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THE IMPACT OF COAL MINING ON THE SOCIO-ECONOMIC CONDITIONS OF THE COMMUNITY IN SANGATTA, EAST KUTAI REGENCY

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ABSTRACT:

This research aims to analyze the impact of coal mining on the social, economic, and environmental conditions of communities in Sangatta District, East Kutai Regency. Mining, as one of the key sectors driving regional economic development, also brings about various issues related to social change, economic inequality, and environmental degradation. The research method employed is a survey with a quantitative approach, namely the collection of measurable numerical data that can be statistically analyzed through questionnaires. The study involved 30 respondents determined by purposive sampling, that is, deliberate selection based on specific criteria namely, residents living around the mining area who are considered to be most affected. The results show that 66.67% of respondents were in the age range of 19-31 years, with the majority stating that they benefited economically from increased job opportunities (76.67%), followed by improvements in local businesses (13.33%) and infrastructure development (6.67%). In terms of social aspects, most respondents (46.67%) assessed that the level of crime or social problems remained the same, although 6.67% perceived an increase. Meanwhile, from the perspective of regional economy, 70% of respondents noted a significant rise in land and property prices, ranging from 50-100% or even higher. The environmental impacts reported by the community include air pollution, land degradation, and disruption of water resources. This indicates that although mining provides economic contributions to most residents, there are also consequences in the form of social inequality and environmental pressures. Therefore, more sustainable mining management is needed, taking into account the balance between economic benefits, social stability, and environmental sustainability.

Keywords: *Mining, Coal, Social, Economy, Environmental*

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1. INTRODUCTION

Coal mining is one of the strategic sectors in Indonesia's national economy. In the Kalimantan region, including East Kutai Regency, this sector is the backbone of regional economic growth and a major contributor to regional revenue and foreign exchange earnings. The mining sector's contribution to East Kalimantan's Regional Domestic Product (RDP) exceeds 45%, with Sangatta being one of the largest coal production centers. The presence of this industry has created new job opportunities, driven local business growth, and accelerated urbanization.

However, behind its economic contributions, coal mining activities also give rise to various social, economic, and environmental issues. Previous studies have yielded mixed results. Wijaya et al. (2020) found that while mining increased community income in South Kalimantan, unsustainable exploitation practices widened social inequality and damaged the environment. Prasetyo (2019) highlighted negative impacts such as water pollution and land conflicts, despite the sector creating job opportunities. Meanwhile, Febrianto et al. (2021) noted that the entry of mining companies in Kutai Kartanegara has influenced the social structure of the community, marked by increased worker migration and pressure on public facilities. In Sangatta itself, rapid

urbanization due to mining has not always been accompanied by improvements in infrastructure quality (Nurhaliza & Siregar, 2023).

From an environmental perspective, several studies report significant ecosystem damage. Hartono et al. (2022) show that mining activities in East Kalimantan have accelerated deforestation, biodiversity loss, and increased carbon emissions. Yulianti (2020) adds that coal waste pollution around mining sites has made it difficult for communities to access clean water. This situation highlights the contradiction between short-term economic benefits and long-term environmental sustainability.

Although there have been many studies on the impacts of mining, research that simultaneously analyzes social, economic, and environmental aspects at the local community level, particularly in Sangatta, remains limited. Most studies focus on environmental aspects (Hartono et al., 2022) or macroeconomics (Wijaya et al., 2020), but few provide empirical evidence of how communities around mines experience multidimensional impacts. Thus, there is room for research to fill this gap with a quantitative approach based on field data.

This study aims to comprehensively analyze the impacts of coal mining on the social, economic, and environmental conditions of communities in Sangatta, East Kutai Regency. Unlike previous studies that were more partial, this study emphasizes integrative analysis by involving quantitative data from communities living around the mining area. Therefore, this study presents an empirical picture based on the perceptions of local communities regarding the multidimensional impacts of mining, so that the results are expected to provide practical contributions to public policy formulation and encourage more sustainable mining management.

2. METHOD

This study uses a quantitative approach with a survey method to examine the impact of coal mining on the social, economic, and environmental aspects of the community in Sangatta District, East Kutai Regency. The sample for this study consisted of 30 respondents determined using purposive sampling. This number was chosen considering the limitations of field access, the homogeneity of respondent characteristics, and the exploratory-descriptive nature of the research, which was deemed sufficient to describe the initial perceptions of communities directly and indirectly affected by mining activities. Respondents consisted of people living around the mine site, local business actors, and local stakeholders. Data were collected using a structured questionnaire with closed-ended questions based on a five-point Likert scale covering three main dimensions: social (social interaction, conflict, mobility), economic (income, employment), and environmental (pollution, access to clean water, land use change). The content validity of the instrument was tested through expert assessment in the field of environmental socioeconomics and limited testing with respondents outside the main sample. Data were analyzed descriptively and quantitatively using simple statistics such as frequency and percentage to describe the community's perceptions of the impacts of mining activities.

