilitation can restore ecosystems, enhance biodiversity, and contribute to the well-being of local communities.						
Biodiversity and Valuing Natural Capital		**Financial risk:** Failure to account for and manage impacts on biodiversity and natural capital can lead to increased environmental costs, loss of access to resources, and reputational risks, affecting the company's long-term viability.						
		Impact risk: The company's operations may contribute to biodiversity loss and degradation of natural capital, such as forests, wetlands, and other ecosystems, undermining the provision of critical ecosystem services.						
		Financial opportunity: By proactively managing biodiversity and natural capital, the company can reduce environmental risks, access new markets for ecosystem services, and differentiate itself as a sustainability leader, attracting investors and customers.						
		Impact opportunity: Integrating biodiversity conservation and natural capital valuation into decision-making can help the company minimize its ecological footprint, contribute to the preservation of ecosystems, and support sustainable development.						

Empowered People

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Local Communities		**Impact risk:** Local communities may face displacement due to business operations, leading to social tensions and legal challenges.	■	■			■	■
		Impact risk: Activities can result in pollution or resource depletion, negatively affecting the community's health and livelihood.	■			■	■	■
		Impact risk: Failure to uphold human rights can lead to reputational damage and strained relationships with stakeholders.	■	■		■	■	■
		Financial opportunity: Improved community relations can enhance market opportunities and customer loyalty.	■		■	■	■	
		Impact opportunity: Positive engagement with local communities can improve relationships, leading to increased corporate value.	■			■	■	■
		Impact opportunity: Creating inclusive and sustainable jobs can address social tensions and improve community welfare.	■		■		■	■
		Impact opportunity: Collaborating with local organizations can lead to innovative solutions and enhanced community support.	■		■	■	■	■
Human Rights		**Financial risk:** Failure to respect and uphold human rights can lead to legal action, regulatory sanctions, consumer boycotts, and reputational damage, affecting the company's social license to operate and its access to markets and capital.	■		■		■	■

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Human Rights		**Impact risk:** The company's operations may directly or indirectly contribute to human rights violations, such as labor exploitation, displacement of indigenous communities, or environmental harm, undermining the well-being and dignity of affected individuals and groups.						
		Financial opportunity: Demonstrating a strong commitment to human rights can enhance the company's reputation, attract socially responsible investors, and strengthen its relationships with stakeholders, creating long-term value and resilience.						
		Impact opportunity: By implementing robust human rights due diligence processes and engaging with affected communities, the company can prevent and mitigate adverse impacts, promote social justice, and contribute to sustainable development.						
Access to Clean Water		**Financial risk:** Conflicts over water resources can lead to social unrest, regulatory restrictions, and reputational damage, which may disrupt the company's operations, increase costs, and limit its growth opportunities in water-sensitive markets.						
		Impact risk: The company's operations, particularly in water-stressed regions, may compete with local communities for water resources, exacerbating water scarcity and compromising access to clean water for drinking, sanitation, and agriculture.						
		Financial opportunity: Investing in water infrastructure, technologies, and partnerships can help the company secure its long-term water supply, reduce water-related costs, and create new business opportunities, such as providing water services to communities or industries.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Access to Clean Water		**Impact opportunity:** By implementing water stewardship practices, such as water conservation, recycling, and treatment, the company can reduce its water footprint, improve water quality, and contribute to the sustainable management of water resources for the benefit of local communities.						
Improving Urban Mobility with EV Business		**Financial risk:** High initial investment costs for developing EV infrastructure and technology may strain financial resources.						
		Impact risk: Delays in infrastructure development and technology adoption could hinder the rollout of EVs, affecting urban mobility improvements.						
		Financial opportunity: Substantial cost savings of up to 70% compared to traditional fossil fuels, enhancing profitability and economic growth.						
		Impact opportunity: Significant reductions in pollution and carbon emissions, improving urban air quality and public health.						
Affordable Clean Power		**Impact risk:** Community opposition to energy projects due to perceived negative impacts (e.g.: noise, visual pollution).						
		Financial opportunity: Developing affordable clean power projects can open up new markets, create long-term revenue streams, and position the company as a leader in the sustainable energy transition, attracting investors and customers seeking social and environmental impact.						
		Impact opportunity: By investing in affordable clean power solutions, such as distributed renewable energy systems, the company can contribute to energy access, improve quality of life, and support local economic development.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Workforce Competency		**Financial risk:** Lack of a skilled and adaptable workforce can hinder the company's ability to implement new technologies, innovate, and remain competitive in the evolving low-carbon and sustainable market, affecting its long-term financial performance.	■				■	■
		Financial risk: Increased employee turnover due to uncertainty about future job prospects.	■				■	■
		Impact risk: Failure to develop the workforce's skills and competencies for the low-carbon transition may lead to job losses, economic disruption, and social inequality, particularly in communities dependent on the coal industry.	■		■		■	■
		Financial opportunity: By proactively developing workforce competencies, the company can enhance its human capital, improve productivity, and attract and retain talent, positioning itself for success in the sustainable energy market.	■				■	
		Impact opportunity: Investing in workforce education, training, and upskilling programs can support a just transition, enabling workers to adapt to new roles in the low-carbon economy and promoting inclusive economic growth.	■		■	■	■	
Occupational Health and Safety		**Financial risk:** Poor occupational health and safety performance associated with new technologies and unfamiliar work processes in the transition to sustainable businesses can result in legal liabilities, regulatory penalties, increased insurance costs, and reputational damage, impacting the company's financial results and investor confidence.	■			■	■	
		Impact risk: Inadequate occupational health and safety measures in the company's operations can lead to accidents, injuries, and illnesses, affecting workers' well-being and the livelihoods of their families and communities.	■		■	■	■	

