

SOCIO-ECONOMIC AND ENVIRONMENTAL CONSEQUENCES OF COAL MINING IN A RURAL COMMUNITY OF EAST KALIMANTAN

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ARTICLE HISTORY

Received : 20-01-2026

Revised : 07-02-2026

Accepted : 28-03-2026

KEYWORDS

Coal_mining;
socio_ecological_
impacts;
rural_communities;
inequality

ABSTRACT

The economic growth generated by natural resources in mining areas is often used by governments to mask structural tensions between development, social inequality, and environmental degradation. This study analyzes the devastating socio-economic and ecological impacts of coal mining expansion in Gunung Asri Village (pseudonym), East Kalimantan, Indonesia. The study used qualitative data obtained from in-depth interviews with 25 informants. Informants included village elites, traditional and religious leaders, farmers, traders, mine workers, and ordinary residents, reflecting variations in occupation, education level, and socio-cultural background. The study found that the industry has generated limited material benefits through infrastructure development and employment. However, the distribution of these benefits is unequal and has resulted in significant socio-ecological damage, such as land displacement, reduced agricultural productivity, water and air pollution, health risks, and increased livelihood vulnerability. CSR programs remain compensatory and technocratic, failing to address structural inequalities or foster long-term community empowerment. This situation is exacerbated by the consolidation of exclusive local power relations tightly controlled by village elites, which limit meaningful community participation and deepen social fragmentation. Coal-based development has resulted in socio-ecological transformation without empowerment in rural mining communities

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INTRODUCTION

Coal mining has become a major driver of economic growth in East Kalimantan. The sector is touted as a source of job creation, infrastructure provision, and local income generation (Großmann, 2019; Handayani et al., 2019;

Murlianti et al., 2025). The industry is consistently portrayed as a development project that emphasizes economic benefits while ignoring social and ecological consequences (Brauers & Oei, 2020; Perdue, 2018; Phillips, 2018). Empirical evidence, however, shows that this industry results in uneven development, environmental degradation, livelihood disruption, and intensified social inequality in rural communities near mining concessions (Culter, 2003; Inoue et al., 2013; Monalisa et al., 2025; Mpanza et al., 2020; Murlianti et al., 2025; T. D. Toumbourou et al., 2022).

In affected villages, the transformation of riverine agrarian livelihoods into an economy dependent on the extractive sector has reshaped local social relations, fraught with vulnerability (T. Toumbourou et al., 2020a, 2020b; T. D. Toumbourou et al., 2022; T. D. Toumbourou & Dressler, 2021, 2024; Werner et al., 1944). Corporate Social Responsibility (CSR) programs, while presented as mechanisms to mitigate negative impacts, have not been effective in addressing structural socioeconomic inequalities and environmental risks (Blakeley et al., 2004; Endah et al., 2022; Handayani et al., 2019; Monalisa et al., 2025; Oktavia et al., 2018a, 2018b; Woźniak & Jurdziak, 2017). This reality raises critical questions about the extent to which extractive sector-based development contributes to sustainable rural livelihoods and inclusive governance.

Kutai Kartanegara Regency stands as one of Indonesia's largest coal-producing regions, contributing over 20% of national output (BPS Kutai Kartanegara, 2021). Beneath these impressive economic figures lies a terrain of socio-ecological devastation. The extractive logic of natural resource exploitation has generated enduring structural impacts, including land dispossession, environmental degradation, and the erosion of agrarian-based livelihoods (Jurniar et al., 2018; Murlianti et al., 2022, 2023; Widyatmoko & Dewi, 2019). These dynamics are amplified by the steady rise in deforestation, water contamination, and soil pollution across East Kalimantan, mirroring the ecological externalities of intensified coal production. Notably, post-mining reclamation efforts have remained largely symbolic, often reduced to bureaucratic formalities with little material implementation (Wibawa et al., 2022). National studies confirm the growing incongruence between mining's economic returns and the ecological costs it engenders (T. D. Toumbourou et al., 2022).

Land alienation and economic restructuring have directly contributed to the deterioration of quality of life for most villagers. These effects are especially acute among farmers and Indigenous communities, whose livelihoods are deeply intertwined with land and ecosystems (Salsabilla & Murlianti, 2023; Wibawa et al., 2022), (Großmann & Gullo, 2022). Research in this Gunung Asri village illustrates how farmers have been forced to alter their subsistence strategies due to irrigation pollution and intensified pest outbreaks (Anggraeni et al., 2019; Werner et al., 1944; Widyaningsih et al., 2022). While certain areas, such as West Aceh, have witnessed improved infrastructure and education outcomes through CSR interventions, the long-term implications for community resilience remain uncertain (Strangleman, 2018).

At a more localized scale, Gunung Asri Village in Tabang Subdistrict, Kutai Kartanegara, offers a concrete illustration of the structural violence embedded in extractive capitalism. Since the influx of large-scale mining corporations in the early 2010s, residents have experienced a dramatic deterioration in their socio-environmental conditions, manifested in river pollution, declining agricultural productivity, and the loss of access to vital arable land (D. Anugrah et al., 2022; I. Anugrah, 2023; Sri Murlianti, 2022). Historically, the Belayan River, which traverses Gunung Asri Village, functioned as the socio-ecological lifeline of the community, providing potable water, sustaining inland capture fisheries, and serving as a vital transportation artery linking remote settlements in the interior of Kutai Kartanegara. These functions embedded the river within the material and cultural fabric of village life. However, the (Gibson-Graham, 2020; Inoue et al., 2013; Krishnan et al., 2025; Mpanza et al., 2020; T. D. Toumbourou et al., 2022) onset of large-scale upstream coal extraction in the early 2010s precipitated a profound rupture in these relational ecologies, accelerating the erosion of both environmental integrity and community livelihoods.