3. RESULTS AND DISCUSSION

This study focuses on analyzing the impact of coal mining on the social, economic, and environmental conditions of the community in Sangatta, East Kutai Regency. The study focuses on mining activities carried out by PT Kaltim Prima Coal, one of the largest mining companies in the region.

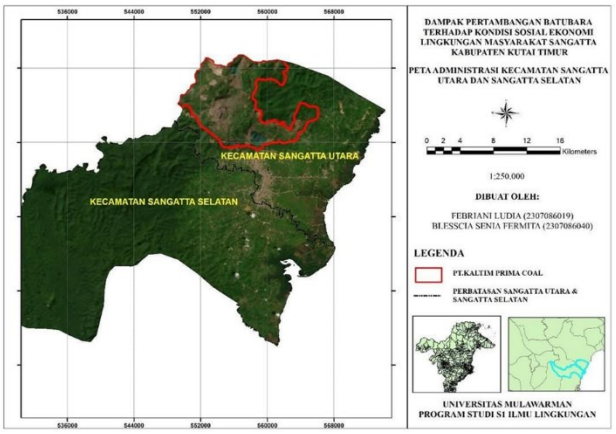

Figure 1. Map of Research Location

3.1 Respondent characteristics

There were 30 respondents in this study, consisting of 19 women (63.3%) and 11 men (36.7%). This shows that female participation was higher than male participation, which may have been influenced by availability of time, interest in the research topic, or social roles in the community (Hapsri). Table 1 shows that all respondents are of working age according to the classification of the Central Statistics Agency (BPS), which is between 15 and 64 years old. The majority of respondents (66.7%) are aged 19–31 years, followed by the 45–57 age group (20.0%), and 32–44 years (13.3%).

Table 1. Age of Respondents

No.	Age (Year)	Number	Percentage
1	19 - 31	20	66,67
2	32 - 44	4	13,33
3	45 - 57	6	20
Total		30	100

The majority of respondents (60.0%) had a college education, while the other 40.0% had a high school education or equivalent. Higher education is believed to increase employment opportunities in the mining sector because most technical and managerial positions require specific academic qualifications (Fitriani, 2020). Additionally, previous research has also shown a positive correlation between education level and environmental awareness and participation in sustainable development (Setiawan & Wulandari, 2019).

Sixty percent of respondents have lived in Sangatta for 12–22 years. Factors encouraging them to stay include economic opportunities, access to infrastructure, social and cultural ties, and support from mining companies' corporate social responsibility (CSR) programs. These findings align with Putra's (2021) research, which states that the sustainability of settlements around mines is influenced by a combination of economic factors and social adaptation of the community.

Most respondents (90.0%) do not work directly in the mining sector. They are generally involved in micro, small, and medium enterprises (MSMEs) or the informal sector, such as trade, logistics services, food stalls, vehicle repair shops, and accommodation providers. This indicates a link between mining activities and the development of local MSMEs, which serve as a pillar of the regional economy (Pradana, 2022).

3.2 The impact of mining on environmental health

Based on the results of the study, the majority of respondents did not experience health problems since mining activities began in their area. Of the total 30 respondents, 21 people (70%) stated that they had never experienced health problems related to the existence of mines, while 9 people (30%) stated that they had experienced health problems. According to the World Health Organization (2018), although most people do not report short-term health complaints, exposure to pollutants from mining activities can pose cumulative risks in the long term. Hazardous substances such as particulates (PM2.5, PM10), heavy metals (mercury, lead, arsenic), and toxic gases (SO_2, NO_x) can accumulate in the human body and the environment, so their effects often only become apparent after a certain period of time. Therefore, more in-depth medical and environmental studies are needed to determine the extent to which mining activities contribute to public health complaints, as well as to serve as a basis for the formulation of appropriate mitigation measures by the government, companies, and health institutions.