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Occupational Health & Safety		**Financial opportunity:** By prioritizing occupational health and safety, the company can reduce accident-related costs, increase productivity, enhance employee morale, and strengthen its reputation as a responsible employer, improving its financial performance and stakeholder relationships.						
		Impact opportunity: Implementing robust occupational health and safety management systems and promoting a strong safety culture can protect workers, improve their well- being, and contribute to the overall resilience of local communities.						

Trusted Partner

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Governance		**Financial risk:** Non-compliance with ESG standards and governance regulations can lead to fines, sanctions, legal battles and their associated costs.						
		Financial risk: Poor governance can result in loss of investor confidence, affecting the company's ability to secure funding.						
		Financial risk: Ineffective governance can lead to operational disruptions, affecting productivity and financial performance.						
		Impact risk: Poor governance practices can harm the company's reputation, reducing stakeholder trust and potentially leading to loss of business opportunities.						
		Impact risk: Lack of clear governance can result in inefficient decision-making and management processes, impacting overall business performance.						
		Financial opportunity: Strong governance can attract ESG-focused investors and enable the company to access green financing options, such as green bonds.						
		Financial opportunity: Effective governance can lead to operational efficiencies and cost reductions through improved decision-making and management practices.						
		Financial opportunity: Enhanced reputation and stakeholder trust resulting from good governance can improve market position and competitiveness.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Governance		**Impact opportunity:** Implementing robust governance practices can increase corporate value by improving transparency, accountability, and stakeholder trust.	■				■	■
		Impact opportunity: Good governance involves all stakeholders in decision-making, fostering a sense of collective responsibility and reducing risk.	■		■	■	■	■
		Impact opportunity: Aligning governance with ESG standards supports sustainability efforts and ensures compliance with regulatory requirements.	■			■	■	■
Value Chain Management		**Financial risk:** Failure to effectively manage ESG risks in the value chain can expose the company to legal liabilities, regulatory penalties, supply chain disruptions, and reputational damage, affecting its financial performance and market position.	■		■	■	■	
		Financial risk: Increased costs associated with implementing sustainable sourcing practices.	■	■			■	■
		Impact risk: Lack of transparency and traceability in the supply chain leading to ethical sourcing concerns (e.g.: child labor, environmental degradation).	■	■	■		■	■
		Financial opportunity: Improved supply chain resilience through diversification and risk mitigation strategies.	■	■			■	■
		Impact opportunity: By implementing robust ESG due diligence processes, engaging with suppliers, and promoting sustainable practices throughout the value chain, the company can drive positive change and contribute to a more responsible and resilient business ecosystem.	■	■	■		■	■
Geopolitics		**Financial risk:** Regulatory changes due to shifting geopolitical landscapes impacting business operations, leading to increased costs, reduced revenues, and strategic uncertainties.	■	■	■	■	■	■

