



# Multidimensional Impacts of Nickel Mining Exploitation towards the Lives of the Local Community

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## ABSTRACT

The mining companies' activities caused problems in the community. This research aims to analyze the impact caused by mining activities on the lives of local communities. The research location was in Mandiodo Village, North Konawe Regency. This research used a qualitative approach, and data was collected through observation and in-depth interviews with several community leaders and village government officials. The collected data were analyzed descriptively. The study results show that mining activities negatively impact the social, economic, and environmental lives of local communities in Mandiodo village. Nevertheless, a positive impact can be seen from the increase in the income of some people due to the diversification of the community's economic businesses: boarding house rental services, basic food stalls, and the opening of new jobs for local people to work in companies, as well as acculturation between immigrant and local communities. On the other hand, negative impacts are detrimental to local communities: flooding in residential areas during heavy rains

and the threat of landslides, air pollution which can cause various respiratory tract infections, siltation of beaches and seawater pollution, decreased fishermen's income, and damaged roads and bridges. Efforts to overcome the company's negative impacts have not been appropriate because the compensation and recognition the company has provided to the community are not commensurate with the negative impacts that are still detrimental to local communities. The conclusion is that the existence of mining companies causes disasters and losses for local communities.

## 1. INTRODUCTION

Indonesia is a country that has abundant and diverse natural resources spread across all provinces. Even though it has abundant natural resources, it has not maximized its contribution to the welfare of the Indonesian people. These natural resources have not been managed with due regard to aspects of environmental sustainability and human rights, causing problems, although it is also acknowledged that the management of these natural resources also has a positive impact on society. Southeast Sulawesi Province is one of the provinces in Indonesia which has very large deposits of nickel mining products spread across several districts. One of the districts that have very large nickel mining deposits covering an area of 17.275 ha (16.000 ha is an area of mining activity and 1.2725 ha is a residential area) is Mandiodo Village, Konawe Utara Regency. Therefore, these nickel mine deposits can be explored and exploited to contribute to local revenue and improve the welfare of local communities, the government has granted permits to several mining companies to carry out exploration and exploitation. However, in reality, these mining activities have not maximized the value of benefits for local communities, on the contrary, they have created very complex problems, namely environmental damage which harms the lives of local communities.

Several studies show that mining exploitation can increase people's income and encourage the creation of new regional developments, but on the other hand, it also has negative impacts on environmental sustainability, such as air pollution, damage to soil and agricultural land which has been the source of people's livelihood, forest destruction, and extinction of flora and fauna in forest areas and worsening public health conditions as a result of air pollution (Listiyani, 2017; Anggraini et al., 2019; Khobragade et al., 2020; Camara et al., 2021). From a juridical aspect, mining activities have also robbed the

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economic, social, and cultural rights of citizens, especially communities around the mine, resulting in violations of human rights (Listiyani, 2017).

Various other studies also show that the presence and existence of mining companies in an area, on the one hand, can provide benefits to changes in the social and economic life of the community, but on the other hand, it can have a negative impact because it creates various social and environmental problems that harm the community. (Misran Safar et al., 2016; Ometehinse, 2019; Adhidarma et al., 2020). Other studies also show that coal mining activities in Separi Village have various impacts on the social structure of the community and the presence of coal mining is not only seen in changes in livelihoods but also in social and economic aspects which include community income levels and non-agricultural employment opportunities (Nurislam et al., 2022). Economically, the presence of the mining industry contributes to the diversification of people's livelihoods, such as opening up new jobs for local people as company employees (Izzudin et al., 2022). Another study conducted by Ometehinse and Bankole (2019) found that the implications of mining exploration and exploitation have resulted in the loss of homes for residents, loss of biodiversity and the use of chemicals has the potential to disrupt the health of workers and communities around mining areas. Nonetheless, Zhang et al., (2022) explain that the mining sector theoretically makes a significant contribution to national and global economic growth.

Other impacts arising from coal mining activities, from an environmental perspective, cause changes in the landscape, decrease in soil fertility, threats to biodiversity, decrease in water quality, decrease in air quality, and environmental pollution, while the social side can be seen from the existence of social conflicts between communities. with companies, the decline in the quality of public health, and the occurrence of changes in the social structure of society. As for the impact from the economic aspect, the existence of a mining company can become a pioneer of the economy, encourage regional development, provide regional and national economic benefits, provide supporting business opportunities, build new infrastructure, provide employment opportunities, open isolation of remote areas, and increase knowledge by transferring community technology around mining (Fitriyanti, 2016). Other studies also show that mining activities have a significant impact on socio-economic aspects, especially opening new job opportunities for local people, while negative impacts are especially related to environmental damage (Sydd, 2002).

