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Original Article

Investigating the Social and Environmental Accounting Implementation in the Reclamation of Former Mining Sreas: A Case Study of PT. Kitadin

Antonius Jatmiko [a,*], Irwansyah Irwansyah [a] and Fibriyani Nur Khairin [a]

[a] Department of Accounting, Faculty of Economics and Business, Mulawarman University, 75119 Kota Samarinda, Kalimantan Timur, Indonesia, Indonesia; irwansyah@feb.unmul.ac.id (I.I.), fibriyani.nur.khairin@feb.unmul.ac.id (F.N.K.).

* Correspondence: jatmiko.antoni@gmail.com (A.J.)

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Abstract: The mining industry significantly contributes to economic development through tax revenue and export duties but also poses serious social and environmental risks, such as heavy metal pollution, air pollution, land subsidence, and forest degradation. These concerns necessitate responsible mining practices and effective reclamation. This study examined the implementation of social and environmental accounting in ex-mining land reclamation using PT. Kitadin as a case study. An interpretive qualitative approach explores a company's practices in managing environmental responsibilities. Research shows that PT. Kitadin, in its post-mining phase since March 2023, has engaged in land reclamation, revegetation, air and water management, and repurposing of ex-mining areas. The company systematically recorded and measured the environmental impact of its reclamation efforts by integrating these aspects into financial statements and sustainability reports. Additionally, PT. Kitadin has addressed social implications by engaging with stakeholders, including local communities and NGOs. This comprehensive approach underscores a company's commitment to post-mining responsibilities, in line with corporate standards. The findings contribute to the understanding of how mining companies can implement social and environmental accounting in reclamation, balancing economic, environmental, and social considerations.

Keywords: Social accounting; Environmental accounting; Reclamation; Former mining industry.

1. Introduction

Many countries view the mining industry as the main driver of economic development (Qi et al., 2019). The mining industry makes a major contribution to domestic tax revenue, export duties, and PNBP (Non-Tax State Revenue). Data from the Ministry of Finance (MoF) show that the mineral and coal mining sector until 2021 contributed to the Non-Tax State Revenue (PNBP) of Rp 70.05 trillion. Tax revenues from the mineral and mineral sectors will also increase by 154.7% in the first quarter of 2022 (Rahman, 2022). However, there is a risk that mining operations could lead to severe social and environmental problems. Mining of coal, rare earth metals, and phosphates has caused serious heavy metal

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pollution, air pollution, land subsidence, and forest degradation in Indonesia (Li et al., 2014). Pollution poses a serious health risk to communities and destroys landscapes and agricultural lands (Hu et al., 1997). Rapid environmental degradation has disturbed the governments and communities in mining areas. Many companies act as top soap opera artists. The company has a style of saving nature like a "hero" even though it is the mastermind of the destruction of nature. Sustainability reports are simply written in a way riddled with lies. This results in a loss of harmony between humans and nature. Mining activities are not spared from natural degradation. The decline in soil and water quality is an inevitable adverse effect of mining. The company is required to reclaim former mining land. However, as time passes, many companies do not fulfil their obligations. The East Kalimantan Provincial Mining and Energy Office noted that of the 160 companies that had mining business permits (IUP), 10 percent of them did not comply with the rules. Data from the Mining Advocacy Network (Jatam) showed that there were 1,735 holes spread across East Kalimantan. These companies left the mine site without reclaiming former mining land, resulting in mining pits.

The company's responsibility to overcome environmental problems, especially in the coal mining industry, is through the reclamation of former mining land, as regulated in Law No. 3 of 2020 concerning Mineral and Coal Mining. Reclamation is a process in which abandoned, or heavily degraded land is returned to productivity and some measures of biotic function and productivity are restored (Gairola, 2020). The purpose of reclamation can be seen from both the theoretical and practical perspectives. In other words, the main goal of the reclamation project is to create a healthy and stable environment so that disturbed areas can be reintegrated into the ecosystem. Land reclamation provides good ecological, economic, and social benefits and is essential for safe and sustainable agricultural production as well as the sustainable and healthy development of industrial mining companies (Kristant et al., 2019). The number of natural disasters and cases of natural degradation have made people ask for environmentally responsible behavior from both the government and businesses.

On the other hand, in the implementation of the reclamation of ex-mining land, costs are incurred. Therefore, there must be specific standards and regulations that hold businesses accountable for pollution and destruction. Most damage is irreversible and must be prevented. This problem can be addressed from two perspectives: first, by studying the company's commitment to society, in line with corporate social responsibility; and second, by emphasizing the value information generated by organizations in society, beyond their economic and financial outcomes (Yu et al., 2020). One way to apply these two perspectives is to introduce so-called social and environmental accounting, a system in which financial and economic measurements consider the effects of power production and consumption on the environment (Stanojevic et al., 2010). Lehman (2004) describes environmental social accounting as "Green or environmental accounting refers to the attempt to integrate the environmental advantages and disadvantages into economic decision-making. Therefore, companies must be able to incorporate environmental benefits and costs into their economic decision-making. Therefore, this study focuses on social and environmental accounting, which is the focus of the research discussion, including the implementation of reclamation of ex-mining land in accordance with the Regulation of the Minister of Energy and Mineral Resources No. 07 of 2014 concerning the implementation of reclamation and post-mining in mineral and coal mining business activities at PT Kitadin reviewed from social and environmental aspects as well as cost treatment in connection with the implementation of reclamation of ex-mining land.

