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Global Scientific and Academic Research Journal of Economics, Business and Management

ISSN: 2583-5645 (Online)

Frequency: Monthly

Published By GSAR Publishers

Journal Homepage Link- <https://gsarpublishers.com/journals-gsarjebm-home/>



By Improving Environmental and Social Risk Mapping, Corporate Responsibility Value Chain can Strengthen Their Business Models And Reach Economic Sustainability: Case study on Post-Mining Program (PMP) management in Indonesia

BY

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Article History

Received: 25/02/2024

Accepted: 03/03/2024

Published: 06/03/2024

Vol – 3 Issue – 3

PP: -01-10

Abstract

With a lengthy history of minerals mining, Indonesia has made a major contribution to global minerals production both as ore and as the end product of the smelting process. This is valid not only for big-middle mining firms (4.225 corporations) but also for small-scale mining associations made up of individuals and businesses involved in Indonesia's minerals mining sector. Stages after mining activities, mine closure activities through mine rehabilitation a vital aspects of responsible mining practices. It involves restoring the land used for mining operations to a state that is as close as possible to its original condition or to a condition that supports sustainable land use. This process is crucial for minimizing the environmental impact of mining and ensuring the long-term well-being of local communities.

Seeing economic threat and their social impact, as well as developing measures to mitigate them, may all be accomplished with the help of social mapping. Beyond risk analysis, social mapping helps with economic risk management by fostering openness, diversity, and cooperation. Successful post-mining programs depend on the effective risk reduction that exists elsewhere. Mining operations may guarantee sustainable development and favorable community results by involving stakeholders, comprehending social perception, and applying the visual mapping technique. Programs for post-mining will be even more effective if risk mitigation is continuously assessed and improved.

Keywords: Social Mapping Risk, Corporate Responsibility, Post Mining Program

INTRODUCTION

In today's interconnected global economy, businesses face a multitude of risks that can impact their long-term viability and success. One such risk that has gained significant attention in recent years is social risk. Social risk refers to the potential negative impacts that mining activities may have on society, including issues such as human rights violations, environmental damage, and community disengagement (Keenan et al., 2019).

As a responsible corporate entity in today's world, it is essential to constantly evaluate and improve our impact on society and the environment (Waddock et al., 2002). One of the most effective tools for achieving this is the SWOT analysis. SWOT stands for Strengths, Weaknesses, Opportunities, and Threats, and it provides a comprehensive framework for understanding and addressing various aspects

of corporate responsibility. In this article, I will delve into the power of SWOT analysis in enhancing the value chain and driving sustainable development.

The concept of social risk is closely tied to the idea of corporate responsibility, which is the duty of mining companies to act in an ethical and accountable manner towards their stakeholders and the wider society (Frederiksen, 2018). A failure to effectively manage social risk can lead to reputational damage, legal liabilities, and financial losses (Gatzert et al., 2016).

Several mining companies have successfully integrated social risk mapping into their value chain, demonstrating the positive impact it can have on corporate responsibility and economic sustainability.

Social mapping is a multidisciplinary approach that draws upon various fields such as geography, sociology, and data



science (Aria et al., 2020). It involves gathering data from a wide range of sources, including government records, surveys, and social media platforms. This data is then analyzed and mapped to identify social networks, community structures, and other relevant information. By understanding the social dynamics of a particular area, we can better assess the potential risks and develop more effective strategies to mitigate them (Cardona, 2013).

Social mapping becomes even more important in the context of post-mining programs. The sustainable development of the communities affected by mining operations is ensured by these programs, which seek to repair and revitalize mining regions (Monteiro et al., 2019). We may modify our programs to meet the unique requirements of these communities and reduce risks by using mapping to understand their social dynamics (Taberna et al., 2020).

While social mapping is an invaluable tool, it is not without its risks. One of the primary risks is the potential for misinterpretation or misrepresentation of the data collected during the mapping process. This can occur due to various factors such as biases in data collection, inadequate training of personnel, or a lack of understanding of the local context. Misinterpretation of social mapping data can lead to poorly designed post-mining initiatives that fail to address the actual needs of the community (Boadi et al., 2018). This can result in wasted resources, missed opportunities for community development, and even social unrest.

