ANALYSIS OF SOCIAL AND ENVIRONMENTAL IMPACT OF THE EXISTENCE OF PT CITRA PALU MINERAL (CPM) GOLD MINE ON THE COMMUNITY IN POBOYA VILLAGE

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Abstract

This study aims to analyze the social, economic, and environmental impacts of PT Citra Palu Minerals (CPM) mining activities on the surrounding communities in Poboya Village, and to evaluate the extent to which the company implements environmental accounting in its practices and reporting. Using a qualitative, case study-based approach, this study combines in-depth interviews, field observations, and analysis of company documents, particularly CPM's sustainability report. The results indicate that mining activities have transformed the livelihood structure of local communities, from previously dependent on the agricultural sector and traditional activities to dependent on the mining industry. However, promised employment opportunities have not been fully absorbed due to limited education and skills of local communities, leading to demands for a Community Mining Area (WPR) as a form of economic resistance and survival strategy. Field findings also revealed serious complaints regarding dust pollution and declining river water quality, which have prompted the community to switch to using drilled wells as an alternative water source. Although CPM's sustainability report lists health, reclamation, and environmental management programs, the community believes that the real impact on quality of life has not been fully realized. From an environmental accounting perspective, the company has recorded an environmental budget, but the information presented does not comprehensively reflect the effectiveness of its ecological impact control. This research confirms that the sustainability of the mining industry requires integration between ecological accountability, reporting transparency, and community involvement as the main actors in the sustainable development process.

Keywords: Mining, Sustainability, Environmental Accounting, Socio-Ecological Impacts

INTRODUCTION

The mineral mining sector is a key foundation for global and national economic growth. In many developing countries, this sector is positioned as a driver of development because it is considered capable of supporting national economic growth and mining company performance, including through financial contributions and the implementation of environmental accounting (Nuraini & Andrew, 2023). However, various studies have demonstrated a mining paradox: economic growth accompanied by social and ecological pressures on communities surrounding mining areas (Nutfa et al., 2024). This paradox raises fundamental questions: to what extent does mining contribute to the well-being of local communities, and to what extent do environmental impacts become a long-term burden for affected communities. In Indonesia, mining activities occupy a strategic position in the national economy. Data from the Central Statistics Agency (2024) shows that the mining sector's contribution to GDP reached 10.43% in 2023 and has experienced an increasing trend in investment over the past five years. However, empirical literature reveals that mining expansion is not always accompanied by improvements in the social welfare of communities surrounding mining areas. Research (Masruddin & Asti Mulasari, 2021) and (Paradise, 2023) indicate negative spillover effects such as unequal economic access, environmental degradation, and the emergence of social conflict. Therefore, mining sector development cannot be assessed solely through economic indicators but must be analyzed comprehensively through socio-ecological dimensions and governance accountability.

This situation is increasingly relevant because the national regulatory framework has emphasized the obligation of social and environmental accountability in mining operations. Law No. 2 of 2025 concerning Mineral and Coal Mining and Government Regulation (PP) No. 22 of 2021 concerning the Implementation of Environmental Protection and Management require mining companies to conduct reclamation, pollution control, and ecological risk analysis. Furthermore, Law Number 40 of 2007 concerning Limited Liability Companies and Financial Services Authority Regulation Number 51/POJK.03/2017 of 2017 regulate sustainability reporting as a form of public accountability to ensure simultaneous economic, social, and ecological sustainability. This regulation establishes the basis for recognizing that mining activities are not merely extractive activities, but rather entities with moral, social, and environmental responsibilities to communities surrounding the mine.

In modern accounting, environmental accounting serves as an evaluative instrument for recording, measuring, and reporting the ecological impacts of a company's operational activities. A study by Burritt et al. (2019) emphasized that environmental accounting should be designed to produce relevant information for stakeholders regarding environmental risks, recovery costs, and long-term sustainability. However, findings by Nuraini & Andrew (2023) indicate that the implementation of environmental accounting in Indonesia does not fully reflect the actual conditions on the ground and tends to be normative, more geared toward fulfilling administrative obligations than reflecting the social and ecological realities of communities surrounding the mine.