2. Literature Review

2.1. Mining industry

The mining industry plays a crucial role in the economic development of many countries, contributing significantly to the national GDP, attracting investments, and creating high-paying employment opportunities. The industry's impact is particularly pronounced at the subnational level, as mining activities are often concentrated in specific geographical areas. Regions and cities that host mining operations frequently benefit from increased job opportunities and above-average income levels. Regional multiplier effects, such as enhanced spending on services due to higher income, are essential factors in promoting regional development (Reeson et al., 2012). Research indicates that the mining sector has substantial job creation potential, with one mining job potentially generating an additional job in another (Moritz et al., 2017). This multiplier effect underscores an industry's capacity to drive regional economic and social progress. However, the mining industry is not without its challenges, particularly about environmental impact. Mining operations are associated with severe adverse effects on the environment, including biodiversity loss, erosion, and surface water, groundwater, and soil pollution. The physical damage caused by mining activities, such as the creation of open pits and the accumulation of waste rock, significantly alters the landscape.

These disturbances result in considerable harm to the local flora and fauna, necessitating the implementation of land reclamation measures at former mining sites. The mining industry operates in four distinct cycles: exploration, development, excavation and extraction, and closure. Each phase presents unique challenges and opportunities for economic growth and environmental management. As the industry continues to evolve, balancing economic benefits with environmental sustainability remains a critical concern for policymakers, stakeholders, and local communities. Thus, while the mining industry offers substantial economic advantages at both national and regional levels, it is imperative to address and mitigate its environmental impacts. Effective management of the industry's four cycles,

coupled with robust reclamation efforts, is essential for ensuring sustainable development and preserving the ecological integrity in mining-affected areas.

2.2. Reclamation of Former Mining Land

The environmental impact of mineral mining poses significant challenges at local, regional, and global scales, necessitating comprehensive reclamation and revitalization efforts in affected areas. These activities are integral to responsible mining practices, which aim to mitigate the consequences of mineral extraction and restore the land to its former functionality, whether for recreational, forestry, agricultural, or water management purposes (Adesipo et al., 2021). Contemporary mining operations are legally mandated to plan their activities in a manner that minimizes environmental degradation. In Indonesia, the legal framework governing mining reclamation concerning mineral and coal mining is primarily established by Law No. 3 of 2020. Article 161 B, paragraph (1) of this legislation, specifically addresses the responsibility for implementing reclamation measures. This regulatory framework obligates companies to seal former mining pits, thereby mitigating the potential risks to human life. In this context, reclamation encompasses efforts to rehabilitate land disturbed by mining activities, with the ultimate goal of restoring it to its original state or a condition suitable for alternative uses (Nadar et al., 2018). The Indonesian government has further elaborated on these requirements through Government Regulation Number 78 of 2010 concerning the Reclamation and Closure of Mines and the Regulation of the Minister of Energy and Mineral Resources Number 7 of 2014. These supplementary regulations provide technical guidance for the implementation of reclamation and mine closure for mineral and coal mining activities. To ensure compliance and financial preparedness, mining companies must provide reclamation guarantees that serve as collateral for the execution of the reclamation process.

This measure is designed to safeguard against unforeseen circumstances, such as company insolvency or noncompliance with reclamation obligations. In response to environmental concerns and public pressure, the East Kalimantan Provincial Government enacted Provincial Regulation Number 8 of 2013 concerning Reclamation and Mine Closure. This regulation was developed as a proactive measure to address issues, such as potential failures in reclamation efforts, inadequate licensing practices, and suboptimal supervision. The formulation of this regional regulation involved extensive stakeholder participation, including civil society organizations and non-governmental organizations (NGOs) at local, national, and international levels, as well as academic experts and practitioners. The key provisions of the East Kalimantan Provincial Regulation include the establishment of criteria for successful reclamation and the creation of an independent supervisory institution. Furthermore, the regulation mandates the submission of reclamation plans and guarantees concurrent with mining permit applications and embodies a preventive approach to ensure responsible mining practices. The comprehensive legal and regulatory framework governing mining reclamation in Indonesia reflects growing awareness of the environmental and social impacts of mining activities. By implementing these measures, the government aims to strike a balance between resource extraction and environmental preservation, ensuring that mining companies fulfill their obligations to restore and rehabilitate the affected landscapes. This approach not only addresses immediate environmental concerns but also contributes to long-term sustainability and responsible resource management.

2.3. Social and Environmental Accounting

Social and environmental accounting aims to address the limitations of conventional accounting by incorporating 'externalities'. However, accurate measurement of external costs and benefits presents significant challenges, hindering the widespread adoption of social and environmental accounting (Crowther, 2000). Organizational performance evaluation encompasses both measurement and reporting aspects. Consequently, as Crowther suggests, a paradigm shift towards social accountability necessitates corresponding changes in corporate measurement and reporting practices. A substantial body of literature explores the connections between accounting, economic growth, social justice, and development. It is generally accepted that accounting plays a crucial supporting role in shaping and maintaining the economic order (Hines, 1988; Hopwood & Miller, 1994). Furthermore, social and environmental accounting has the potential to foster a new paradigm that extends beyond profit-centric objectives (Lehman, 1999).