Understanding Social risk mapping and its Role in Enhancing Corporate Responsibility

Social risk mapping is a systematic approach to identifying, assessing, and managing social risks throughout the value chain (Silva & Schaltegger, 2019). It involves analyzing the potential social impacts of a company's operations, products, and services, and developing strategies to mitigate or eliminate these risks. Social risk mapping is not a one-size-fits-all solution; it requires a deep understanding of the specific social risks that are relevant to each industry, geography, and stakeholder group (Aria et al., 2020).

The role of social risk mapping is to enable mining companies to proactively address social risks and opportunities, rather than merely reacting to crises or negative impacts (Gao et al., 2021). By understanding the potential social risks associated with their operations, mining companies can develop targeted strategies to minimize these risks while maximizing positive social outcomes. Social risk mapping also provides mining companies with a valuable tool for engaging stakeholders (Chipangamate et al., 2023), including employees, customers, investors, and local communities, in the decision-making process.

Integrating social risk mapping into the corporate responsibility value chain offers numerous benefits for economic sustainability (Tate et al., 2010). Firstly, it helps mining companies identify and prioritize the most significant social risks that could impact their long-term financial performance. By focusing resources on addressing these risks, a mining company can better protect its reputation, mitigate

legal and regulatory risks, and improve operational efficiency (Tseng et al., 2019).

Secondly, social risk mapping enables mining companies to seize opportunities for innovation and market differentiation (Husted & Allen, 2004). By understanding the social needs and expectations of their customers, mining companies can develop services that meet these needs and create a competitive advantage. Thirdly, social risk mapping promotes transparency and accountability, both internally and externally. By mapping and disclosing social risks, mining companies can build trust with stakeholders (Chipangamate et al., 2023), including investors, regulators, and civil society mining companies. This trust enables effective collaboration and dialogue, which in turn leads to more sustainable business practices and positive social outcomes (Alghababsheh & Gallear, 2021).

Social mapping is a powerful tool that allows us to analyze and understand the social fabric of communities affected by mining activities (Mancini & Sala, 2018). It involves identifying, documenting, and analyzing the relationships, dynamics, and structures within a community. By mapping these social networks, we gain valuable insights into the needs, concerns, and aspirations of the community members.

In the context of corporate responsibility, the SWOT analysis helps in identifying the strengths and weaknesses of the mining company's sustainability practices (Kumar & Rathore, 2015), such as its commitment to environmental conservation, social initiatives, and ethical business practices. It also allows us to assess the opportunities and threats that may arise from various external factors, such as changing regulations, emerging technologies, or evolving consumer preferences (Namugenyi et al., 2019). The value chain encompasses all the activities involved in delivering a product or service to the customers, from sourcing raw materials to distribution and disposal. By conducting a SWOT analysis, companies can identify areas where they can add value and improve their overall sustainability performance (Phadermrod et al., 2019). By using this approach to a comprehensive assessment, businesses can learn a great deal about where they are now and where they might go better.

Corporate responsibility is a concept that has gained significant attention in recent years. It refers to the commitment of businesses to contribute positively to society and the environment while generating profits (Carroll & Shabana, 2010). The corporate responsibility value chain is a framework that helps mining companies identify and manage their social and environmental impacts throughout their operations (Ackers & Grobbelaar, 2022). It consists of various stages, from sourcing raw materials to product development, manufacturing, distribution, and post-consumer use.

Theoretical Foundation for Corporate Responsibility Value Chain

a. Corporate Responsibility Value Chain

Corporate responsibility is not just a moral imperative; it is also a strategic advantage (Raufflet et al., 2014). By integrating responsible practices into its value chain, a mining

company can enhance its brand reputation, attract and retain top talent, foster innovation, and ultimately drive long-term profitability. Corporate responsibility is not a standalone function, but rather a fundamental aspect of every stage of the value chain (De et al., 2010), from sourcing raw materials to manufacturing, distribution, and marketing.

At each stage of the value chain, mining companies have the opportunity to make choices that align with their values and contribute positively to society (Seuring, 2013). For example, a company can choose to source materials from suppliers that adhere to fair labor practices, invest in renewable energy sources, or support local communities through philanthropic initiatives (Hernández-Mogollon et al., 2010). By incorporating corporate responsibility considerations into decision-making processes, mining companies can create shared value for both their shareholders and society at large.