This phenomenon is clearly reflected in the Poboya sub-district in Palu City, Central Sulawesi, which is within the mining area of PT Citra Palu Minerals (CPM). Prior to mining activities, the Poboya community relied on agriculture and small businesses. However, a study by Hapsari et al. (2024) shows that mining activities have shifted the community's

socio-economic structure toward an extractive economy dependent on both mining companies and traditional mining. Ecologically, research by Yahya & Yassi (2021) found a decline in river water quality due to mining activities, forcing communities to adapt by drilling wells and constructing alternative water systems. Increased heavy equipment traffic and land clearing also worsen air quality and the living conditions of surrounding communities.

Most previous research in Poboya has focused on policy and institutional conflicts (Kurnia, 2015; Zainuddin et al., 2012), while integrating social and environmental impacts through the direct experiences of communities surrounding the mine is still limited. Furthermore, in-depth qualitative approaches that capture community narratives, adaptations, and factual experiences have been limited. This gap highlights the need for research that simultaneously examines the social and environmental dimensions from the perspective of the directly impacted communities.

Based on academic urgency and the growing empirical need in mining areas, this study aims to provide a comprehensive understanding of the consequences of mining activities on the surrounding community and environment. The primary focus of the study is directed at mining activities conducted by PT Citra Palu Minerals in Poboya Village, with an in-depth examination of the social impacts experienced by the surrounding communities and the environmental changes resulting from these activities. Through this study, the research seeks to uncover how mining activities affect social structures, lifestyles, economic relations, and the dynamics of local community welfare. It also describes the forms of ecological degradation directly experienced and felt by residents, such as environmental degradation and changes in local ecosystems.

Furthermore, this research aims not only to capture the social and environmental realities on the ground but also to make a significant academic contribution to the development of socio-environmental literature and environmental accounting, particularly in the context of the extractive sector. It is hoped that the research findings can serve as a basis for constructive evaluation for local governments and companies in formulating and improving mining policies, so that the resulting policies are more inclusive of community interests, responsive to environmental issues, and oriented towards the principles of long-term sustainability.

REVIEW OF LITERATURE

Social Impact

Social impacts refer to structural, economic, and social changes in communities resulting from external activities such as mining. According to Bebbington & Humphreys Bebbington (2018), mining activities often create social disruption that alters community life patterns through the loss of traditional livelihoods, unequal access to employment, and the dominance of the industrial sector over local socio-economic life. Pitoyo (2007) explains that the extractive sector often results in a dualistic economy, with formal and informal sectors operating concurrently, creating social inequality and marginalizing local groups.

Previous research has shown that social impacts cannot be viewed solely from an economic perspective, but also involve shifts in social identity, changes in class structure, and social conflict. Research by Nutfa et al. (2024) in Poboya confirms that limited local

labor absorption drives communities to engage in traditional mining as a form of economic adaptation. This aligns with the findings of Octapiani & Supriadi (2024), who noted that communities surrounding mining areas experienced a transformation in their livelihoods from the agricultural sector to the informal mining sector. Al Hadis (2024) also found new patterns of social stratification resulting from large-scale mining activities in Kasiro Village, which in the long term could widen the economic gap between community groups.

Theoretically, social impacts can be divided into positive ones (increased income, job creation, and the growth of small businesses) and negative ones (social conflict, shifts in work culture, and dependence on other sources of income). Therefore, in the mining context, social impacts are understood not only as direct impacts on society, but as a process of social transformation that gives rise to new forms of adaptation and social responses within the community (Longhofer & Winchester, 2016).

Environmental Impact

Environmental impact refers to changes in physical and biological ecosystems resulting from industrial activities, including mining. Environmental impact is often defined as changes in air, water, soil, and biodiversity quality that threaten ecosystem sustainability and human health (Hidayat & Supriandi, 2024; Mawardi Heru Prasetyo et al., 2025). Mining, especially large-scale mining, significantly contributes to land degradation, groundwater pollution, and the release of hazardous particulates into the atmosphere (Žibret et al., 2018).

