

Corporate Social Responsibility Challenge in the Nickel Mining Area (Comparative Study Between Philippine and Brazil)

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ABSTRACT: This research background is global nickel mining development trend, this trend causing sustainable corporate social responsibility (CSR) program needed. The formulation of this research problem is based to overcome the impacts that can be caused by the trend. This study aims to compare the sustainability of the nickel mining area CSR program. This study uses the literature review method, this research method is carried out by collecting and analyzing literature or written sources related to the research topic. The results of this study show that Brazil and Philippine have not implemented the three aspects of CSR sustainability. The conclusion of this study is CSR programs play an important role for nickel mines, therefore economic aspects, social aspects, and environmental aspects need to be included CSR program for nickel mining sustainability.

KEYWORDS: CSR, Nickel Mining, Sustainability

INTRODUCTION

Nickel mining is the process of extracting nickel-containing ores from the earth's crust and processing them into nickel metal or other nickel-containing products (Meshram and Pandey., 2018). Nickel is a silvery-white metal that is used in a wide range of applications, including the production of stainless steel, batteries, and electronics (Genchi *et al.*, 2020). Nickel mining typically involves open-pit or underground mining methods, depending on the location and quality of the ore deposit (Zehirov *et al.*, 2017). The ore is usually first extracted using explosives, and then transported to a processing plant where it is crushed and separated from other minerals and impurities (Schlesinger *et al.*, 2021). The nickel is then further processed to remove any remaining impurities and turned into a usable product (Pandyaswargo *et al.*, 2021). Nickel is a silvery-white metal that is used in a variety of applications, including the production of stainless steel, batteries, and electronics (Genchi *et al.*, 2020).

Despite large nickel production in the world, this industry also faces several problems, including conflicts with indigenous peoples (Nancy, 2022), environmental impacts (Alves *et al.*, 2019) and concerns over the health of mining workers (Kramer *et al.*, 2017; Roslan *et al.*, 2020). In line with this, other studies also state that nickel mining can cause including soil erosion (Sellier *et al.*, 2021), water pollution (Tolvanen *et al.*, 2019), and greenhouse gases release (Wei *et al.*, 2020). Efforts are being made to minimize these impacts with more sustainable mining practices and the development of new technologies for reducing waste and emissions. One of the company's efforts to reduce this negative impact is to carry out a corporate social responsibility (CSR) program.

The CSR program is a form of corporate social responsibility to make a positive contribution to the surrounding environment, both socially and environmentally (Al Kerdayy, 2019). However, it is necessary to pay attention to the sustainability of the CSR program so that the program can provide long-term benefits for the community and the surrounding environment. As for the sustainability aspects of the CSR program, namely economic aspects, social aspects, and environmental aspects (Giddings *et al.*, 2002; Uddin *et al.*, 2008). Brazil and the Philippines are the two largest nickel producing countries in the world, these two countries have geographical similarities, namely being countries with tropical climates (Cinco *et al.*, 2016; Amorim *et al.*, 2018), these two countries are also developing countries, so that one of the country's largest sources of income comes from the sale of natural products.

Based on various previous descriptions, this study aims to compare the sustainability of the Nickel Mining Area CSR between Brazil and Philippine, this research is expected to provide a comparative among countries so that they can provide recommendations for development.

METHOD

This study uses the literature review method, literature review method is a research method that is carried out by collecting and analyzing literature or written sources related to the research topic to be carried out (Merli *et al.*, 2018; Sileyew, 2019). This method is often used in scientific research because it provides advantages in understanding the research topic more deeply (Danese *et al.*,

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2018), expanding understanding of the research topic (Greenhalgh *et al.*, 2018), and providing a solid basis for developing research hypotheses (Vom Brocke *et al.*, 2015).

In this literature study, journals were collected from Google Scholar with a range of 2013-2023. This study compares the sustainability aspects of CSR implementation, aspects of sustainability being compared are environmental, social, and economic according to research by Uddin *et al.*, (2008). In the discussion section of this paper, this paper discuss the three aspects of sustainability problems and provide recommendations.