The link between social mapping risk and the corporate responsibility value chain is crucial for the success of CSR initiatives (Bilham, 2021). Social mapping helps identify potential risks that could hinder the implementation of CSR programs. These risks can range from community resistance to cultural barriers and environmental concerns (Nzimande & Chauke, 2012). By understanding these risks, mining companies can develop strategies to mitigate them and ensure the smooth execution of their CSR initiatives.

Furthermore, social mapping also helps in identifying opportunities for collaboration and partnership. By mapping the social landscape, mining companies can identify local mining companies and stakeholders who share similar values and objectives (Visser & Kymal, 2015). This collaboration can enhance the value chain of CSR initiatives by leveraging local expertise, resources, and networks.

b. Environmental and Social Risk Mapping in Corporate Responsibility

Environmental and social risk mapping is a powerful tool that enables mining companies to identify and assess potential risks associated with their operations. It involves mapping out the environmental and social aspects of the value chain (Fraser, 2017), such as resource consumption, waste generation, greenhouse gas emissions, labor practices, and community impacts. By understanding these risks, mining companies can develop strategies to mitigate them and improve their overall sustainability performance.

Environmental and social risk mapping also helps in identifying opportunities for collaboration and partnership (Bocken et al., 2015). By mapping the social risk, mining companies can identify local mining companies and stakeholders who share similar values and objectives. This collaboration can enhance the value chain of CSR initiatives by leveraging local expertise, resources, and networks. By integrating social mapping risk assessment into the value chain, mining companies can ensure that their CSR efforts are sustainable, impactful, and aligned with the needs of the communities they operate (Bocken et al., 2015).

Sustainability is a crucial aspect of the corporate responsibility value chain (Moran et al., 2014)33). It involves meeting present needs without compromising the ability of future generations to meet their own needs. By integrating sustainability into its value chain, a mining company can minimize its negative environmental and social impacts (Valderrama et al., 2020), while maximizing its positive contributions. This approach not only helps protect the planet but also enhances the reputation and competitiveness of businesses (Eizenberg & Jabareen, 2017).

c. Tools and Resources for Social Risk Mapping

Several tools and techniques can assist organizations in conducting a comprehensive SWOT analysis (Benzaghta et al., 2021). Tools and techniques are available for mining companies to undertake social mapping in their CSR initiatives. These include (Tsangas et al., 2019) 37):

1. **SWOT Matrix:** This matrix helps in visually organizing the strengths, weaknesses, opportunities, and threats identified during the analysis. It allows for a quick overview of the key findings and enables effective decision-making.
2. **PESTEL Analysis:** This analysis helps in identifying external factors that may impact the organization's sustainability practices, such as political, economic, social, technological, environmental, and legal factors.
3. **Stakeholder Mapping:** By mapping stakeholders' interests and influence, organizations can identify potential opportunities for collaboration and address any threats arising from conflicting interests.
4. **Scenario Planning:** Scenario planning involves analyzing different future scenarios and their potential impact on the organization's sustainability practices. This technique helps in identifying potential risks and opportunities, enabling proactive decision-making.

Community consultations and stakeholder engagement play a vital role in social mapping. By actively involving local communities and stakeholders in the process, mining companies can gain valuable insights and ensure that their CSR programs are aligned with their needs and aspirations (Tsangas et al., 2019). Surveys, interviews, and focus groups are commonly used techniques for collecting primary data during the social mapping process.

Implementing social risk mapping requires access to relevant tools and resources. Here are some valuable resources to consider (Kikuchi & Takahashi, 2022):

1. **Guidelines and frameworks:** There are several international frameworks and guidelines available to help mining companies implement social risk mapping, such as the United Nations Guiding Principles on Business and Human Rights and the Global Reporting Initiative's Sustainability

Reporting Standards. These frameworks guide identifying, assessing, and managing social risks.

Data and research: Access to reliable and up-to-date data is essential for effective social risk mapping. Mining companies can leverage existing research reports, industry benchmarks, and stakeholder surveys to gather relevant data on social risks. Additionally, mining companies can invest in data management systems and technologies that enable efficient data collection and analysis.