Other studies also show that coal mining has a positive impact on the economy of a small part of the community around the company, namely providing job opportunities and business opportunities, such as food stalls, food stalls, and house rental businesses, but on the other hand, coal mining has a large negative impact. , such as conflicts between communities and companies that were triggered by mudflows that flowed into residents' agricultural areas, resulting in reduced agricultural output and some agricultural land being converted into mining areas resulting in some communities losing land as a source of life for future generations. Mining does not guarantee the socio-economic welfare of the community as happened in Makroman Village (Risal et al., 2013). Other studies show that coal mining companies operating in the Floating Village have a positive impact on the socio-economic life of the Floating Village community including the availability of new jobs for the local community, improving the local community's economy, by providing assistance: (1) chicken and catfish farming, (2) providing orange seeds to farming communities (3) providing elephant cassava seeds, (4) providing clean water and water storage assistance, (5) providing social assistance in the form of groceries, (6) building infrastructure in the form of roads and infrastructure in the form of road improvements villages, building roads between villages and building sports fields, (7) providing assistance during community service. Meanwhile, the negative impacts of mining companies include deforestation, loss of flora and fauna, reduced land for agricultural activities, pollution of several waterways, dust or air pollution, and land disputes between communities (Jimmy et al., 2020).

The existence of mining companies conducting exploration and exploitation of nickel mines has not been profitable and prosperous for the entire Mandiodo community and its surroundings. For some people, the existence of mining companies has a positive impact on increasing income and welfare of the community, but for other community groups, especially those who work as fishermen, the existence of these mines is detrimental and miserable for fishermen because of environmental damage and seawater pollution. Meanwhile, the compensation provided by the company is not commensurate with the losses and suffering experienced by local fishermen. In contrast to the results of previous studies, this study found an interesting fact that out of 236 heads of households living in Mandiodo Village, 225 heads of households who work as fishermen have lost their livelihoods because massive mining activity has caused damage to the coastal and marine environment. Mining activities result in siltation and damage to coastal and marine ecosystems. This study found that the existence of the mining industry in Mandiodo Village had a greater negative impact on the people who work as fishermen than a positive impact.

## 2. METHODS

The research location is in North Konawe Regency with a focus on mining activity areas in Mandiodo Village (Mandiodo Block). The choice of location was based on academic considerations that in that village nickel mining activities were carried out by several mining companies on a massive scale without regard to the socio-economic interests of the community as a whole and environmental sustainability. The chosen research approach is qualitative research by considering aspects of social phenomena that occur in the research location. In this way, the researchers can describe all the events that occurred at the research location as a whole comprehensively. To obtain the desired results, this research used the "field research" method by focusing on in-depth interviews, observation, and document studies. In-depth interviews were conducted to obtain information or data from community leaders, traditional leaders, village officials, fishermen, traders, and company employees. To triangulate the data, the researcher made observations and studied documents from the village. Under the approach used, data analysis uses descriptive-explanative analysis. As with qualitative data analysis, this analysis consists of three streams of activities that occur simultaneously and intertwine with one another, namely data reduction, data presentation, and conclusions. This analysis does not need to be sequential but rather depends on the research needs.

## 3. RESULTS AND DISCUSSION

Conflict mining activities carried out in Mandiodo Village have resulted in social, economic and environmental changes. Initially, the mining activity was expected to provide benefits to the community, but it harmed the community more. Environmental damage due to massive mining activities has caused losses and suffering to the community, such as floods, landslides, siltation of beaches and pollution of marine ecosystems and air pollution. Meanwhile, the compensation provided by the company is not comparable to the suffering and losses experienced by the community. Even so, it cannot be denied that the existence of the mining industry has also created new jobs, but those who fill the new jobs are people from outside the village, while the local people, who are mostly fishermen, cannot afford to switch professions from fishermen to work in companies. Another small portion of the local community opened food stalls and kiosks to serve company employees and rented out boarding rooms. In addition, social interaction between company employees and local communities can positively foster assimilation and acculturation.

### **Environmental and Seawater Damage, and Air Pollution**

Several mining companies operating and carrying out nickel mining on a large scale and massively have caused environmental damage in Mandiodo Village and its surroundings. The condition of the village forest which was damaged due to massive exploration and exploitation by a nickel mining company has resulted in flooding and the threat of landslides affecting the residents of the village. Every rain with moderate to heavy intensity always brings mining materials to residential areas and is accompanied by flooding. In mid-December 2022 there was a flash flood that hit residential areas and damaged public facilities, such as schools and places of worship, roads and bridges, and other public facilities.