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Geopolitics		**Financial risk:** Increased security risks for employees and assets operating in volatile regions.						
Geopolitics		**Impact risk:** Geopolitical instability, conflicts, and tensions can lead to human rights violations, environmental damage, and social unrest in the regions where the company operates, exacerbating existing challenges and creating new risks for local communities.						
		Financial opportunity: Proactively managing geopolitical risks through scenario planning, diversification, and stakeholder engagement can help the company build resilience, adapt to changing conditions, and seize opportunities in new markets and sectors.						
		Impact opportunity: By engaging with governments, international organizations, and civil society, the company can contribute to peace-building efforts, support responsible business practices, and promote sustainable development in conflict-affected areas.						
Data Privacy		**Financial risk:** Regulatory fines and reputational damage from data breaches or misuse of customer data.						
		Financial risk: Difficulty attracting and retaining talent in a data-driven economy.						
		Financial opportunity: Investing in data privacy and security can help the company differentiate itself as a trusted provider, attract privacy-conscious customers, and develop innovative solutions that meet the growing demand for privacy-enhancing technologies and services.						
Capital Risks and Opportunities	Trust and Reputational Risks	**Financial risk:** Reputational damage can lead to decreased market share, higher costs of capital, difficulty attracting and retaining investors and partners as well as talents, ultimately affecting the company's financial performance and long-term viability.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Capital Risks and Opportunities	Trust and Reputational Risks	**Impact risk:** Loss of trust and damage to the company's reputation can erode its social license to operate, leading to reduced support from communities, customers, and other stakeholders, and limiting its ability to create positive social and environmental impact.						
		Financial opportunity: A strong reputation and trust-based relationships can help the company secure long-term partnerships, and benefit from positive word-of-mouth and advocacy, leading to increased brand value, market share, and growth opportunities.						
		Impact opportunity: By consistently demonstrating integrity, transparency, and responsibility in its actions and communications, the company can build trust and credibility among its stakeholders, enhancing its ability to drive positive change and contribute to sustainable development.						
Capital Risks and Opportunities	ESG Disclosures and Mandates as Risk	**Financial risk:** Increased cost of compliance with evolving ESG disclosure requirements.						
		Financial risk: Failure to comply with evolving ESG disclosure mandates and regulations can expose the company to legal and regulatory risks, such as fines, penalties, as well as increased scrutiny from investors, lenders, and insurers, affecting its access to capital and financial performance.						
		Impact risk: Potential for greenwashing accusations due to inaccurate or misleading ESG reporting.						
		Impact risk: Incomplete, inaccurate, or misleading ESG disclosures can undermine the company's credibility, erode stakeholder trust, and hinder progress towards sustainable development goals, as stakeholders rely on this information to make informed decisions and hold the company accountable.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Capital Risks and Opportunities	ESG Disclosures and Mandates as Risk	**Financial opportunity:** Effective ESG disclosure can help the company attract sustainable finance, lower its cost of capital, and gain a competitive advantage by meeting the growing demand for ESG-related information from investors, customers, and other stakeholders.						
		Impact opportunity: By providing comprehensive, reliable, and decision-useful ESG disclosures, the company can demonstrate its commitment to transparency and accountability, build trust with stakeholders, and drive positive change by setting an example for others in the industry.						
Capital Risks and Opportunities	Transition Financing	**Financial risk:** High costs of pre-investment in renewable energy pose financial risks, including capital investments and research expenditures, particularly given market price volatility.						
		Impact risk: Political and regulatory instability may hinder access to capital investments needed for long-term projects, potentially slowing the transition to renewable energy.						
		Financial opportunity: Leveraging international financing and alternative funding sources such as green bonds and partnerships can attract investor exposure and mitigate financial risks.						
		Financial opportunity: Significant investment potential in renewable energy projects presents an opportunity for substantial business growth and revenue generation.						
		Impact opportunity: Successful transition financing aligned with ESG factors can enhance company reputation and value, fostering trust among investors and stakeholders.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Business Model Transition and Innovation	Waste Management	**Financial risk:** Increased tipping fees leading to higher operational costs and smaller profit margins.						
		Financial risk: Missed opportunities to recover valuable resources and generate revenue from waste.						
		Financial risk: Pursuing M&A opportunities in waste management without proper due diligence and integration planning can result in overpaying for assets, operational disruptions, and failure to realize expected synergies and financial returns.						
		Impact risk: Acquiring waste management companies may lead to market consolidation, reducing competition and potentially leading to higher prices and lower quality of service for customers and communities.						
		Financial opportunity: Successful M&A transactions in the waste management sector can provide access to new markets, technologies, and expertise, enabling the company to scale up its operations, diversify its revenue streams, and create value for shareholders.						
Business Model Transition and Innovation	Electric Vehicle (EV)	**Impact risk:** Hesitancy of financial institutions to invest in the EV industry due to concerns about its track record poses a risk to sector growth and development, limiting access to financing and hindering EV adoption and infrastructure expansion.						
		Financial opportunity: Facilitating the transition to EVs in logistics for carbon neutrality and advocating for policy support to reduce gasoline consumption can unlock the full potential of EV technology in reducing carbon emissions and promoting sustainability.						
		Impact opportunity: Collaboration with governments for battery recycling and second-life usage in remote areas can address sustainability challenges and promote circular economy practices.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Business Model Transition and Innovation	Waste-to-Energy	**Financial risk:** High upfront capital investment of waste-to-energy infrastructure.						
		Financial risk: Uncertainty of long-term viability of waste-to-energy technology compared to other renewable energy sources.						
		Impact risk: Public opposition to waste-to-energy facilities due to air emission concerns.						
Business Model Transition and Innovation	Green Hydrogen	**Financial risk:** Investment in green hydrogen technologies and infrastructure entails financial risks, including capital expenditure, operational costs, and uncertainties in returns on investment due to market volatility and regulatory uncertainties.						
		Impact risk: Policy, legal, and compliance risks related to the development and implementation of regulations governing green hydrogen production and usage may pose challenges to the sector's growth and adoption.						
		Impact risk: Technology risks associated with green hydrogen production, storage, transportation, and logistics may hinder its widespread adoption and economic viability.						
		Impact risk: Market risks stemming from factors such as fluctuating demand, competition from conventional energy sources, and uncertainties in pricing and investment may affect the market penetration and profitability of green hydrogen.						
		Financial opportunity: Research and development efforts focused on addressing challenges related to green hydrogen storage, transportation, and logistics can lead to innovative solutions, driving cost efficiencies and enhancing market competitiveness.						