Partnerships and collaborations: Building partnerships with external stakeholders, such as NGOs, research institutions, and industry associations, can provide valuable expertise and resources for social risk mapping. These partnerships can help mining companies access specialized knowledge, share best practices, and collaborate on joint initiatives for addressing social risks.

A SWOT analysis should also be performed by the mining firm to assess all of the facts and data that have been gathered. This approach ensures a holistic understanding of the issue's strengths, weaknesses, opportunities, and threats. To effectively apply SWOT analysis in corporate responsibility initiatives, mining companies should follow a systematic approach. First, they need to gather relevant data and information related to their sustainability practices, such as energy consumption, waste generation, and social impact. This data will serve as a foundation for the analysis

Discussion

To maximize the effectiveness of risk assessment, social mapping should be integrated with other methods and approaches (Khaled et al., 2021). By combining social mapping with environmental assessment tools, for example, we can gain a more comprehensive understanding of the risks and vulnerabilities in a particular area.

The integration of social mapping with other risk assessment methods requires interdisciplinary collaboration and data sharing (Gao et al., 2021). It is essential to break down silos and foster partnerships between different sectors and stakeholders. By combining the expertise and resources of various disciplines, we can develop more robust and effective risk assessment frameworks (Eizenberg & Jabareen, 2017). The following are details about the stages of the social risk mapping approach in strengthening the Corporate Responsibility Value Chain shown in Figure 1



Figure 1. Social Mapping Risk Approach

Once the social mapping data has been collected and analyzed, it is crucial to analyze and utilize the insights gained. This involves interpreting the data and identifying key trends, patterns, and relationships (Bisogno, 2016). Data visualization techniques, such as charts, graphs, and maps, can be used to communicate the findings effectively.

a. Strategies for Effectively Integrating Social Risk Mapping

To overcome the challenges and obstacles in implementing risk mapping, mining companies can adopt several strategies (Gao et al., 2021). First, they should invest in data collection and management systems that enable accurate and efficient tracking of environmental and social impacts (Ghorbanzadeh et al., 2019). This includes leveraging technology and digital tools to streamline data-gathering processes.

Secondly, collaboration and engagement with stakeholders are crucial (Norrish et al., 2019). By involving suppliers, customers, employees, and local communities in the risk mapping process, mining companies can gain valuable insights and ensure the effectiveness of their sustainability initiatives. Then mining companies should develop robust risk management frameworks that enable proactive identification and mitigation of risks (Karwowski & Raulinajts-Grzybek, 2021). This involves setting clear goals, establishing performance indicators, and regularly monitoring progress towards sustainability targets.

There are various advantages to incorporating social and environmental risk mapping into the corporate responsibility value chain (Chowdhury et al., 2017). 1) It assists businesses in identifying and prioritizing the most important risks so they can allocate resources efficiently; 2) It improves accountability and transparency by making sure all parties involved are aware of the potential consequences and the steps taken to address them; and 3) It stimulates innovation by pushing businesses to come up with novel ways to reduce risks and maximize benefits. Finally, it improves decision-making by providing data-driven insights that enable mining companies to make informed choices (Bilham, 2021)

Integrating social mapping into the corporate responsibility value chain is essential for the success and sustainability of CSR initiatives (Arzubiaga et al., 2019). Social mapping should be an integral part of the planning, implementation, and evaluation stages of CSR programs. By identifying potential risks and opportunities early on, mining companies can ensure that their initiatives are aligned with the needs and aspirations of the communities they serve (De Vreese et al., 2016).

The link between social mapping risk and the corporate responsibility value chain is crucial for the success of CSR initiatives (Ghorbanzadeh et al., 2019). Social mapping helps identify potential risks that could hinder the implementation of CSR programs. These risks can range from community resistance to cultural barriers and environmental concerns. By understanding these risks, a mining company can develop

strategies to mitigate them and ensure the smooth execution of their CSR initiatives.