The exploitation of nickel mines by several companies on a large scale and massive basis has also led to siltation (sedimentation) of beaches and seawater pollution. Mining materials carried by water from mining areas in high altitudes during the rainy season have caused sedimentation on the beach in Mandiodo village. Even the nickel mining location which is directly adjacent to the shoreline has made the village beach a pile of mud which is very dangerous for fishermen and residents who are active in the sea. As a result of nickel mining, the seawater changes color to reddish, especially during the rainy season so that it can disrupt and damage the marine ecosystem. The fishermen from Mandiodo Village are no longer able to catch fish and cultivate fish around the village beach due to the destruction of the ecosystem.

Several previous studies have shown that the seawater around Mandiodo Village and Molawe Bay has been polluted by heavy metals and mercury caused by nickel mining activities. As a result, many fish migrate away from the coast to the deep sea because the ecosystem in the coastal area has been damaged and polluted by the waste of nickel mining activities. Currently, fishermen from Mandiodo Village and its surroundings no longer catch fish on the village beach and Molawe Bay, but they catch fish farther away from the beach and the bay leads into the deep sea about 1 hour away from the village beach. As a result, fishermen often lose money because the production costs for catching fish increase, while fish catches decrease and fish catches decrease drastically.

Another environmental damage caused by nickel mining activities by several companies operating in Mandiodo Village was damaged village roads and bridges connecting the villages. Damage to roads and bridges was caused by company cars and employees' vehicles that passed the village road for almost 24 hours. The condition of the road becomes badly damaged, especially during the rainy season because the road conditions are muddy and have potholes that can disturb the comfort of people who cross the road, and can even cause accidents and fatalities. Several damaged village bridges can also cause accidents and discomfort for the community when crossing the village bridges.

The company's activities in exploiting added nickel in Mandiodo Village also cause air pollution, especially during the dry season. Dust that is scattered when heavy equipment, such as excavators dredge and load soil (nickel ore) at high altitudes can cause air pollution. In addition to the air pollution, many people complain that the roofs of their houses have turned deep red, including the roofs of the elementary school and the mosque in this village. Some villagers began to complain because air pollution had caused various diseases suffered by some local villagers, especially respiratory and skin infections.

### **Recognition is Incompatible with Environmental Damage**

The activities of several mining companies in carrying out massive exploitation of nickel ore (ore) in Mandiodo Village have had negative impacts, especially related to flooding, environmental damage, and air pollution without adequate recognition and compensation from the companies to the affected communities. Recognition and compensation for losses and flood victims experienced by the community and environmental damage as a result of nickel mining activities in this village should be a concern and priority for the company to share profits from nickel mining with the affected communities. Communities who were victims of floods and mudflows in mid-December 2022 and damage to roads and bridges, as well as damage to other village infrastructure, should be given adequate compensation from companies that benefit from nickel mining activities in Mandiodo Village. Therefore, the company has only provided compensation in the form of funds to the public when the company ships nickel ore (ore). Compensation is given by the company to the community as compensation for "dust money" because when the nickel ore is shipped on board the barge, the air will be polluted by the nickel ore shipping activity. According to one of the informants, explained that every company that ships nickel ore, the community receives compensation in the form of dust money of IDR. 300,000 to be received by each family head in Mandiodo Village. According to him, each family head receives IDR.1,500,000-IDR.2,000,000 dust money from the company because in one month the company ships nickel ore more than once. Compensation from the company is considered not commensurate because the loss to society arising from nickel mining activities is far greater than simply receiving dust money given by the company.

There is no other compensation from the company to the people affected by nickel ore mining activities besides dust money. Regulations from the local regional government have not regulated social and economic protection for communities affected by mining company activities that operate and exploit in Mandiodo Village. Communities affected by nickel mining activities become victims, such as victims of water and mud floods due to damage to the environment seems to be ignored by the parties, both from the company and the local government. Disasters of water and mud floods as well as damage to roads and bridges will continue to occur because parts of Mandiodo Village are concession areas for mining business permits. Thus, the settlements of these villagers are surrounded by companies that carry out mining of nickel ore, so that in the future these villagers are threatened by the dangers of flooding and landslides as well as declining air quality.