Research by Wu et al. (2021) explains that mining waste can carry heavy metals such as Hg, As, and Pb, which accumulate in the food chain directly impacting public health. Meanwhile, research by Yahya & Yassi (2021) in the Poboya region shows a decline in river water quality due to the disruption of water catchment areas and tailings pollution. When primary water sources are disrupted, communities turn to drilled wells as an ecological adaptation mechanism. Research (Kurnia, 2015) also emphasizes that ecological degradation occurring around mining operations is often not accompanied by transparent environmental mitigation. Therefore, environmental impact in this study is understood not only as physical damage, but also as an indicator of ecological accountability and the existence of corporate governance regarding the sustainability of the surrounding environment.

Environmental Accounting

Environmental accounting is a branch of social accounting that focuses on measuring, recognizing, and reporting the environmental impacts of business activities, particularly in extractive sectors such as mining (Schaltegger et al., 2022). The primary objectives of environmental accounting are to assess the efficiency of natural resource use, estimate the costs of ecological damage, and assess the level of corporate responsibility towards society and the environment. In recent developments, environmental accounting has evolved into Environmental Management Accounting (EMA), which encompasses key elements such as environmental cost accounting, material flow accounting, environmental performance indicators, and sustainability reporting based on GRI and ISO 14001 standards.

The application of environmental accounting is closely aligned with Stakeholder Theory, which emphasizes that companies have a moral and economic obligation to consider all parties impacted by their operational activities, including local communities, governments, and the natural environment (Freeman, 2010). In this context, environmental accounting serves as a means of communication between companies and stakeholders through sustainability reporting, reclamation implementation, or waste management.

Schaltegger & Burritt (2018) emphasized that the EMA approach can improve decision-usefulness and help companies understand their ecological responsibilities in a more structured way. Therefore, environmental accounting is not simply a reporting tool but also a mechanism to ensure that stakeholders' rights and interests are respected fairly and transparently.

Furthermore, Legitimacy Theory explains that companies operate based on an unwritten social contract with society, so their continued operations depend on social acceptance (a social license to operate) (Suchman & Mark C, 1995). Environmental accounting becomes a legitimacy strategy used by companies to demonstrate compliance with sustainability norms, values, and standards. However, if reporting is done merely as a formality or to improve image without a substantive commitment to the environment, this practice can be categorized as symbolic legitimacy or greenwashing (Patten & Shin, 2019). From a theoretical perspective, environmental accounting is not only a reporting system but also a public accountability tool and a basis for evaluating a company's integrity in maintaining a balance between economic profit and environmental sustainability.

Framework

This research framework is based on the assumption that PT Citra Palu Minerals' mining activities are a factor triggering social change and environmental degradation in Poboya Village. Mining operations encompass exploitation, processing, waste disposal, and land clearing, which have direct consequences for the community. Social impacts manifest in changes to livelihoods, the emergence of conflict, and health risks. Meanwhile, environmental impacts are visible through water and air pollution, soil degradation, and the loss of the Poboya area's ecological function as a water catchment area and natural habitat.

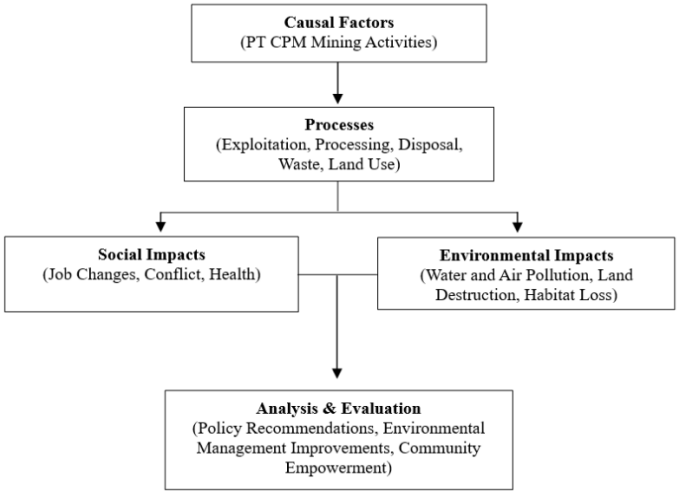

Figure 1.
Framework Diagram

Source: Primary data, processed by researchers (2025)