During the planning stage, social mapping helps in setting clear objectives and targets for CSR programs. By understanding the social landscape, mining companies can develop strategies that address the most pressing issues, ensuring maximum impact (Ghorbanzadeh et al., 2019). During the implementation stage, social mapping aids in stakeholder engagement, resource allocation, and risk mitigation. It helps mining companies make informed decisions and adapt their initiatives according to the changing needs and dynamics of the community.

Finally, during the evaluation stage, social mapping provides valuable insights into the effectiveness and impact of CSR initiatives. By measuring key performance indicators and monitoring social indicators, mining companies can assess the outcomes and make necessary adjustments. This iterative process ensures continuous improvement and the long-term sustainability of CSR programs.

b. Implications for Post-Mining Program (PMP) management

Post-mining refers to the activities that take place after the extraction of minerals or resources from the earth (Hendrychová et al., 2020). It includes land rehabilitation, ecosystem restoration, and community development. Post-mining plays a vital role in sustainability efforts, as it ensures the responsible closure of mines and minimizes the long-term environmental and social impacts.

By integrating post-mining practices into the corporate responsibility value chain, mining companies can contribute to sustainable development and leave a positive legacy. This includes implementing reclamation plans, restoring biodiversity, and supporting local communities in transitioning to alternative livelihoods (Festin et al., 2019).

The extractive industries as mining companies, face unique challenges when it comes to implementing CSR initiatives (Hysing, 2021). Post-mining CSR is an area where social mapping plays a crucial role in addressing these challenges. After the closure of a mine, mining companies often have a responsibility to ensure the well-being and sustainable development of the communities affected by their operations.

Social mapping helps in understanding the social and economic dynamics of these communities, identifying their needs, and tailoring CSR programs accordingly (Demajorovic et al., 2022). It enables mining companies to address the challenges of unemployment, loss of livelihoods, and environmental degradation that often accompany the closure of mines. By integrating social mapping into post-mining CSR, mining companies can ensure a smooth transition for the affected communities and contribute to their long-term well-being (Holcombe, 2022). The methodology for implementing Corporate Social Responsibility (CSR) initiatives to enhance business models and achieve economic sustainability in the Post-Mining Programmes (PMPs) is illustrated in Figure 2 below.

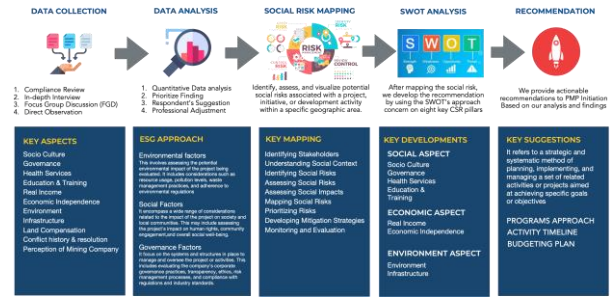


Figure 2. Methodology for implementing Corporate Social Responsibility (CSR) initiatives in the Post-Mining Programmes (PMPs)

To be mined out, the mining company must use a methodical and cooperative approach to social risk mapping implementation. Here are some important actions to think about:

- 1. Assess your mining company's current state:** Conduct a comprehensive assessment of your mining company's current social risks and responsible practices. This includes analyzing existing policies, procedures, and stakeholder engagement processes.
- 2. Identify relevant social risks:** Identify the social risks that are most relevant to your mining company, taking into account industry-specific risks, regional context, and stakeholder expectations. This may involve conducting stakeholder consultations, benchmarking against industry best practices, and analyzing emerging social trends.
- 3. Develop a social risk mapping framework:** Develop a framework for mapping and assessing social risks throughout the value chain. This framework should include indicators, metrics, and data collection methods to measure and monitor social risks over time. It is also important to establish clear roles and responsibilities within your mining company for managing social risks.
- 4. Engage stakeholders:** Engage with your stakeholders throughout the social risk mapping process. This includes consulting with employees, customers, suppliers, investors, and local communities to understand their perspectives, expectations, and concerns. Stakeholder engagement should be an ongoing and iterative process, ensuring continuous feedback and collaboration.
- 5. Integrate social risk mapping into decision-making:** Integrate social risk mapping considerations into your mining company's decision-making processes. This includes incorporating social risk assessments into project planning, procurement procedures, and performance evaluations. It is also important to establish clear accountability mechanisms for managing social risks and tracking progress.