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
		Impact opportunity: Diversification of the energy portfolio with green hydrogen production allows for risk mitigation and selective investment tailored to local circumstances, enhancing the company's resilience.	■		■	■	■	
Business Model Transition and Innovation	Land-based Nature-based Solutions	**Financial risk:** Limited knowledge and expertise in implementing nature-based solutions (NBS) for carbon capture or ecosystem restoration.	■				■	■
		Financial risk: Uncertainty about long-term funding mechanisms for NBS projects.	■				■	■
		Impact risk: Investments in land-based nature-based solutions may have unintended consequences on local communities, biodiversity, and ecosystems if not properly designed, implemented, and monitored with the participation of relevant stakeholders.	■	■	■		■	■
		Impact risk: Difficulty in measuring and verifying the carbon sequestration potential of NBS projects.	■				■	■
		Financial opportunity: Potential for revenue generation through carbon credits or ecosystem service payments.	■				■	■
		Impact opportunity: Achievement of carbon neutrality goals through leveraging own assets using carbon insetting approach.	■				■	■
Economic Performance		**Financial risk:** Disruptions in energy production or supply chains leading to revenue loss.	■	■	■		■	■
		Financial risk: Increased competition in the energy sector impacting market share and profitability.	■		■		■	■
		Financial risk: Increased costs for compliance with climate change regulations (e.g.: carbon pricing).	■				■	■
		Financial risk: Damage to infrastructure and assets from extreme weather events.	■				■	■

Topic	Sub-topic	Risk and Opportunity	Value Chain			Time Horizon		
			Own Operations	Up stream	Down stream	Short - Term	Medium - Term	Long - Term
Economic Performance		**Financial opportunity:** Revenue diversification through expansion into clean energy solutions and waste management services.						
		Financial opportunity: Cost savings through adaptation measures to improve climate resilience (e.g.: energy-efficient infrastructure).						

Feedback Form

The company will continue to improve the quality of performance disclosures to meet stakeholder information needs. With this, the Company has been able to collect more comprehensive data across all divisions.

If you have questions, comments, or feedback for any area of this Report, or other reports that TBS has published, please fill in and return the questionnaire below.

No.	Statement	SA	A	SD	D	SD	Comment
1.	This report contains useful information on TBS Sustainability Development commitment and policy.						
2.	This report provides a good overview on TBS performance in its pursuit to reach sustainable development.						
3.	This report is easy to understand.						
4.	The report provides enough detail of information.						
5.	This report is credible enough.						

SA = Strongly Agree A = Agree SD = Somewhat Disagree D = Disagree SD = Strongly Disagree

Thank you for taking the time to complete this form and provide your feedback to us. Please ensure you send this form back at the this addresses:

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