RESULTS AND DISCUSSIONS

This section compares the sustainability of the CSR programs from Brazil and Philippine, this comparison determine whether the existing CSR programs are sustainable or not, this comparison also provide an overview of development opportunities for countries regarding the implementation of CSR programs.

Because of the nickel function, mining and processing for nickel production are increasing over time. The trend of increasing nickel production can be seen in Figure 1.

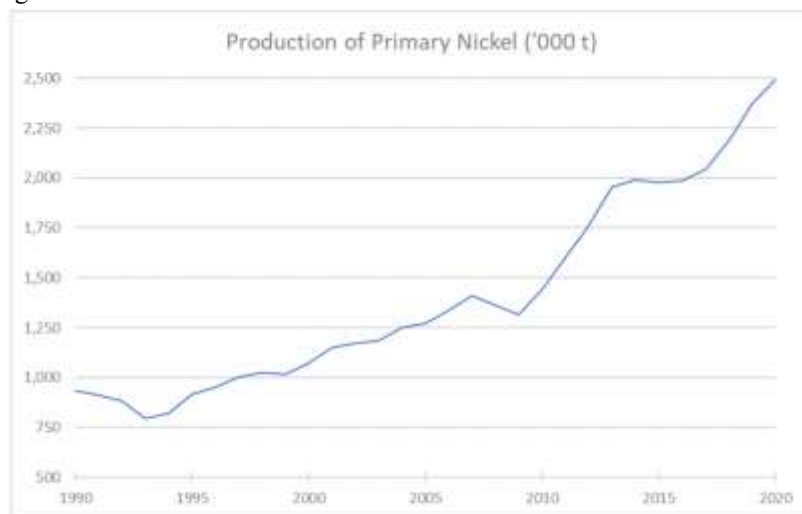


Figure 1. Global Nickel Production Trends
(Source: INSG, 2021)

Indonesia as example is a country that has the largest nickel reserves in the world (Supriyatna and Sihotang, 2019). According to data from the US Geological Survey (USGS), nickel reserves in Indonesia in 2020 reach 21 million tons, which accounts for around 23% of the world's nickel reserves, Indonesia's nickel production in the same year reached around 800,000 tons (USGS, 2021). Nickel mining activities in Indonesia mainly occur in the provinces of Southeast Sulawesi, Central Sulawesi, and North Maluku (Yoesgiantoro *et al.*, 2022).

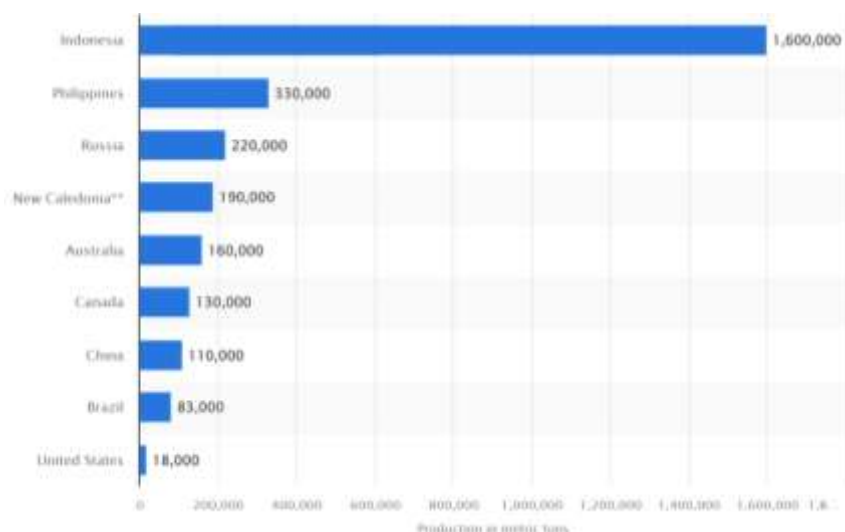


Figure 2. The Largest Nickel Producing Countries in 2022
(Source: Statista, 2023)