### **The Creating of small merchants and New Jobs**

The existence of several mining companies operating to mine nickel ore in Mandiodo Village has had a positive impact on increasing community income. Since the mining company started nickel mining activities, the community has started to open micro-economic businesses in the small-scale trading sector, starting by opening food stalls, food stalls, local transportation services on land and at sea, and renting boarding houses/dormitories. All the daily needs of company employees are provided for and served by the community. All the daily needs of the company's employees do not need to look outside the village, but all are readily available at various food stalls and food stalls scattered throughout the village. This shows that the existence of a wife in every family is not just a housewife who depends on her husband's income, but they help her husband to supplement household income. In addition, most households have boarding rooms, boarding houses, and dormitories which are rented out to company employees, thus increasing the

income of each household in this area. Each boarding, room is rented out to company employees for IDR.700,000. up to IDR 1,500,000. per month, while boarding houses are rented out to employees on average IDR.7,000,000. per month.

In addition to having a positive impact on increasing household income from these micro-economic businesses, the presence of mining companies has also had a positive impact on opening up new jobs for the community. Most of the people in this village work as company employees, both as heavy excavator operators, truck drivers, and administrative staff in company offices. They earn an average income of IDR 8,000,000. up to IDR 10,000,000. per month. Even so, not all people in Mandiodo Village are interested and switch to working for the company, they still maintain their profession of working as fishermen. Those who are still pursuing their profession as fishermen generally come from the age group of 50 years and over (old age) because they are used to working at sea and it is difficult to switch to work on the land, especially since this type of work in a company requires skills, such as being an excavator operator.

### **Acculturation between Employees and Local Communities**

Another aspect that shows the positive impact of the existence of a mining company in Mandiodo Village is the occurrence of social and cultural assimilation (acculturation) between immigrant communities and local communities. The existence of social assimilation can be seen in the existence of marriages between immigrant communities and local communities. Several company employees marry local women without questioning the differences in regional culture and customs of each party. This shows that the migrant community, some of whom are company employees, and the local community maintain harmonious social relations, even though they have different ethnicities, religions, races, and intergroup. Even though in other areas social conflicts often occur between migrant communities and local communities, in Mandiodo Village as a nickel mining location a new community has been formed as a result of different social and cultural mixing between immigrant communities originating from Javanese, Bugisnese, Sundanese and other ethnic groups. other migrants with the local community, namely the Tolakinese, and Bajonese.

Traditional wedding ceremonies that are often used by wedding couples of different ethnic groups generally use Tolaki customs, but in some cases, weddings are usually accompanied by traditional wedding ceremonies from other tribes. This kind of atmosphere shows that social and cultural integration between immigrant communities and local communities can take place well without causing disputes. Even during the traditional wedding ceremony in this village, lulo dance is often performed together which is participated by the people who live in Mandiodo Village, both from the local community and immigrant communities who generally work as company employees. The harmony between the migrant community and the local community can also be seen in the cooperation and cooperation during social activities in Mandiodo Village. The two community groups are involved and help each other in completing work when preparing wedding parties (tekonggo), farewell parties for the dead (mepokolapasi), and other social community activities. Likewise, the implementation of socio-religious activities is carried out together without distinguishing ethnic groups, such as holding Friday prayers, Eid Al-Fitr, and Eid Al-Adha prayers.

## **4. CONCLUSION AND RECOMMENDATION**

Nickel mining exploitation activities by mining companies in Mandiodo Village have had negative and positive impacts on people's lives. The positive impact can be seen from the absorption of local workers to work in companies and the emergence of new micro-economic businesses with the emergence of food stalls, canteen, and boarding houses for rent. Ironically, the increase in economic value is not enjoyed by people who work as fishermen. Environmental damage due to mining exploitation destroys the livelihoods of local fishermen because of damage to the environment and fish habitat along the village coast. Meanwhile, local fishermen are unable to switch to new jobs as company employees. Environmental damage has also caused floods of water and mud that hit villagers' settlements, threats of landslides, and damage to public facilities, such as village roads and bridges. Another disaster threat is the emergence of various types of respiratory tract infections suffered by the community due to air pollution. Meanwhile, the compensation from the company is not commensurate with the loss and suffering of the community. Given the negative impact that has caused loss and suffering to local communities, it is recommended that: (1) Exploration and exploitation of nickel mining must be paid attention to aspects of environmental sustainability and human rights of local communities, (2) Companies must provide recognition and compensation that is appropriate and commensurate with loss and suffering of the local community, (3) the local regional government must intervene and make regulations to protect the interests of the local community.