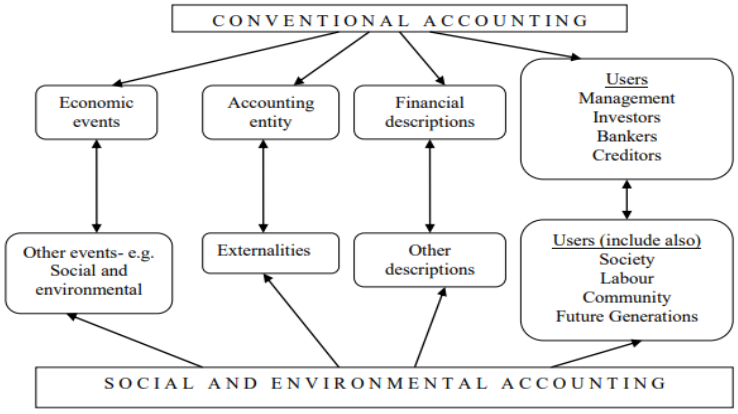

Figure 1. Elements of Conventional Accounting and Social and Environmental Accounting
Source: Gray et al. (1988); Zulkifli (2008)

Figure 1 illustrates the components of traditional accounting in comparison to social and environmental accounting, highlighting the incorporation of externalities and the perceived necessity to report non-economic events. This visual representation underscores the inadequacy of current accounting and financial reporting practices in acknowledging broader social, economic, political and environmental implications. Addressing concerns regarding the lack of a foundational paradigm in social and environmental reporting, Gray et al. (1988) proposed that such reporting serves as a mechanism to compel organizations to demonstrate their accountability to the broader community. Social and environmental accounting posits the existence of a social contract between organizations and society, necessitating corporate accountability. This perspective aligns with system-oriented views wherein entities are influenced by key societal aspects. Social and environmental accounting generally encompasses social accounting issues, responsibilities, and environmental concerns, focusing on the impact of corporate activities on employees, local communities, consumers, and the natural environment (Owen et al., 1994).

Mathews (1993) defines social and environmental accounting disclosure as the voluntary dissemination of qualitative and quantitative information by organizations to inform or influence various stakeholders. Quantitative disclosures include both financial and nonfinancial data. Similarly, Gray et al. (1988) characterize social and environmental accounting as the process of communicating the social and environmental impacts of economic actions to specific interest groups and wider communities. This approach extends organizational accountability beyond the traditional role of providing financial statements to capital owners, particularly shareholders, based on the premise that companies have broader responsibilities beyond profit generation.

The expansion of accounting to include social and environmental aspects addresses the limitations of traditional financial accounting, which primarily cater to shareholders. Social and environmental accounting broadens the scope of disclosure to non-traditional areas such as providing information on employees, products, community services, and pollution prevention or reduction (Mathews, 1997). Owen and Lehman (2000) emphasize that social and environmental accounting transcends the work of accountants, involving a symbiotic relationship with society and suggesting a form of emancipatory accounting that evaluates the 'bottom line' to assess corporate actions in the public interest. The term "social accounting" also encompasses a comprehensive form of accounting that considers externalities. The primary objective of social and environmental accounting is to promote the identification, measurement, and assessment of social impacts, particularly those classified as externalities (Zulkifli, 2008).

3. Materials and Methods

This research employs an interpretive approach, adopting a "practical orientation" that focuses on "how people manage their practical affairs in daily life, or how they get things done" (Neuman, 2014). The aim is to understand how individuals create and maintain their social world, aligned with the concept of organizing (Weick et al., 2005), which demonstrates the dynamism of organizations in interpreting and shaping their environment. This approach enables researchers to comprehend the process by which companies perceive and implement reclamation of ex-mining land. The interpretive paradigm posits that individuals play a crucial role in shaping the reality of their environment and organization (Bantz, 1993). Researchers utilizing this approach primarily generate qualitative data, although numerical data may be incorporated, albeit with limited reliability (Abdul Rehman and Alharthi, 2016). The primary objective of interpretive research is to formulate explanations that elucidate how subjective meanings are constructed and

maintained within a particular context. This approach allows for a deeper understanding of the reclamation processes of ex-mining land conducted by the PT. Kitadin.

A qualitative methodology was employed to explore the behaviors, perspectives, and experiences of individuals or groups. This approach involves a comprehensive understanding of the complexity, details, and context of social life to provide a holistic form of analysis and explanation (Mason, 2022). Denzin & Lincoln (2018:3) note that qualitative research enables researchers to "explore aspects in their natural context, seek to dig into understanding, or interpret phenomena by paying attention to the meanings given by the individuals involved." This approach facilitates the collection of rich descriptions for studying phenomena and events from the participants' perspectives. The case study method was utilized to present an in-depth description and analysis of the case using various data representation techniques such as tables, diagrams, charts, and narratives. Yin (2019) explains that, in case studies, researchers seek themes about in-depth knowledge or concepts that can elucidate the case under investigation. However, data analysis in case studies can be challenging for researchers, often leading to uncertainty regarding the specific analytical stages employed. In this study, thematic analysis was employed within the case study framework. This analytical approach allowed for the identification and examination of patterns or themes within the data, providing a structured method for interpreting the complex information gathered throughout the research process.