RESEARCH METHOD

This research uses a descriptive qualitative approach to deeply understand the social and environmental impacts of PT Citra Palu Minerals (CPM) mining activities on the community in Poboya Village. This approach positions social reality as an object interpreted naturally through the perspectives of informants, allowing for the exploration of community

meanings and subjective experiences. Qualitative research does not aim to test hypotheses, but rather to explore perceptions, adaptive responses, and socio-ecological dynamics that emerge as a direct result of mining activities. This approach was chosen because it is able to capture complex realities that cannot be explained solely through numbers or statistical variables.

The research was conducted in Poboya Village, Mantikulore District, Palu City, Central Sulawesi, within the PT CPM mining area. This location was chosen based on its intensity of social and environmental impacts compared to other areas, making it considered representative for uncovering the research phenomenon. Field data collection was conducted from October–November 2025, or until data saturation reached, to ensure that the research findings reflect the actual conditions on the ground. The unit of analysis in this study focuses on the social and environmental impacts experienced by the community surrounding the Poboya mine. Informants were selected using purposive sampling techniques, taking into account direct involvement in the research phenomenon, understanding of the issues in the field, and willingness to provide information openly. Informants consisted of:

Table 1.
Research Informants

No	Informant Category	Role in Research	Reason for Selection
1	Village Government Apparatus	Providing information related to policies, regional management, and government responses to mining activities.	Have administrative authority and formal understanding of social and environmental conditions in Poboya Village
2	Directly Affected Communities	Describes experiences, perceptions, and social and environmental impacts felt as a result of mining activities.	They are the parties who most directly feel the impact of mining activities in their daily lives.
3	NGO representatives	Providing critical views, supporting data, and monitoring results on social and environmental issues	Actively carry out monitoring and advocacy regarding the impact of mining in the research area.

Source: Primary data, processed by researchers (2025)

The selection of informants took into account relevance to the research topic, recommendations from local figures, willingness to be interviewed, and the ability to provide valid and factual data. Therefore, data collection was based on analytical considerations, not solely on the number of informants. Data collection was conducted through observation, in-depth interviews, and documentation. Field observations were used to assess the physical environmental conditions and social interactions following the presence of mining activities. Semi-structured interviews were used to explore community perceptions, experiences, and adaptation strategies to socio-ecological changes.

Documentation was used as a secondary data source, including PT CPM's sustainability report, the company's social and environmental responsibility policies and

procedures, and CPM's June 2025 financial report. These three techniques complemented each other, resulting in rich, contextual, and academically sound data. Data analysis followed the interactive model of Miles and Huberman, which includes data reduction, data presentation, and inductive conclusion drawing. The reduction process was carried out through sorting, coding, and categorizing field findings based on the main themes of the MAXQDA analysis. The filtered data were organized into thematic narratives to facilitate the interpretation of social and ecological meanings. Research conclusions were drawn by considering the consistency of findings from various informants.

RESULTS AND DISCUSSION

Social Impact of CPM Mining Activities in Poboya: Changes in Economic Structure and Dependence on Mining

The research results indicate a shift in the economic structure of the Poboya community, moving from an agricultural sector to an extractive sector focused on mining. Prior to the presence of PT CPM, the community's primary livelihoods came from agriculture, plantations, and small businesses. A shift in livelihood systems has occurred, leading to a dependence on mining activities, both as company employees and as artisanal miners. This shift illustrates the phenomenon of livelihood transformation, a shift in community economic patterns due to the dominant intervention of industry, both through capital and policy.