In addition to health aspects, coal mining activities also have a significant impact on the environment. Data from Global Forest Watch (2023) shows that East Kalimantan lost approximately 3.79 million hectares of forest cover between 2001 and 2023. This loss of forest has impacted natural ecosystems and wildlife habitats, including endemic species such as the Bornean orangutan (Pongo pygmaeus). Research by Kurniawan and Febrianto (2021) shows that mining expansion around Kutai National Park has increased human-wildlife conflicts and reduced populations of large mammals such as sun bears and clouded leopards. These findings are consistent with research by Siregar and Prasetyo (2023), which revealed that mining has caused a reduction in primary forest cover and threatens endemic plant species such as meranti (*Shorea* sp.) and keruing *(Dipterocarpus)*. Although mining companies have made efforts at reclamation and reforestation, their effectiveness is still questionable because the ecological damage tends to be greater than the restoration.

3.3 The impact of coal mining activities on social conditions

Although migrant inflows are not on a large scale, the arrival of residents from diverse cultural backgrounds still requires anticipation to prevent potential social frictions. Therefore, local governments need to prepare inclusive social integration policies, adaptive spatial planning, the development of social infrastructure, and sustainable labor management. With these measures, population mobility, even if limited, can still generate equitable benefits for the community. Research by Wicaksono & Pratama (2023) shows that the coal mining sector is one of the driving factors of mobility to Sangatta, although its contribution to population growth is not dominant. This aligns with the perception of some residents who feel that the number of newcomers has increased, even though statistical data indicates otherwise.

Based on research on the main impacts of migrant inflows, the majority of respondents stated that the presence of migrants has a significant influence on economic growth in their area. A total of 22 out of 30 respondents, or 73.3%, believed that migration has a positive impact on local economic development, such as job creation, business growth, and increased economic circulation. Meanwhile, 4 respondents (13.3%) noted that the impact of migration was felt through rising property prices, most likely due to increasing demand for housing. On the other hand, 3 respondents (10%) identified the occurrence of social conflicts as a consequence of interactions between locals and migrants, which may have been triggered by competition over resources or differences in social values. In addition, 1 respondent (3.3%) reported cultural changes as an effect of the ongoing acculturation process. Overall, this indicates that community perceptions of migration are generally positive in terms of economic aspects, but concerns remain regarding the accompanying social and cultural impacts. Research by Susilo and Trisilia (2024) shows that interregional labor migration in Indonesia, including informal workers, positively contributes to local economic growth. Their study emphasizes that migration increases productivity and drives economic development in destination areas.

The presence of the mining industry in Sangatta has brought various social changes, including in community communication patterns. One of the most visible impacts is the diversification of interactions resulting from the influx of migrants from different regions. Mining workers from diverse cultural, linguistic, and behavioral backgrounds have introduced new dynamics into the way communities communicate. Prior to mining activities, communication patterns in Sangatta tended to be homogeneous, relying on local languages or Indonesian with distinct regional dialects. However, with the arrival of workers from outside the region, residents began to adopt standard Indonesian more frequently as the primary means of communication, even in everyday interactions in social settings, markets, and workplaces. This shift reflects a transition from locally based communication to one that is more inclusive and open.

Conflicts between local communities and mining companies in Sangatta are recurring issues as the coal mining industry continues to expand in the region. One of the main sources of conflict is land ownership and use. Many locals feel that their rights to customary land or agricultural areas have been seized or diminished due to mining expansion, with compensation perceived as unfair. Moreover, land acquisition processes that lack transparency or fail to involve active community participation further fuel dissatisfaction. These conflicts intensify when companies are seen as unresponsive to community grievances or as failing to fulfill their social responsibilities adequately. Beyond land disputes, environmental issues such as water and air pollution and forest degradation also serve as points of contention. Communities directly affected by mining activities often complain about declining quality of life, disrupted livelihoods (particularly for farmers and river fishers), and health risks caused by mining waste. When companies are perceived as neglecting environmental responsibilities or not providing contributions proportional to the damage caused, tensions with communities escalate.

Nevertheless, coal mining has also brought positive social impacts. In some cases, mining companies have established good partnerships with communities through corporate social responsibility (CSR) programs, infrastructure development, educational scholarships, and skills training. However, the success of these initiatives heavily depends on effective two-way communication, transparency, and respect for local community rights. Thus, while the potential for conflict exists, it can be minimized through more participatory, fair, and sustainable approaches to natural resource management, as well as the active involvement of all stakeholders in the decision-making process.