4. Results and Discussion

4.2 Implementation of Social and Environmental Accounting of PT. Kitadin

Social and environmental accounting are intrinsically linked to stakeholder decision-making processes. This emerges as a manifestation of a company's dedication to environmental stewardship and management. Organizations delineate social and environmental accounting in accordance with their corporate policies, presenting this information to serve specific purposes. For companies operating in the mining sector, social and environmental accounting constitute a crucial component that must be disclosed to stakeholders. Mining enterprises must implement environmental protection and management strategies to mitigate the impacts associated with resource extraction. In the context of mining companies, social and environmental accounting encompasses expenses related to the reclamation of post-mining landscapes and costs associated with Community Development programs. This was also revealed by Mr. Muhammad Ilyas as Accounting Staff (Wednesday, July 12, 2023) as follows:

"Environmental cost reporting is imperative for companies when presenting information in their financial statements, Work Plans and Cost Budgets (RKAB). All expenses related to the reclamation of post-mining land are considered part of the company's obligations and must be comprehensively reported in both financial statements and RKAB reports submitted to government authorities. Companies typically delineate their environmental policies in annual and sustainability reports, encompassing issues such as post-mining land reclamation and various environmental initiatives. Such initiatives include hazardous and toxic waste (B3) management, biodiversity conservation, energy management, and other aspects of environmental stewardship. Additionally, these reports often include information on legal compliance, environmental achievements, and other environmental management practices."

This statement aligns with Franciska et al. (2019), who defined environmental costs as expenses incurred owing to a company's actions that negatively impact the environment. Elmaci et al. (2016) further elaborated that environmental costs encompass both the expenses related to environmental goals and needs, as well as the costs associated with managing the environmental impact of organizational activities in an eco-friendly manner. Social and environmental accounting aims to address the potential gaps in current accounting practices. It refers to the integration of environmental information and costs into various accounting practices, exploring the relationship between accountants and ecological issues, and enhancing the understanding of environmental cost information related to product distribution and environmental activities, policies, and organizational strategies. According to Tanc, & Gokoglan (2015), the primary objective of social and environmental accounting is to generate information on the overall costs incurred in environmental protection and management, while considering the concept of social responsibility. Lubis and Diani (2018) outline the social and environmental accounting process, which includes identifying, recording, measuring, presenting, and disclosing the environmental costs. For mining companies, environmental and social costs encompass various aspects and obligations that must be addressed to comply with environmental regulations and to maintain acceptable environmental impact levels. Based on interviews and analysis of consolidated annual financial statements and the parent company's annual report, the main components of environmental and social costs in the reclamation case at PT Kitadin were as follows:

Table 1. Environmental and Social Cost Components

No.	Environmental Cost Components	Information
1	Land Reclamation and Revegetation	Upon completion of the mining operations, the mining company assumes responsibility for the rehabilitation and reclamation of the former mining site. This process encompasses the closure of mine pits, the restoration of damaged soil, and ecosystem repair through revegetation. The expenses associated with reclamation and revegetation are often substantial and may represent a long-term financial obligation for a company.
2	Air Management	Air pollution control is a crucial component of environmental costs. Mining companies must ensure that toxic gas and particulate matter emissions are effectively controlled and comply with applicable air quality regulations.
3	Water Management	Effective wastewater management from mining operations is essential for preventing the contamination of groundwater and surface water resources. Companies must invest in infrastructure and technology to manage wastewater adequately.
4	Utilization of Ex-Mining Land	The utilization of post-mining land is a critical step following the reclamation and revegetation processes aimed at maximizing the value and productivity of previously mined areas. These reclaimed lands can be repurposed for various applications including plantations, agriculture, and livestock farming.

The environmental and social impacts associated with mining operations frequently manifest as enduring obligations that necessitate meticulous management. To mitigate these long-term liabilities, numerous mining enterprises are allocating resources to implement more environmentally friendly technologies, sustainable extraction methodologies, and comprehensive strategies for the rehabilitation and reclamation of post-mining landscapes. Furthermore, these companies are compelled to engage in ongoing dialogue with various stakeholders, including local populations and governmental bodies, to ensure regulatory compliance and foster positive relationships with neighboring communities.

4.2.1 Identification of Environmental and Social Costs

The field of social and environmental accounting encompasses a broad spectrum of topics, and the information derived from this discipline can inform the decision-making processes of various stakeholders, including governments, business partners, management teams, and competitors. In PT. Kitadin, environmental and social costs are categorized as expenses incurred for environmental protection and management, post-mining land reclamation, and Community Development programs. As a subsidiary, PT. Kitadin records expenditures related to environmental protection and management, which are subsequently presented in internal company reports and are transmitted to the parent company for inclusion in consolidated financial statements. At the parent company level, environmental and social costs are further classified into direct and indirect expenses. This was also revealed by Mr. Muhammad Ilyas as Accounting *Staff* (Wednesday, July 12, 2023) as follows.

"Reclamation costs can be classified into two primary categories: direct and indirect costs. The direct costs include land planning, erosion control, water management, and revegetation expenses. In contrast, indirect costs comprise administrative expenses, mobilization and demobilization charges, supervision fees, and other associated expenditures."