Research by Hapsari et al. (2024) found that in Poboya, an economic transition has occurred from an agricultural sector to mining as a survival mechanism when access to traditional economic resources begins to diminish. This finding is supported by Al Hadis (2024), who stated that the presence of gold mines tends to cause gradual but permanent socio-economic changes, particularly in rural communities with limited access to alternative income sources. This suggests that the presence of extractive industries often creates a mono-economy, depriving communities of diversified income sources. This phenomenon illustrates the condition of an extractive-dependent economy, where industrial activity makes local communities increasingly economically vulnerable due to dependence on a single dominant sector. Bebbington & Humphreys (2018) explain that mining can create social disruption and economic narrowing, namely the narrowing of alternative economic access and the loss of traditional economic systems. However, document analysis results show that the company has undertaken several economic empowerment initiatives in the CPM 2024 Sustainability Report. Some of the alternative economic programs listed are:

1. Fat-tailed sheep farming and livestock feed in Talise, Palu City.
2. Freshwater fish farming in Poboya with the procurement of 3,500 fingerlings.
3. Involving former traditional miners in the production of Core Boxes and Sample Bags to support mining operations.
4. Increasing the capacity of MSMEs around the mine through local economic training.

Administratively, these programs reflect the company's efforts to reduce economic dependence on mining. However, field findings indicate that these initiatives have not yet been fully felt by the Poboya community. No informants mentioned direct involvement in the programs. Therefore, the company's economic interventions can be categorized as

symbolic initiatives, existing in documentation but not yet becoming an economic mechanism that effectively replaces mining dependence.

This situation indicates a gap between reported sustainability and experienced sustainability. From an Environmental Management Accounting (EMA) perspective, companies should not only report economic performance but also record socio-ecological costs as a consequence of changes in the community's economic structure (Burritt et al., 2019). If economic programs have not substantially impacted the community, then the company's social accountability remains at the compliance stage, not yet reaching empowerment.

From a Stakeholder Theory perspective (Freeman, 2010), the Poboya community is a primary stakeholder entitled to directly benefit from the mining industry's economic activities. However, if economic diversification has not been concretely realized, the local economic structure can be categorized as being in a state of economic vulnerability, namely high dependence on a single dominant sector that is not fully accessible to the local community. Changes in the economic structure of Poboya are not merely an "impact" of the existence of the mine, but rather an indicator of structural dependency that has the potential to create social vulnerability if not followed by systematic community empowerment policies, based on field data, and in line with the principles of ecological and socio-environmental justice.

Social Exclusion and Limited Job Access

Interviews with government officials and community members indicate that most Poboya residents lack adequate access to employment at PT CPM. In an average neighborhood unit (RT), only about five residents work for the company, with most others able to work as artisanal miners or casual wage laborers. Informants emphasized that the main obstacle is not simply job availability, but also educational qualifications and administrative requirements that are not aligned with the real conditions of the local community, as illustrated in the following interview:

"The company has prioritized, but first, we need to look at the human resources. Most people here don't graduate from high school, so only a few can get in."

These field findings are supported by data from the 2024 CPM Sustainability Report, which shows that the educational profile of CPM employees is dominated by college graduates. In 2024, 235 employees held bachelor's degrees, 9 held master's degrees, and 1 held doctoral degrees. Meanwhile, 280 employees held high school degrees, while only 1 junior high school graduate and 6 elementary school graduates worked at CPM. This composition shows that company recruitment is highly dependent on formally educated workers, so that the Poboya community, most of whom only have junior high or elementary school education, are in a structurally subordinated position.

Table 2.
Employee Composition Table Based on Education in 2024

No	Educational level	Amount
1	Doctorate (PhD)	1
2	Master's Degree	9
3	Bachelor's Degree	235
4	Senior High School (or equivalent)	280
5	Junior High School (or equivalent)	1

6	Elementary School (SD/equivalent)	6

Source: CPM Sustainability Report 2024

This inequality represents a form of education-based social exclusion, where access to employment is determined not by local proximity but by formal standards that only certain groups can meet. This reinforces the argument of Bebbington & Humphreys Bebbington (2018) that mining often causes social disruption when industry standards do not align with the social capacities of communities surrounding the mine. Meanwhile, Hilson (2020) refers to this condition as a dualistic economy, where the formal and informal sectors coexist, but this marginalizes local communities that do not qualify as "industrially qualified human resources."

