



DILEMMA: SUSTAINABLE MINING OR SOCIALY RESPONSIBLE MINING?

Review

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Abstract: *Given the forecasted exponential growth of demand for rare soils and critical raw materials throughout the world, and especially due to the desire to reduce the dependence on imports, the European Union and Serbia will have to face mining challenges in the coming years. The production of critical raw materials requires investment in technologically advanced and environmentally responsible mining facilities, as well as involvement with the local communities for mutual benefit. Serbia has significant reserves of the aforementioned raw materials, but in order to become a significant player in the European supply chain, it is necessary to focus on sustainable mining practices. This leads to a dilemma between the concepts of sustainable and socially responsible mining that arises due to the different emphases of these two approaches, although both strive for ethical and responsible mining of natural resources.*

1. **Environmental component:** *Sustainable mining emphasizes the reduction of negative environmental impact. This includes techniques that minimize soil damage, water pollution and emissions of harmful gases. Socially responsible mining, on the other hand, includes environmental protection, but focuses more on the interests and the well-being of the local community and workforce.*
2. **Social aspect:** *Socially responsible mining emphasizes the protection of community rights, transparency, respect for local customs and investment in community development. Although sustainable mining includes social aspects, its primary focus often remains on environmental sustainability.*
3. **Economic impact:** *Sustainable mining usually takes a longer-term view of economic impact, aiming at using natural resources carefully in order to preserve them for future generations. Socially responsible mining is aimed at short and medium-term economic benefits for the community, through employment and investment in local infrastructure.*

The question is whether sustainability can be achieved only through environmental measures or whether it is necessary to introduce social and economic aspects through socially responsible mining. Ideally, sustainable mining should include social responsibility so that companies could achieve long-term goals and justify the social impact on local communities.

Key words: SUSTAINABLE DEVELOPMENT; MINING LIFE CYCLE; ENVIRONMENT; SOCIETY; ECONOMY

INTRODUCTION

Business culture and policy require understanding business, creating practices and behaviours, applying and sharing experience when building company teams. ESG (Environmental, Social Governance) today comprises all these topics in a comprehensive framework, which can help a mining company successfully navigate and balance benefits for the planet, people and profits. Investors are starting to look beyond the financial statements, they want to consider the non-financial statements - ethics, competitive advantage and culture of the mining organization. They propose new standards and frameworks, according to which investments in mining should be measured. In order to develop industry as well as mining, well-known global companies are introducing the practice of Socially Responsible Business [1,2]. Socially responsible business (SRB) refers to the practice of companies that, in addition to making a profit, they will also take into account the positive impact on the society and the environment. This includes care for employees, respecting human rights, protecting natural resources, supporting local communities, as well as an ethical relation with the partners and customers. Socially responsible companies strive to comply their business goals with the needs of the society, using resources in a way that contributes to sustainable development and contributes to long-term benefits for all stakeholders [3,4]. Thus, two terms appear in the processes of mining and processing of mineral raw materials: Sustainable mining and Socially responsible mining. In order to eliminate the dilemma of which term to use, let us get familiar with the basic definitions of the mentioned terms.

DESCRIPTION OF TERMS

SUSTAINABLE MINING

Sustainable mining is an approach that integrates the economic, environmental and social aspects of mining activities, with the aim of reducing the negative impacts on the natural environment and local communities, while at the same time ensuring long-term economic profit. At the heart of sustainable mining lies the idea that mining activities should not be destructive to natural resources and ecosystems, but should enable responsible use of resources in order to preserve them for the future generations [5,6].

Key features of sustainable mining:

1. Environmental responsibility:

- **Minimizing environmental impacts:** Sustainable mining means minimizing damage to the natural environment. This includes reducing

soil, water and air pollution, controlling mining waste and managing risks associated with mining activities (such as soil erosion or waste dumps).

- **Protection of biodiversity:** Mining can cause destruction of natural habitats and ecosystems. Sustainable mining involves efforts to minimize these effects, for example, by rehabilitating the land after mining.
- **Resource management:** Effective management of non-renewable resources is essential. This means reducing energy and water consumption in mining operations, as well as innovation in technologies that reduce pollution and hazardous gas emission.

2. **Economic sustainability:**

- **Efficient use of mineral resources:** As part of sustainable mining, efficient use of mineral resources reduces the waste, increases productivity and extends the mine life. This includes better extraction processes and recycling of mining waste.
- **Diversification and innovation:** Investing in technologies that reduce negative environmental impact (e.g. electrification of mining machines) and enable recycling of metals is a key part of the economic aspect of sustainable mining.

3. **Social factors:**

- **Improving working conditions:** In addition to environmental and economic aspects, sustainable mining also relies on improving safety standards and working conditions for miners, taking into account occupational safety and health.
- **Long-term perspective:** Sustainable mining assumes planning not only for immediate benefits, but also for long-term survival of mining communities and the industry, with the aim of reducing the reliance on mining resources in the future.

SOCIALLY RESPONSIBLE MINING

Socially responsible mining is a broader concept that refers to responsible management of mining operations, particularly in terms of interaction with people and local communities affected by mining activities. This concept emphasizes the social responsibility of companies, the protection of the rights of workers and communities, as well as fair management of resources [7,8].

Key elements of socially responsible mining:

1. **Human rights and community protection:**

- **Engagement of local communities:** It is important that mining companies cooperate with the local communities affected by mining operations. This includes gathering points of views and opinion and giving communities the opportunity to participate in decisions affecting them, through processes such as consultation, compensation arrangements and economic benefit sharing [9].