In the context of environmental management and reclamation of post-mining land, PT Kitadin adhered to the guidelines and regulations stipulated in the Regulation of the Minister of Energy and Mineral Resources of the Republic of Indonesia Number 07 of 2014 concerning the implementation of recreation and post-mining in mineral and coal mining business activities. This regulation classifies reclamation costs into two primary categories: direct and indirect. Direct costs encompass all expenses associated with the restoration and engineering of post-mining land, including land surface arrangement, reclamation, erosion control, water management, and revegetation activities. These costs are integral to the company's efforts to restore former mining sites to improve environmental conditions and support sustainability and biodiversity after the cessation of mining operations. Conversely, indirect costs involve aspects related

to the reclamation process that cannot be directly attributed to specific activities, such as administrative expenses, equipment mobilization and demobilization, supervision, and other incidental costs. Cost allocation is based on the realization of the annual budget and is recognized only when benefits are derived during the relevant period. By adhering to these regulations, PT Kitadin implemented post-mining land reclamation practices in a structured and transparent manner, ensuring compliance with the applicable regulations. This approach not only supports the company's environmental protection efforts but also ensures the sustainability of the ecosystem surrounding the mine site. PT. Kitadin commitment to land reclamation practices can be viewed as a concrete step towards responsible and sustainable mining practices.

Table 2. Identification of Reclamation Costs

No	Components of Reclamation Costs
	Direct Costs
1	Ground Surface Arrangement
2	Land hoarding used for exploration activities
3	Erosion control and water management
4	Air management
5	Revegetation
	Indirect Costs
1	Mobility and Demobilization of tools
2	Reclamation Planning
3	Administration and General
4	Supervision
5	The cost of using ex-mining land, consists of:
	Purchase of Cattle, Chickens and Goats
	Purchase of Animal Feed
	Training and Development of Farmer Groups
	Infrastructure Costs
	Research and Planning Costs
	Licensing and Regulation Fees
	Administration and Management Fees

Table 2 delineates the direct and indirect cost elements associated with ex-mining land reclamation. The direct costs include land surface arrangement, stockpiling, exploration activities, erosion control, water and air management, and revegetation. The indirect costs include equipment mobility and de-mobility, reclamation planning, administration, supervision, and post-reclamation land use. At PT Kitadin, post-reclamation land-use costs include livestock and feed procurement, training and development, infrastructure, research and planning, licensing and regulations, and administrative and management expenses. These costs are categorized as indirect costs because of their lack of direct association with physical reclamation activities. While practices may vary across companies and jurisdictions, these indirect costs are integral to maximizing the economic and environmental benefits of reclaimed land. They are typically recorded as development or operational costs depending on their nature. Effective management of these costs is crucial for optimizing ex-mining land use and ensuring sustainable benefits for both the company and environment.

4.2.2 Recognition of Environmental and Social Costs

Environmental and social costs are intricately linked to the expenses associated with products, processes, systems, or facilities, which are crucial for enhancing management decision-making. The primary objective of social and environmental accounting is to minimize environmental costs and enhance environmental performance. Companies may categorize environmental costs differently based on their specific goals, potentially allocating them to costs, budgets, or stakeholder communication purposes. Accounting recognition involves recording transactions that impact a company's financial statements. The recognition of environmental and social costs specifically pertains to the process of documenting expenses related to environmental protection, restoration, or regulatory compliance in a company's financial records. This recognition adheres to established accounting principles including Sustainability Accounting Principles relevant to environmental concerns. At PT Kitadin, the recognition of environmental and social costs was based on the nature of these expenses and their associated environmental obligations. These costs can be recognized as expenses, liabilities, or assets depending on specific criteria. The general principles for recognizing environmental and social costs at PT Kitadin are as follows:

1. Recognition as an Expense: Environmental and social costs associated with current liabilities, such as routine maintenance or daily waste management, are typically recognized as expenses in the income statement. This recognition reduces the company's revenue and net profit for the period in which these costs are incurred, reflecting its commitment to social and environmental responsibility and meeting financial reporting transparency requirements.
2. Recognition as an Asset: Environmental and social costs related to future obligations, such as the reclamation of former mining sites scheduled for upcoming years, may be recognized as assets if they meet the criteria for asset recognition. These assets can depreciate over an appropriate period.
3. Recognition as a Liability: Environmental costs, recognized as liabilities in financial statements, reflect future obligations resulting from environmental impacts. These expenses are recorded as deductions from equity and are classified as long-term liabilities. If the company has legal or contractual obligations to reclaim or restore former mining sites or other areas damaged by its activities, these costs may be recognized as liabilities, reflecting the company's responsibility to restore the environment to its original condition.

The classification of environmental and social costs as assets or expenses typically depends on their relationship with future obligations and the extent to which they provide future economic benefits. Recognition of these costs in corporate financial statements is an increasingly significant practice in the context of corporate sustainability and social responsibility. This recognition reflects the expenses incurred by corporate actions or policies that affect the environment and society. It is essential that the recognition of environmental costs adheres to applicable accounting principles, including guidelines imposed by relevant authorities. The recognition of environmental costs was also expressed by Mr. Muhammad Ilyas as Accounting *Staff* (Wednesday, July 12, 2023) as follows:

"The expenses related to land reclamation and revegetation activities during the production phase were incorporated into the revenue cost. The allocation of these costs is derived from the annual budget and is recognized when the associated benefits are realized within the relevant period, regardless of whether actual cash expenditures have occurred at that time."

Furthermore, Mr. Viktorianus Elpidius So (VE) as the *Environment & Accounting* Team (Wednesday, July 12, 2023) explained as follows.

"All costs incurred are summarized and made a report, sir. So, there is an RPP report and a reclamation plan report. From there, we set an estimate of how much we will make for reclamation activities, including land reclamation."