Table 2. Crime rate or social problems after the mine

No	Level of crime/problem	Percentage %
1	Greatly increased	6,67
2	Somewhat improved	13,33
3	Stayed the same	46,67
4	Decreased	6,67

5	Don't know	26,67
	Total	100

Based on Table 2 above, which presents data on perceptions of changes in crime rates or social problems in the community after the mine began operating. According to the study, 46.67% of the total respondents stated that there was no increase in crime rates in the study area due to coal mining. This indicates that, according to the majority of respondents' perceptions, the presence of the mine does not significantly affect crime rates in the area. However, 6.67% of respondents and 13.33% of the total respondents believe that there has been an increase in crime rates due to the coal mining operations in the area. According to Zhao & Chen (2024), public perceptions of crime rates do not always reflect actual crime data but are more influenced by how risks and threats are understood. The high proportion of respondents who feel there has been “no change” or “do not know” may be due to a lack of effective risk communication by the mining company or security authorities, leading to neutral perceptions or uncertainty.

3.4 The impact of coal mining activities on economic conditions

Table 3. Economic benefits felt by the Sangatta community

No.	Economic benefits felt society	Number of respondents (Person)	Percentage (%)
1	Increased employment	23	76,67
2	Infrastructure development	2	6,67
3	Company's CSR program	1	3,33
4	Local business improvement	4	13,33
	Total	30	100

Table 3 shows that the majority of respondents (76.67%) view increased employment as the main economic benefit of coal mining activities. This indicates the important role of the mining sector in absorbing labor in the region. Additionally, there are other benefits, although at lower percentages, such as infrastructure development (6.67%), increased local businesses (13.33%), and corporate social responsibility (CSR) programs (3.33%). This data shows that the economic impact of mining is not limited to job creation but also includes infrastructure, SME development, and corporate social responsibility. However, according to Singh & Patel (2021), the economic benefits of the mining industry are not always distributed evenly. Although employment is the most felt benefit, other aspects such as infrastructure and local business development are still limited. This highlights the need for a more in-depth analysis of the distribution of economic benefits among different community groups. From a sustainable development perspective, the economic impact of mining should not only be short-term (such as job creation) but also include infrastructure development, local business empowerment, and sustainable CSR programs. Although corporate participation through CSR remains relatively low (3.33%), this aligns with the principle that mining companies have a social responsibility to contribute to the well-being of surrounding communities.

Table 4. Increase in land and property prices around the mine

No.	Rising land prices & property around mine area	Number of respondents (People)	Percentage (%)
1	Significant increase (>100%)	6	20
2	Fairly large increase (50-100%)	15	50
3	Slight increase (10-50%)	7	23,33
4	Stable	2	6,67
5	Decrease	0	0
	Total	**30**	**100**

Based on Table 4, the majority of respondents (93.33%) stated that land and property prices around the mine had increased, with varying degrees of increase. Fifty percent of respondents (15 people) reported price increases in the range of 50–100%, while 20% (6 people) stated that the increase exceeded 100%. Additionally, 23.33% (7 people) noted a lower increase, between 10–50%. Only 6.67% (2 people) stated that property prices remained stable, and no respondents reported a decrease in prices. These findings indicate that mining activities have a positive impact on property values in the surrounding area, with most residents experiencing significant

increases. This aligns with the research by Chen & Zhang (2023), which explains that increased economic activity and job creation from the mining industry drive property demand, while limited land supply causes prices to rise significantly. Thus, the dynamics of the property market in mining areas are greatly influenced by local economic growth.

Coal mining in Sangatta has had a significant impact on various aspects of community life. Socially, this activity has triggered changes in the community structure due to increased migration of newcomers, which in turn has altered social interaction patterns to become more individualistic and caused conflicts between the local community and mining companies. Although access to education and health services has improved, social inequality and pressure on public facilities remain serious challenges. Economically, mining activities have made positive contributions, such as increased employment, higher household incomes, and the growth of small businesses. On the other hand, the environmental impact of mining is very real, including air pollution in the form of dust and noise, decreased water quality, and threats to biodiversity. Based on research findings, concrete steps are needed to balance the economic benefits and negative impacts of coal mining in Sangatta. The government must strengthen regulations and oversight to ensure mining companies comply with environmental standards, including land reclamation and responsible waste management.

4. CONCLUSION

This study concludes that coal mining activities in Sangatta, East Kutai, have a positive impact on the economy through increased employment, household income, and local business development, but also cause social problems in the form of changes in the structure of society and serious environmental impacts such as deforestation, water and air pollution, and threats to biodiversity. Although the majority of respondents did not report direct health issues, the potential long-term risks from exposure to pollutants still need to be addressed. These findings emphasize the importance of stricter environmental management policies from local governments, more effective reclamation and CSR programs by companies, and further studies on health impacts and the distribution of economic benefits to achieve sustainable development in mining areas.

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