Numerous mining companies have successfully implemented social mapping in their CSR initiatives, showcasing the power and effectiveness of this approach (Krzysztofik et al., 2022). One such example is a global mining company that used social mapping to identify the needs and concerns of the local

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community affected by its operations. By engaging with the community and mapping their social landscape, the company was able to develop targeted CSR programs that addressed their specific needs (Yakovleva & Vazquez-Brust, 2012). This approach not only improved the company's relationship with the community but also resulted in long-term sustainable development.

Post-mining initiatives play a crucial role in mitigating the environmental and social impact of mining activities. Phadermrod et al., (2019) explain integrating SWOT analysis into these initiatives, mining companies can effectively assess the strengths and weaknesses of their reclamation and restoration practices, identify opportunities for biodiversity conservation and community development, and address potential threats such as water pollution and land degradation (Kumar & Rathore, 2015).

For instance, a mining company that conducts a SWOT analysis may identify that its strength lies in its expertise in land rehabilitation (Tsangas et al., 2019). Leveraging this strength, the company can collaborate with local communities and environmental mining companies to establish sustainable land management practices, such as reforestation and habitat restoration.

Implementing social risk mapping is not without its challenges. Some common challenges include (Kikuchi & Takahashi, 2022):

2. **Data availability and quality:** Gathering accurate and reliable data on social risks can be a significant challenge, particularly in regions with limited transparency and accountability. Mining companies can address this challenge by investing in data collection and verification processes, building partnerships with local stakeholders, and leveraging emerging technologies for data analysis.
3. **Resistance to change:** Implementing social risk mapping may require a shift in mining company culture, processes, and priorities. Resistance to change can be addressed through effective change management strategies, including clear communication, stakeholder engagement, and training programs. It is important to create a shared understanding of the benefits of social risk mapping and the role of each stakeholder in its implementation.
4. **Resource constraints:** Implementing social risk mapping requires dedicated resources, including financial, human, and technological resources. Mining companies can overcome resource constraints by integrating social risk mapping into existing processes, leveraging external partnerships, and demonstrating the business case for investing in corporate responsibility.

To achieve post-mining sustainability, mining companies should adhere to best practices. This includes conducting comprehensive environmental assessments before mining

operations commence, implementing progressive rehabilitation plans throughout the mining lifecycle, and engaging with local stakeholders in decision-making processes (Kalisch & Dunow, 2022).

Furthermore, mining companies should invest in research and development to explore innovative solutions for mine closure and post-mining activities. This includes leveraging technologies for land rehabilitation, water management, and waste treatment. By following these best practices, mining companies can ensure that post-mining activities contribute to a sustainable future and align with the principles of corporate responsibility (Streit et al., 2023).

c. Measuring the Impact of Social Risk Mapping on Economic Sustainability

The successful mitigation of social mapping risks heavily relies on the active involvement and collaboration of various stakeholders. These stakeholders include mining companies, local authorities, community members, NGOs, and academic institutions (Bhattacharya, 2017).

Mining companies play a crucial role in initiating and supporting social mapping programs. They have the resources and expertise to implement comprehensive mapping initiatives and ensure the ethical and responsible use of the collected data (Nicolson, 2017). By actively engaging with community members and other stakeholders, mining companies can build trust, gather valuable insights, and design initiatives that align with community aspirations (Alghababsheh & Galleary, 2021).

Measuring the impact of social risk mapping on economic sustainability is important for demonstrating the value of this approach (Eggert, 2001). Key metrics for measuring impact include:

5. **Financial performance:** Assess the financial impact of social risk mapping on your mining company, including cost savings, revenue growth, and shareholder value. This can be done through financial analysis, benchmarking against industry peers, and tracking key performance indicators (KPIs) related to corporate responsibility.
6. **Reputation and brand value:** Measure changes in brand reputation and value, customer loyalty, and market share. This can be done through surveys, brand tracking studies, and analysis of media coverage and social media sentiment.
7. **Stakeholder satisfaction:** Evaluate the satisfaction levels of your stakeholders, including employees, customers, investors, and local communities. This can be done through surveys, focus groups, and feedback mechanisms.
8. **Social impact:** Assess the social impact of your mining company's activities, including improvements in labor conditions, environmental performance, and community well-being. This can

be done through impact assessments, stakeholder consultations, and third-party audits.