On the basis of the analysis of the interview results and examination of the company's consolidated financial statements, it can be determined that reclamation and revegetation expenses can be recorded and recognized as assets, expenses, and environmental liabilities in accordance with established cost criteria. This approach aligns with PT Kitadin's recognition of environmental costs.

Table 3. Recognition of Reclamation Costs

No	Components of Reclamation Costs	Mining Operations	Reclamation	Post-Mining
Direct Costs				
1	Ground Surface Arrangement	Obligation	Obligation	Obligation
2	Land hoarding used for exploration activities	Obligation	Obligation	Obligation
3	Erosion control and water management	Obligation	Obligation	Obligation
4	Air management	Obligation	Obligation	Obligation
5	Revegetation	Obligation	Obligation	Obligation
Indirect Costs				
1	Mobility and Demobilization of tools	Obligation	Obligation	Obligation
2	Reclamation Planning	Burden	-	-
3	Administration and General	Obligation	Obligation	Obligation
4	Supervision	Obligation	Obligation	Obligation
5	The cost of using ex-mining land, consists of:	Obligation	Obligation	Obligation
	Purchase of Cattle, Chickens and Goats	Asset	Asset	Asset
	Purchase of Animal Feed	Obligation	Obligation	Obligation
	Training and Socialization of Farmer Groups	Obligation	Obligation	Obligation
	Infrastructure Costs	Asset	Asset	Asset

Research and Planning Costs	Obligation	Obligation	Obligation
Licensing and Regulation Fees	Obligation	Obligation	Obligation
Administration and Management Fees	Obligation	Obligation	Obligation

PT. Kitadin recognizes the direct costs of ex-mining land reclamation as an obligation, recording them in the allowance account for mining rehabilitation. This liability reflects the company's responsibility to restore or rehabilitate the land disturbed by mining. Several factors justify recognizing reclaimed land arrangements as a liability rehabilitation allowance.

1. Legal and contractual obligations Mining companies are often subject to strict regulations or contractual agreements that require land reclamation.
2. Accounting principles: The recognition of assets and liabilities as they arise is fundamental to accounting. The reclamation obligation emerges from ongoing mining activities.
3. Matching principle: The costs associated with revenue generation should be recognized during the same period. Reclamation costs are linked to mining activities and should be recognized accordingly.
4. Environmental responsibility: Recognizing a reclamation obligation reflects a company's commitment to environmental restoration.
5. Financial transparency: The separate recognition of land rehabilitation obligations provides stakeholders with crucial information for assessing a company's environmental and financial performance.

The accounting treatment for mine rehabilitation allowance typically involves two steps.

- **Creating the allowance:**
  Debit: Production Cost (Mine Reclamation)
  Credit: Mine Rehabilitation Allowance Obligation
- **Recording actual rehabilitation costs:**
  Debit: Obligation to Spare for Mine Rehabilitation
  Credit: Cash

This accounting approach aligns with PSAK 64 (Revised 2013) "Mining," which outlines the recognition, measurement, and disclosure of mining-related assets, liabilities, expenses, and revenues. PSAK 64 stipulates that reclamation costs should be recognized as a liability when

- A definite legal or contractual obligation exists.
- The obligation can be measured at the present value of the estimated future expenditure.
- Estimated expenditure is predictable and reliably measurable.
- The obligation is recognized as part of the mineral extraction cost.

The indirect reclamation costs at PT. Kitadin may be recognized as assets or obligations. Livestock and infrastructure purchases for land recovery can be recognized as assets if they play a significant role in reclamation, have measurable economic benefits, and comply with relevant accounting standards. Other indirect costs, such as reclamation planning, are typically recognized as expenses in the period they are incurred, allowing the company to track operational costs, monitor budgets, and evaluate project profitability.

4.2.3 Measurement of Environmental and Social Costs

Environmental and social cost measurement is critical for evaluating the financial implications of activities that impact the environment. This assessment is integral to environmental management and social and environmental accounting, as it enables organizations to comprehend the environmental consequences of their operations and identify potential mitigation strategies. In the context of ex-mining land reclamation, measuring environmental and social costs involves quantifying the expenses related to ecological restoration and assessing the societal impacts associated with the rehabilitation process. These measurements provide companies with valuable insights into their environmental footprint and their effects on local communities. PT. Kitadin employs the historical cost principle for measuring environmental and social costs. This accounting method records assets and liabilities at their original acquisition costs, without adjusting for subsequent changes in value. Similarly, expenses reported in the income statement reflect the historical costs of goods sold or utilized rather than their current replacement costs. By contrast, current expenses represent the expenditure necessary to replace an asset in the present period. This is based on a statement from Mr. Muhammad Ilyas as Accounting Staff (Wednesday, July 12, 2023) as follows:

"In calculating the cost of reclamation and revegetation, the company uses rupiah currency that is in accordance with the budget that has been issued and refers to the average budget realization of the previous period. This approach is considered more accurate and tends not to have a significant difference with the budget realization in the current period."

PT. Kitadin employs historical cost accounting for measuring and assessing expenses, utilizing monetary values derived from past data and previously disbursed funds. The company evaluates its obligations based on estimated future expenditures, discounted to present value. By adhering to the historical cost principle, PT. Kitadin allocates costs incurred in previous years to the current year's records. This approach aims to maintain consistency between current year expenses and budget realizations from prior periods. The reclamation costs for former mining sites are measured using the historical cost method, which encompasses the total actual expenses incurred throughout the reclamation process. This method records costs at their original value when incurred or paid, including all expenses across all stages of the reclamation project. Measuring ex-mining land reclamation costs using historical cost provides a direct approach that accurately reflects the actual expenses incurred during the entire reclamation process. The subsequent section details the measurement of mine reclamation costs at PT. Kitadin.