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The Carajás National Forest is an area managed by a nickel mining company and the Brazilian government, where there are important mineral reserves that are protected from occupancy, this is intended to be used for mineral exploration in the future to support economic growth in Brazil (Souza-Filho *et al.*, 2019). Based on research from Saes *et al.*, (2021), the nickel mining CSR program in Brazil highlights the company's role in conserving biodiversity, the company's operations in the Carajás National Forest are presented as a model for environmental preservation, however, only a small portion of the area is covered, namely 3% of 412 thousand hectares. This notion of territorial development, which results from undemocratic decision-making processes and excludes plural perspectives and values, is fully compatible with the company's interests, as it does not compromise its territorial expansion and the growing private appropriation of natural resources (Luckeneder *et al.*, 2021; Saes *et al.*, 2021).

Similar to Brazil, nickel mining companies in the Philippines have implemented CSR programs from a social aspect in their local communities, but only for a select few, this has resulted in low public knowledge of the programs that have been carried out (Raborar *et al.*, 2019). The company is financially able to carry out various programs, but they have presented a problem that mining companies lack community relations which causes low community interest in accepting existing mining activities, this is also exacerbated by a lack of monitoring and evaluation of programs (Nem Singh & Camba, 2020; Yumul *et al.*, 2021).

Brazil challenges

Nickel mining in Brazil has been a source of significant controversy and environmental concern. Some of the problems associated with nickel mining in Brazil include:

First, Environmental pollution, nickel mining in Brazil pollutes the environment with hazardous chemicals, this chemical contaminates soil, water, and air around mines (Silva *et al.*, 2013; Cabral *et al.*, 2021; Saes and Muradian, 2021).

Second, Destruction of natural habitats, nickel mining in Brazil often requires land clearing and deforestation of the Amazon rainforest, this can destroy natural habitats and affect biodiversity (de Jesus *et al.*, 2014; Prematuri *et al.*, 2020).

Philippine challenges

Meanwhile, nickel mining in the Philippines also causes significant environmental problems, some of the problems associated with nickel mining in the Philippines include:

First, Water and soil contamination, nickel mining waste can contaminate water and soil with heavy metals in Philippines, this can affect public health in the area around the mine (Migo *et al.*, 2018, Nolos *et al.*, 2022).

Second, Destruction of natural habitats, the process of nickel mining in Philippines destroy natural habitats, especially forests and agricultural land (Nakajima *et al.*, 2017).

Third, Conflicts with local communities, Philippines nickel mines are often in local community areas, conflicts can occur because mining violates customary rights and destroys areas considered sacred by local communities (Raborar *et al.*, 2019)

The implementation of CSR from the two countries can take lessons from the implementation of CSR in the largest nickel mining company in Indonesia, namely PT. Vale, this company has been running CSR programs since 2013 until now. The CSR program at this company covers aspects of sustainability implemented by the company, while the CSR program includes energy, water, waste, water, biodiversity, and social. These various programs are carried out because the company provides solutions both for the short term and the long term (Murdifin *et al.*, 2019). This is in line with research which found a significant positive and indirect relationship between CSR practices and community acceptance around nickel mines in Indonesia (Zainuddin Rela *et al.*, 2020).

To address issues associated with nickel mining, mining companies and governments must consider environmental impacts of their activities, this could include the development of more environmentally friendly mining technologies and better management of waste and pollution (Dobele *et al.*, 2014; Monteiro *et al.*, 2019). In addition, it is important for governments and companies to establish strict regulations and monitor compliance with environmental regulations (Falcone, 2020; Kazangcolu *et al.*, 2021). Companies also need to place the same priority on environmental and social aspects, not just on the economy.

Conclusion and Recommendation

The conclusion of this study shows that CSR programs play an important role for nickel mines, so economic aspects, social aspects, and environmental aspects need to be included CSR programs for nickel mining sustainability. This paper explains that nickel mines in Brazil and the Philippines have not carried out a sustainable CSR program because they still do not accommodate environmental and social aspects. These two countries can take lessons from implementing a sustainable CSR program in the largest nickel mining company in Indonesia. Therefore, this conclusion can be used as a basis for making recommendations for further research on the topic of CSR in the nickel mining area.

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