- **Protection of cultural heritage and rights:** Socially responsible mining recognizes that mining activity can jeopardize the cultural and historical assets, as well as the rights of indigenous peoples. This aspect is about respecting their traditions, land and way of life, and ensuring that their communities receive appropriate compensation and protection [10].
2. **Fair working conditions:**
 - **Occupational safety and health:** The mining industry often involves hazardous working conditions. Socially responsible mining companies must ensure the safety of their employees, through occupational safety and health measures, training and improvement of the working environment.
 - **Labour rights and equality:** This includes respecting the workers' rights, ensuring fair wages, prohibiting child and forced labour, and promoting gender equality and diversity within the workforce.
 3. **Economic and social contribution:**
 - **Local economic development:** Socially responsible mining companies should invest in local communities through the construction of infrastructure, healthcare, education and employment of the local workforce. This contributes to long-term economic development and helps reduce the communities' dependence on the mine itself.
 - **Return to communities:** In addition to direct economic benefits, mining companies can invest in socially beneficial projects, such as training programmes, scholarships for local residents, or the improvement of social services.
 4. **Transparency and accountability:**
 - **Open business:** Transparency in business means that companies publicly publish their financial reports, environmental impacts and risks, and other relevant information in order to ensure responsibility towards the community and the state.
 - **Anti-corruption:** Socially responsible companies strive to eliminate corruption and illegal activities related to mining, ensuring that mining resources are used in a fair and responsible manner.

THE CONNECTION AND DIFFERENCES BETWEEN SUSTAINABLE AND SOCIALLY RESPONSIBLE MINING

Although **sustainable mining and socially responsible mining** differ in their emphases, their goals overlap and are complementary. Sustainable mining focuses on environmental sustainability and efficient use of resources, while socially responsible mining puts an emphasis on people, community rights and fair business practices. Both approaches aim to make the mining industry sustainable, responsible and beneficial to both the economy and the society, with minimal negative consequences.

The connection between **sustainable and socially responsible mining** is reflected in their mutual goal of making mining activities less harmful, while bringing long-term benefits to the industry, communities as well as the environment. Although they have

different focuses—sustainable mining is more concerned with the conservation of natural resources and the environmental balance, while socially responsible mining emphasizes human rights and social aspects—both concepts are complementary and correlated.

Key aspects of their connection:

1. Environmental and social impacts:

- Sustainable mining focuses on minimizing the negative environmental consequences of mining activities, which includes waste management, water and soil conservation, and reduction of greenhouse gas emissions. These environmental goals have direct links to socially responsible mining, as the health of people and communities depends on clean water, soil and air [11,12].
- Socially responsible mining takes care of the rights and well-being of communities living near the mine, and environmentally sustainable operations directly contribute to reducing conflicts between the mining companies and the local populations. Environmentally harmful practices often lead to dissatisfaction among communities, who may suffer from environmental pollution and degradation [11,12].

2. Human rights and community protection:

- Sustainable mining cannot be fully successful if it does not consider the impacts on people. Socially responsible mining puts special emphasis on the protection of human rights, especially the rights of local and indigenous communities, whose lives are directly affected by mining operations [13].
- Sustainable mining in its definition includes long-term social benefits. If mining companies strive for sustainability, they need to be committed to a fair distribution of resources, as well as to preservation of human health and safety, which are the key elements of socially responsible mining.

3. Economy and community:

- Both concepts aim at making the mining industry economically sustainable so that it would provide benefits to both companies as well as to the local communities. Socially responsible mining promotes economic development through employment of the local workforce, investment in infrastructure and training of workers. On the other hand, sustainable mining involves the efficient use of resources in order to maintain long-term profitability and preserve resources for the future generations.
- Success in social responsibility contributes to long-term stability of mining projects. Communities that benefit from mining operations are less likely to enter into conflicts with companies, which reduces the risk of downtime and extends the life of the mine [14,15].

4. Transparency and accountability:

- **Sustainable mining** implies transparent business in terms of environmental standards and practices, and this directly overlaps with the

requirements of **socially responsible mining** for transparency towards the local communities and compliance with the social contracts.

- Mining companies that strive for sustainability often adopt the **Global Reporting Initiative (GRI)** or similar reporting standards, which include not only environmental indicators, but also the social ones, such as the working conditions, compliance with the rights of local communities and the fight against corruption. This shows how much the social and environmental factors are correlated [16].

5. **Global Sustainable Development Goals (SDGs):**

- Both concepts are closely related to **the United Nations Sustainable Development Goals (SDGs)**, especially in the areas of environmental protection, economic development and poverty reduction. The mining industry can contribute to the achievement of these goals through sustainable practices, but also through the promotion of social responsibility and the rights of people in mining communities.
- **SDG 8** (dignified work and economic growth) and **SDG 12** (sustainable consumption and production) represent the key points where sustainable and socially responsible mining overlap. Increasing the efficiency of mining resources (SDG 12) reduces negative environmental impacts, while SDG 8 promotes fair labour practices and local economic development [17].

CONCLUSION

The connection between **sustainable and socially responsible mining** stems from their shared aspiration to minimize the negative impacts of the mining industry on people and the planet, while maximizing the economic and social benefits. Sustainable mining cannot be considered truly successful if it does not take into account the rights and well-being of communities affected by mining operations. Similarly, socially responsible mining depends on the environmental sustainability in order to ensure long-term supply of resources and the health of local communities.

By combining both approaches, mining companies can ensure that their operations not only meet the current economic needs, but also take care of the environment and the society, ensuring long-term sustainability of the industry.

Bearing in mind the above, the authors propose a unified single term such as **Sustainable Socially Responsible Mining**.

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