Table 4. Measurement of Environmental Costs

No	Components of Reclamation Costs	Measurement
Direct Costs		
1	Ground Surface Arrangement	Historical Cost
2	Land hoarding used for exploration activities	Historical Cost
3	Erosion control and water management	Historical Cost
4	Air management	Historical Cost
5	Revegetation	Historical Cost
Indirect Costs		
1	Mobility and Demobilization of tools	Historical Cost
2	Reclamation Planning	Historical Cost
3	Administration and General	Historical Cost
4	Supervision	Historical Cost
5	The cost of using ex-mining land, consists of:	
6	Purchase of Cattle, Chickens and Goats	Historical Cost
7	Purchase of Animal Feed	Historical Cost
8	Training and development of Farmer Groups	Historical Cost
Infrastructure Costs		
1	Research and Planning Costs	Historical Cost
2	Licensing and Regulation Fees	Historical Cost
3	Administration and Management Fees	Historical Cost

Measurement of mine rehabilitation allowances using historical costs is a widely accepted accounting approach for recording rehabilitation liabilities associated with mining operations. This method involves valuing the rehabilitation allowance based on the actual costs incurred by the company during the initial stage of mine rehabilitation activities, including land restoration, environmental monitoring, and waste management. Mine rehabilitation allowances typically commence with an initial assessment at the onset of mining operations, or when a clear commitment to rehabilitation is established. Thus, a cost estimate for rehabilitation based on historical costs must be compiled using reasonable assumptions. Companies are required to estimate the potential costs of rehabilitating former mining sites, encompassing expenses related to land restoration, waste management, environmental monitoring, mine closures, and other pertinent activities. These estimates are subject to change over time, necessitating periodic review, and if required, updates to align with evolving conditions and regulatory changes. A discount factor accounting for the time value of money may be applied to the estimated rehabilitation costs, acknowledging that future costs will have a different value than present-day expenses.

While measuring mine rehabilitation allowances using historical cost is a conservative approach that reflects the actual costs incurred by the company at the outset of rehabilitation, companies should regularly update their cost estimates to account for potential changes in conditions and regulations. In Indonesia, the measurement of mine rehabilitation allowances adheres to the PSAK No. 64 (Statement of Financial Accounting Standards on Allowance for Productive Assets and Operating Expenses). This standard provides guidance on the measurement and recognition of obligations related to mine rehabilitation. PSAK No. 64 stipulates that companies engaged in activities resulting in

rehabilitation obligations, such as mining, must recognize these obligations in accordance with the historical cost principle. The measurement of mine rehabilitation obligations involves estimating the costs required for environmental restoration and the reconfiguration of former mining sites. This cost estimate should reflect both the actual costs incurred or anticipated for rehabilitation and projected future expenses incurred in the rehabilitation process.

4.2.4 Presentation of Environmental and Social Costs

Most companies do not explicitly define "environmental and social costs" in their financial statements. In practice, many companies often adopt conventional approaches in financial accounting systems when implementing environmental accounting practices. The social and environmental accounting approach emphasizes more on calculating environmental costs. These costs involve information that is not only related to measurable environmental and social costs, but also includes information regarding material and energy use. In order to achieve the fulfillment of information for stakeholders, companies are required to be able to present environmental costs in financial statements. According to the Financial Accounting Standards (SAK), companies involved in the exploration of natural resources that may affect the environment are required to disclose social and environmental activities that are closely related to the impact of exploitation on the environment. This information is presented as part of a supplemental report to supplement the main financial statements. PT Kitadin presents environmental and social costs into the company's consolidated financial statements. The statement was expressed by Mr. Muhammad Ilyas as Accounting Staff (Wednesday, July 12, 2023) as follows:

"Costs related to the reclamation of ex-mining land, such as equipment rental costs, revegetation costs, fuel and oil costs, professional and management service fees, and other indirect costs, are recorded and explained as a single entity in the company's financial statements. In addition, some of these expenses are allocated in the "miscellaneous" category in the financial statements."

Based on this information, it can be concluded that PT Kitadin presents costs related to the reclamation of ex-mining land into the company's consolidated financial statements made by the parent company, namely PT Indo Tambangraya Megah Tbk. The cost of reclamation of ex-mining land which is the company's operational expense must be presented in the income statement as a component of operational costs. Operational costs are expenses incurred in order to run a day-to-day business and include various costs necessary for the company's operations. These costs are part of operational costs because they are directly related to mining operations. These costs include costs incurred during the relevant period to restore and manage ex-mining land. Based on the results of interviews and information retrieval from the company's consolidated financial statements, PT Kitadin presents the cost of reclamation of ex-mining land into the following financial statements:

Income statement: The cost of reclamation of ex-mining land, which is the company's operational expense, must be presented in the income statement as a component of operating expenses. This includes the costs incurred during the relevant period to restore and manage the former mining land. The environmental and social costs in the reclamation of ex-mining land are recorded in the related account which is a group of cost of income as depicted in the following income statement Table 5.