From a Stakeholder Theory perspective, companies should not only demand the competency of local workers but also facilitate capacity building through training, vocational training, or skills transfer that directly address the needs of communities surrounding the mine. However, although the sustainability report mentions scholarship and soft skills training programs, no direct involvement of the Poboya community in these programs is found. This indicates an implementation gap: on paper, the company has fulfilled its social responsibilities, but in reality, the majority of the community remains excluded from formal employment structures. This situation can be categorized as symbolic legitimacy (Suchman & Mark C, 1995), a condition where a company projects an image of social concern through formal documents, but fails to produce substantive change in the communities surrounding the mine. In other words, social exclusion in Poboya is not simply an individual limitation, but a consequence of a recruitment system that is not linked to holistic social responsibility. Therefore, this issue of job access needs to be read not only as an economic issue, but also as a problem of social legitimacy and corporate accountability to key stakeholders, namely the Poboya community as the directly impacted community.

WPR Demands as a Form of Economic Resistance

The research results indicate that the demand for a Community Mining Area (WPR) represents a form of economic resistance by the Poboya community against the formal mining system, which they believe does not provide equitable access to livelihoods. Although local communities are directly impacted by PT CPM's activities, the company's labor absorption capacity remains very limited. Informants stated that "in one neighborhood unit (RT), only about five people work at CPM," indicating that job access is exclusive and does not reach the majority of the community. The main obstacle that arises is the minimum educational standard of high school or bachelor's degree, which not all Poboya residents possess, as stated in interviews:

"The company has prioritized, but first, let's look at the human resources. Most people here don't graduate from high school, so only a few can enter... that's why the community demands WPR to continue mining independently."

This situation creates a structural barrier to economic access. Rather than empowering, the formal employment system actually leads to social exclusion for community groups that previously relied on traditional land for their livelihoods. This aligns with Worlanyo & Jiangfeng's (2021) study on the emergence of a dualistic economy, where the formal corporate sector and the traditional informal sector coexist, but result in economic disparity and marginalization of local groups. In the Poboya context, communities excluded

from formal access ultimately developed a survival mechanism through illegal traditional mining as a last resort to maintain their livelihoods.

Within the framework of Political Ecology theory, this phenomenon reflects a struggle for control over living space and natural resources between companies holding formal concession permits and local communities lacking legal access but historically having socio-ecological ties to the area. Demands for WPR are not simply rejections, but rather attempts to defend their economic rights to their land. The findings of Nutfa et al. (2024) confirm that the conflict in Poboya is not simply a conflict of interest, but a form of negotiation of the community's economic identity and social space against the dominance of the mining industry.

Regulatoryly, it is important to note that the determination of WPR falls under the authority of the government, not the companies. Based on Article 22 paragraphs (1)–(2) of Law No. 3 of 2020 (amendment to Law No. 4 of 2009 concerning Mineral and Coal Mining) and Government Regulation No. 22 of 2021, Articles 132–135, the determination of a WPR can only be made through a decision by the Minister of Energy and Mineral Resources or the Governor/Regent after a technical evaluation and recommendations from relevant agencies. Therefore, the Poboya community's demands for a WPR are actually a form of criticism of government regulations that have failed to provide a legal basis for alternative livelihood mechanisms. This situation is not solely a company problem, but reflects a regulatory gap between national mining policy and the socio-economic realities of communities surrounding the mine.

However, CPM's sustainability report demonstrates efforts to empower the economy through MSME programs, freshwater fish farming, agricultural training, and the involvement of traditional mining groups in the production of "core boxes" and "sample bags." While commendable, these programs are insufficient to replace the economic role of traditional mining, primarily because they do not fully address the community's primary needs: access to employment, control over resources, and economic sustainability. From the perspective of Stakeholder Theory and Legitimacy Theory, the company has not yet obtained substantive legitimacy because the economic empowerment provided is still partial and has not reached the core of the livelihood issues of the Poboya community.

Environmental Impact of CPM Mining Activities in Poboya:
Water and Air Degradation as Ecological Impacts of Mining

Field research revealed two crucial issues most felt by the Poboya community regarding the environmental impacts of mining: air pollution (dust) and a water quality crisis. Residents living around the foothills of the mountain, approximately 3 km from the mining area, reported being directly impacted by mining operations. This is clearly illustrated in the following interview:

"For me, regarding the environment, the community, especially this area, is exposed to everything from the air... automatically the dust reaches here, especially when the wind blows here. Not to mention, if you want to drink the river water, it's no longer suitable for consumption."