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## 6. REFERENCES

- Adidharma, M. A., Emiyarti, & Pratikino, A. G. (2020). Sebaran Logam Berat Nikel (Ni) Dalam Air di Perairan Kecamatan Molawe, Kabupaten Konawe Utara. *Jurnal Sapa Laut*, 6(4), 273-280. <https://ojs.uho.ac.id/index.php/JSL>
- Anggraini, D., Sumarno, & Riniwati, H. (2019). The Effect of Traditional Gold Mining toward the Socio-Economic and Environmental Aspect in Sepauk District Sintang Regency. *Indonesia Journal of Environment and Sustainable Development*, 10(1), 51-57. <https://doi.org/10.21776/ub.jpj.2019.010.01.09>
- Ibrahima S. M., Deyi, J., & Lin, L. (2021). The Impact of Mining Exploration on Sangaredi Community's Sustainable Development: Inhabitant's Perspective on Livelihood. *Global Journal of Engineering Science*, 7(5), 1-11. <https://doi.org/10.33552/GJES.2021.07.000671>
- Fitriyanti, R. (2016). Pertambangan Batubara: Dampak Lingkungan, Sosial, dan Ekonomi. *Jurnal Redoks*. 1(1), 34-40. <https://doi.org/10.31851/redoks.v1i1.2017>
- Izzudin, M., Santoso, A. D., Baiquni, M., & Nugroho, A. S. (2022). Community Livelihood Diversification as a Result of Mining Industry Activities: A Case Study of Soligi Village, South Halmahera. *Jurnal Ilmu Sosial dan Humaniora, Undiksha*, 11(1), 176-187. <https://doi.org/10.23887/jish.v11i1.41106>
- N, Jimmy., & Merang, K. R. I. (2020). Dampak Pertambangan Batubara Dalam Kehidupan Sosial Ekonomi Masyarakat di Desa Apung, Kecamatan Tanjung Selor, Bulungan. *JUAN: Jurnal Ilmu Administrasi Negara*, 8(2), 111-121. <https://doi.org/10.31629/juan.v8i2.2679>
- Safar, M., Karsadi & Hamuni. (2016). Mining Conflict and Indigenous People. *International Journal of Science and Research*, 5(2), 1165-1171. <https://paper.researchbib.com/view/paper/319222>
- Khobragade, K. (2020). Impact of Mining Activity on Environment: An Overview. *International Journal of Scientific & Research Publication*. 10(5), 784-791. <http://dx.doi.org/10.29322/IJSRP.10.05.2020.p10191>
- Listiyani, N. (2017). Dampak Pertambangan Terhadap Lingkungan Hidup di Kalimantan Selatan dan Implikasinya Bagi Hak-hak Warga Negara. *Jurnal Al'Adi: Jurnal Hukum*, 9(1), 67-85. <http://dx.doi.org/10.31602/al-adl.v9i1.803>
- Nurislam, A. A., Hasid, Z., & Amalia, S. (2022). Dampak Pertambangan Batubara Bagi Kehidupan Sosial Ekonomi Masyarakat. *Jurnal Ilmu Ekonomi Mulawarwan*, 7(2), 136-144. <https://doi.org/10.29264/jiem.v7i2.9077>
- Ometehinse, A. O., & Bankole, D. A. (2019). The Environmental Implications of the Exploration and Exploitation of Solid Minerals in Nigeria with a Special Focus Tin in Jos and Coal in Enugu. *Journal of Sustainable Mining*, 18(1), 18-24. <https://doi.org/10.1016/j.jsm.2018.12.001>
- Risal, S., Paranoan, D. B., & Djaja, S. (2013). Analisis Dampak Kebijakan Pertambangan Terhadap Kehidupan Sosial Ekonomi Masyarakat di Kelurahan Makroman. *Jurnal Administrative Reform*, 1(3), 117-129. <http://dx.doi.org/10.52239/jar.v1i3.482>
- Zhang, B., Yao, J., & Lee, H.J. (2022). Economic Impact and Challenges of Chinese Mining Industry: An Input-Output Analysis, *Sustainable Energy System*, 10(1), 1-17. <https://doi.org/10.3389/fenrg.2022.784709>
- Sydd, O. R., Sairinen, O., & Orenius, H. T. (2022). Social Impacts of Modern Smallscale Mining: Case Studies from Serbia and Bosnia & Herzegovina. *Society & Natural Resources an International Journal*, 35 (8), 816-835. <https://doi.org/10.1080/08941920.2022.2079157>