Table 5. Income Statement

Net income	Rp xxx
Cost of income	
Mining fees	Rp xxx
Coal transportation	Rp xxx
Salary and benefits	Rp xxx
Depreciation of fixed assets	Rp xxx
Fuel and oil	Rp xxx
Amortization of exploration costs and the development of Suspended	Rp xxx
Care and maintenance	Rp xxx
Forestry contributions	Rp xxx
Equipment rental	Rp xxx
Revegetation	Rp xxx
Exploitation royalties/contributions	Rp xxx
Coal purchase	Rp xxx
Allowance Burden for mine rehabilitation	Rp xxx

Total Cost of Income	Rp xxx
Gross profit	
Sales expenses	Rp xxx
General and administrative load	Rp xxx
Financial burden	Rp xxx
Profit before income tax	Rp xxx
Income tax burden	Rp xxx
Total comprehensive profit for the current year	Rp xxx

Balance Sheet: If the company has reclamation liabilities that may arise in the future (these liabilities are usually measured based on estimated reclamation costs), then these liabilities should be presented in the balance sheet as part of the long-term liabilities. In some cases, these obligations can be divided into short-term and long-term if there is a payment expected in the near future.

Table 6. Statement of Financial Position

LIABILITY	
SHORT-TERM LIABILITIES	
Accounts payable - third party	Rp xxx
Tax debt	Rp xxx
Outstanding expenses	Rp xxx
Other short-term liabilities	Rp xxx
Employee compensation allowance	Rp xxx
Amount of short-term liabilities	Rp xxx
LONG-TERM LIABILITIES	
Allowance for rehabilitation mine	Rp xxx
Allowance for dismantling, relocation, and restoration	Rp xxx
Rental liability	Rp xxx
Long-term bank loans	Rp xxx
Other long-term liabilities	Rp xxx
Amount of long-term liabilities	Rp xxx
AMOUNT OF LIABILITIES	Rp xxx
EQUITY	
Share capital	Rp xxx
Retained earnings	Rp xxx
Total EQUITY	Rp xxx
Total LIABILITIES AND EQUITY	Rp xxx

4.2.5 Environmental and Social Cost Disclosure

The disclosure of environmental and social costs in financial statements represents a crucial step in providing stakeholders with transparent information regarding environmental obligations, corporate environmental protection efforts, and associated financial impacts. These disclosures enable stakeholders to understand how companies manage their environmental responsibilities and related risks. Companies engaged in the reclamation of former mining sites typically disclose such information in sustainability and Community Development reports. Likewise with PT Kitadin, because the disclosure of the subsidiary is not carried out separately but is merged with the parent company as explained by Mr. Muhammad Ilyas as Accounting Staff (Wednesday, July 12, 2023) as follows:

"Environmental costs have been automatically included in the relevant cost categories in the company's financial accounts. In the financial statements to be published, the disclosure of environmental costs has been considered and will be included. No specific disclosures are made here for environmental costs, as the information is already integrated in similar cost accounts. The importance and compliance with environmental cost disclosure guidelines has always been a priority in a company's financial statements. This also applies in the consolidated financial statements to be published, which include all subsidiaries of PT Indo Tambangraya Mega, Tbk. All environmental expenses will be recorded and explained in detail, ensuring transparency and accountability in comprehensive financial reporting."

On the basis of interviews and information gathered from the parent company's consolidated financial statements and sustainability reports, the researcher presents the disclosure of PT Kitadin former mining land reclamation costs, as follows:

1. Financial statement footnotes should provide supplementary information regarding ex-mining land reclamation costs, including the assumptions used in cost estimations, measurement methodologies, and other pertinent details. This disclosure enhances stakeholders' understanding of a company's environmental obligations.
2. The financial statements must incorporate a disclosure of accounting policies elucidating PT Kitadin approach to measuring and recognizing ex-mining land reclamation costs, including the underlying assumptions.
3. If significant risks or uncertainties are associated with reclamation costs, they should be disclosed in the financial statements. Such disclosures may encompass risks related to changes in environmental regulations, fluctuations in cost estimates, or other factors that could impact reclamation expenses.

PT Kitadin may provide additional disclosures in its financial statements or other reports such as sustainability reports, offering more comprehensive information about reclamation costs and other environmental initiatives undertaken by the company. The disclosure of ex-mining land reclamation costs should be meticulously and transparently drafted to ensure compliance with regulatory requirements and to provide stakeholders with a clear understanding of environmental obligations and associated expenses.

5. Conclusions

PT. Kitadin entered its post-mining phase in March 2023, marking the beginning of its obligation to reclaim former mining lands as part of its environmental responsibility. Based on interviews, observations, and extensive documentation review, it can be concluded that PT. Kitadin has implemented social and environmental accounting through various activities, including land reclamation and revegetation, air and water management, and repurposing of ex-mining areas. From an environmental accounting perspective, PT. Kitadin has diligently recorded and measured the environmental impact of its ex-mining land reclamation efforts, integrating these aspects into its financial statements and sustainability reports. Concurrently, from a social accounting standpoint, the company has actively managed the social implications of land reclamation activities, disseminating relevant information to key social stakeholders, including local communities, surrounding populations, and non-governmental organizations focused on social issues. This comprehensive approach demonstrates PT. Kitadin's commitment to addressing both the environmental and social dimensions of its post-mining responsibilities, aligning with contemporary standards of corporate accountability and sustainable business practices.

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