This situation indicates that river water, once a primary source, is no longer usable. So, the community has turned to drilled wells, some even digging small wells on the riverbanks just to obtain drinking water. CPM's sustainability report showcases various activities under the Environmental Pillar, such as green reclamation, planting local

vegetation, plastic waste recycling training, organic fertilizer programs, and mangrove planting. This narrative portrays a professional and environmentally responsible company image. However, in the field, public perception remains the opposite, as stated by an informant from the local government:

"CPM can be considered a professional company... they carry out reclamation work like planting trees... but the environmental impact that remains a problem is the pollution (dust) from the tracks leading in and out of the mine... even though they do watering, it's useless because Palu's weather is very hot."

This statement of "useless" is important academically, because it indicates that the company's mitigation methods fail to address the source of the pollution. Mine dust is a particulate matter that can carry toxic substances and pose a long-term threat to respiratory health. Therefore, watering road surfaces cannot be considered effective mitigation. This statement aligns with the findings of Bebbington & Humphreys Bebbington (2018), who stated that the mining industry often engages in greenwashing, a symbolic environmental practice that lacks substantial ecological restoration. Within the Environmental Management Accounting (EMA) framework, companies are supposed to report scientific data on water quality, air emissions, tailings, and public health impacts (Burritt et al., 2019), not just a cosmetic list of CSR programs.

However, the 2024 SR CPM report contains no quantitative data on water or air quality, lacks transparency of laboratory test results, and does not include estimates of public health risks. However, according to ISO 14001 and GRI standards, these aspects are key indicators of credible and responsible environmental reporting. Water and dust impacts are not merely technical issues, but concern the community's right to a healthy environment, as mandated by Law No. 32 of 2009 and Article 28H of the 1945 Constitution. If not addressed, public complaints about water and air pollution could develop into demands for environmental justice, potentially even leading to future ecological conflicts.

Public Health Risks as Ecological Impacts

The research results indicate that the environmental impacts of PT CPM's mining activities not only result in the loss of ecological resources but also lead to long-term public health risks. From an environmental health risk perspective, Poboya is currently in the "early warning" phase, meaning the community has experienced ecological disruption but has not yet received a systematic health protection mechanism from the company or the government.

The community's primary complaints include air pollution from mining dust and river water pollution, which has been deemed unfit for consumption. Field findings also indicate serious concerns about future health:

"Here, in the next three to five years, there will definitely be an impact on health... I hope the government and the company will find a solution soon."

This situation illustrates ecological health vulnerability, where the community is exposed to an environment that potentially contains hazardous particulates (PM2.5 and PM10) and the risk of heavy metals in river water due to mining activities. These impacts are latent, not immediately visible today, but can manifest as respiratory illnesses, skin diseases, or impaired child growth in the medium term. The Contrast between Company Claims and Field Reality of the CPM 2024 Sustainability Report (SR) presents various health programs under the Health Pillar, such as:

1. Health checks and blood donations
2. Stunting education and supplementary feeding,
3. Mass circumcisions for communities around the mine

This program demonstrates a more curative and promotive corporate orientation, without addressing the root of the ecological problem: the declining air and water quality caused by extractive industry activities. There is no apparent program for early detection of acute respiratory infections (ARI), monitoring of heavy metal levels in groundwater, or development of a community health baseline around the mine. An NGO informant emphasized:

"Planting trees is good, but it's just cosmetic… if the water is still polluted and dust remains high, that means mitigation has failed. We're talking about the risk of chronic respiratory disease. This is about responsibility, not ordinary CSR."

Based on the Environmental Health Risk theory in environmental accounting studies, public health risks from industry must be assessed through the scope of exposure impacts, ecological pathways, identification of vulnerable communities, and long-term risk projections.

Legally, Law No. 32 of 2009 stipulates that companies are required to regularly monitor environmental quality and the health of affected communities, including transparent laboratory reporting and preventive health interventions. Based on these findings, the Poboya community is at risk of ecological health, a health risk arising from environmental degradation that has not been fully identified or addressed by the company or government. If this situation is not addressed preventatively, Poboya has the potential to face an ecological health crisis and strengthen the basis for social demands that could develop into legal claims based on environmental justice.