Measuring the impact of social mapping on CSR initiatives is crucial for mining companies to understand the effectiveness and value of their efforts (Lestari et al., 2018). Several indicators can be used to assess the impact of social mapping, including:

9. **Increased stakeholder satisfaction and engagement:** By actively involving stakeholders in the social mapping process, the mining company can measure the level of satisfaction and engagement among the community members. This can be done through surveys, feedback mechanisms, and community consultations.
10. **Improved relationships with local communities:** Social mapping should result in stronger relationships and improved trust between mining companies and local communities. Mining companies can measure this through indicators such as the number of community partnerships, collaborations, and positive media coverage.
11. **Tangible outcomes in the community:** The impact of social mapping should be reflected in tangible outcomes in the community, such as improved access to education, healthcare, clean water, or employment opportunities. Mining companies can measure these outcomes through baseline studies, impact assessments, and monitoring and evaluation processes.
12. **Alignment with the United Nations Sustainable Development Goals (SDGs):** Mining companies can measure the impact of social mapping by assessing how their CSR initiatives contribute to the achievement of the SDGs. This alignment demonstrates the broader societal impact of CSR programs

Measuring the accuracy of the social mapping data can be done through data validation exercises and comparison with other sources of information (Georgiadis & Besiou, 2010). This helps identify any discrepancies or biases in the collected data and allows for corrective actions to be taken.

Community satisfaction surveys and feedback loops are valuable tools to assess the impact of the initiatives on the community members. These surveys can gather feedback on the relevance, effectiveness, and sustainability of the initiatives, enabling continuous improvement and adjustment based on community needs (D'Amato et al., 2019).

Conclusion

Social risk mapping is a powerful tool for enhancing corporate responsibility and economic sustainability. By proactively identifying, assessing, and managing social risks, a mining company can protect its reputation, drive innovation, and create shared value for both its shareholders and society at large. While implementing social risk mapping may present

challenges, the benefits far outweigh the costs. By embracing social risk mapping as a strategic opportunity, mining companies can position themselves as responsible leaders in their industries and contribute to a more sustainable and equitable future.

Integrating environmental and social risk mapping into the corporate responsibility value chain is a significant step toward sustainability. It enables mining companies to identify and manage their impacts, enhance transparency, foster innovation, and make informed decisions. While challenges and obstacles exist, mining companies can overcome them by investing in data collection systems, collaborating with stakeholders, and developing robust risk management frameworks.

As businesses increasingly recognize the importance of corporate responsibility and sustainability, integrating risk mapping into the value chain will become a standard practice. By doing so, mining companies can create a more sustainable future for all.

Recommendation

The future of CSR lies in the effective integration of social mapping into the corporate responsibility value chain (Chipangamate et al., 2023). As mining companies strive to create a positive impact on society and the environment, understanding the link between social mapping risk and the corporate responsibility value chain becomes crucial (Bilham, 2021). By actively engaging with local communities, identifying potential risks and opportunities, and tailoring CSR programs accordingly, mining companies can ensure sustainable development and long-term success (Arzubiaga et al., 2019).

Proactive social mapping risk mitigation is a crucial step for successful post-mining program initiatives. By understanding the social dynamics of the affected communities, we can design initiatives that address their specific needs and minimize potential risks (Chipangamate et al., 2023).

SWOT analysis is a powerful tool that can help organizations enhance their value chain and drive sustainable development (Kumar & Rathore, 2015). Through the integration of SWOT analysis into corporate responsibility initiatives, organizations can contribute to a more sustainable future while maintaining a competitive edge in the market. Mining companies need to embrace the power of SWOT analysis and harness its potential to create value and drive positive change (Phadermrod et al., 2019).

Mitigating social mapping risks is not without its challenges. Standardized guidelines, qualified personnel, and trust-building efforts are necessary to ensure the accuracy and relevance of the mapping process (Karwowski & Raulinajtys-Grzybek, 2021). Furthermore, the use of appropriate tools and technologies, stakeholder engagement, and continuous evaluation are essential for effective risk management (Gao et al., 2021).

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