Environmental Accounting: Evaluation of Implementation and Opportunities for Strengthening

The implementation of environmental accounting (Environmental Management Accounting/EMA) in the mining industry is a crucial element in supporting sustainability principles. In the context of PT CPM, its 2024 sustainability report demonstrates that the company has strived to implement social and environmental responsibilities through reclamation programs, economic empowerment, public health, and youth education.

From the socio-economic aspect, the company allocated USD 1,083,554 for the Community Empowerment Program (PPM) in 2024, a 122% increase compared to the previous year. This increase demonstrates the company's progressive commitment to strengthening relationships with communities surrounding the mine. Furthermore, MSME empowerment programs, soft skills training, educational scholarships, and supplementary feeding programs for toddlers and the elderly reflect a transformative approach to local community social development.

However, from an environmental accounting perspective, the implementation of EMA at CPM is still in its early stages. So far, reporting has included Corporate Social Responsibility (CSR) but not yet fully encompassed environmental cost accounting or material flow accounting in detail. In other words, the reporting foundation has been established, but there is still room for development towards an EMA integrated with financial reporting and ecological impact evaluation.

Based on field data, communities surrounding the mine acknowledge that the company has carried out reclamation and dust suppression, but community perceptions regarding the environmental impacts remain varied. This is a common situation in large-scale mining projects. Therefore, this does not mean that mitigation efforts are not working, but rather that a more collaborative communication mechanism is needed between the company and the community. This is highly relevant to the Stakeholder Engagement Model approach, where the company and the community need to establish a more systematic ecological dialogue.

"We know they are planting trees, but the community is still worried about the impacts five years down the road. We hope there will be regular discussions and clear information from the company."

This statement is not a rejection, but rather a stepping stone to designing a more participatory environmental accounting reporting mechanism. Thus, CPM has the opportunity to become a pilot model for implementing community-based EMA in Indonesia, a strategic contribution to strengthening sustainable mining governance.

CONCLUSION

This research shows that the mining activities of PT Citra Palu Minerals (CPM) have had significant social and environmental impacts on the communities surrounding the mine in Poboya Village. The most prominent phenomenon is the shift in the local economic structure, with communities shifting from agrarian livelihoods to the mining-oriented extractive sector. This shift reflects a transformation in livelihoods in response to limited alternative economic options. Although the company has absorbed some of the local workforce, disparities in skills and educational qualifications remain major obstacles limiting community access to formal employment in the mining sector.

On the social side, this research found forms of exclusion that occur not only economically but also through administrative barriers and human resource capacity. These conditions have influenced the emergence of community aspirations for Community Mining Areas (WPR) as a survival mechanism and a space for negotiation regarding rights to local resources. This demand is not merely understood as a conflict, but rather a form of social adaptation to changes in the structure of living space and limited access to livelihoods. In this context, the role of stakeholders—companies, government, and communities—is crucial in striking a balance between industrial expansion and social sustainability.

Environmental aspects also exhibit complex dynamics. Field findings indicate complaints about river water quality and dust pollution, which are considered quite disruptive to daily community activities. Mitigation efforts such as road watering and reclamation have been implemented by the company, but they have not fully addressed community concerns about long-term health. From an environmental accounting perspective, CPM's sustainability reporting has provided an important basis for corporate transparency, although there is still room for further refinement of the analysis—particularly regarding the measurement of ecological costs and the effectiveness of restoration programs and ongoing environmental monitoring.

This study is limited in terms of the number of informants and access to certain data, so interpretation of the findings needs to be understood within the context of qualitative

research. Nevertheless, this study makes academic and practical contributions to the socio-environmental study of mining in Indonesia, while also opening up space for strengthening more progressive, community-based environmental accounting. Further research could consider mixed-method approaches, comparative analyses across mining areas, and environmental accounting models that more systematically integrate ecological and social data. Thus, responsible mining practices become not merely an administrative commitment, but part of the effort towards inclusive and sustainable development.

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