In this context, an inquiry into the socio-economic and environmental impacts of coal mining in Gunung Asri Village becomes essential for informing more equitable and sustainable development policies. This study not only fills the micro-sociological data gap concerning everyday life in mining-adjacent communities but also amplifies the voices of local residents, voices often marginalized in the dominant developmentalist discourse of natural resource

governance. The research interrogates how extractive operations reshape social relations, livelihood strategies, and claims to a healthy environment.

Anchored in a critical engagement with structural and ecological transformations, this study is guided by a central question: How do coal mining operations reconfigure the socio-economic relations and environmental entitlements of rural communities? The primary objective is to empirically examine the disjuncture between the corporate promise of development, embodied in infrastructure and education, and the emergence of new social and ecological vulnerabilities, including agrarian conflict, environmental degradation, elite polarization, and community exclusion from decision-making. The novelty of this research lies in its micro-sociological, mixed-methods approach, mapping local power configurations, perceptions of Health, Safety, and Environment (HSE) standards, and lived experiences of harm and adaptation. By centering the case of Gunung Asri, this paper offers both theoretical and practical insights into the uneven geographies of sustainability under extractive industrialization and critiques the normalizing rhetoric of CSR as a veil for structural inequality and environmental injustice.

RESEARCH METHOD

This study was conducted in Gunung Asri Village, Tabang Subdistrict, Kutai Kartanegara Regency, East Kalimantan. The village spans an area of 217.118 km² with the dominant land use allocated to smallholder oil palm plantations covering 5,683 hectares and is inhabited by 2,035 individuals across 627 households. Geographically, it is bounded by Kutai Timur to the north, Kutai Barat to the south, Long Bleh Modang Village to the east, and Long Lalang Village to the west. The village's road infrastructure consists predominantly of dirt and semi-paved roads in varying conditions, and access to the subdistrict's administrative center requires more than eight hours of motorized travel. The transformation of the region from subsistence agriculture to an industrial enclave, marked by phases of logging, plantation, and mining since the 1970s, has dramatically restructured the local socio-economic landscape.

As of 2022, the demographic profile of Gunung Asri included 2,035 residents, 1,112 men and 923 women, organized into 627 households. The primary sources of income include oil palm cultivation, employment in mining companies, and other service-related activities. However, this economic transformation has not been without consequences. Emerging social problems include land conflicts, environmental pollution, growing dependence on extractive industries, and the persistent underdevelopment of educational and health infrastructure. The village's social fabric is dominated by a handful of powerful families who wield considerable influence over local decision-making processes, complicating efforts to distribute development benefits equitably. While household incomes may have increased due to industrial activity, this growth has not translated into improved ecological sustainability or social resilience, both of which remain pressing issues for the community.

The study employed a qualitative technique to generate a holistic understanding of the complex social dynamics under investigation (Fatimatuzzahroh et al., 2020; Ryan & Bernard, 2003). Informants were selected with attention to the diversity of social strata and how they experience the different impacts of the company's operations. Informants were chosen based on several key criteria, namely their role in society, the strength of their social networks within the company and government bureaucracy, professional diversity, educational level, and representation of youth and women.

Data collection unfolded in three primary stages: (1) a closed-ended survey capturing villagers' perceptions and experiences related to coal mining operations; (2) focus group discussions (FGDs) conducted in two sessions with residents from diverse social backgrounds; and (3) individual in-depth interviews with key informants exploring strategic issues, historical narratives, and emergent forms of social resistance or adaptation. A triangulation strategy was adopted to ensure reliability and credibility of the data (Knoblauch et al., 2005). Qualitative data were subjected to thematic descriptive analysis, while quantitative data were processed using frequency distribution analysis.

RESULT AND DISCUSSION

The socio-ecological transformations resulting from the extractive industry in Gunung Asri Village are not neutral and linear, but emerge through unequal power relations. These mechanisms create a dichotomy about who

benefits and who bears the costs of extractive expansion. Environmental risks and livelihood losses are borne by rural communities, while economic and political gains benefit corporations and local elites. In Gunung Asri, this mining-led growth has failed to provide a pathway to inclusive development, instead reproducing structural inequalities and deepening socio-ecological vulnerabilities.

The findings in Gunung Asri demonstrate how promises of jobs, infrastructure, and corporate social responsibility (CSR) are used to justify land displacement, environmental degradation, and the erosion of agricultural livelihoods. This aligns with the concepts of the resource curse and elite control (Bebbington et al., 2018), where mining profits are distributed unequally and mediated through local power networks that limit meaningful community participation. The consolidation of profits among village elites and external actors stands in stark contrast to the increasing suffering of ordinary people who must consume polluted water, experience declining agricultural productivity, bear health risks, and endure precarious work and wages.

This article highlights how local communities confront ecological pressures and assert their rights within the development process. This approach opens up a critical space to question not only the legitimacy of "development" but also institutional capacity as a key factor in determining whether mining becomes an opportunity for empowerment or an agent of inequality and ecological degradation. The case of Gunung Asri Village offers insight into how power relations between corporations, the state, and local elites shape the distribution of benefits and burdens. A striking phenomenon emerges: the use of CSR programs as hegemonic instruments to normalize environmental damage, and how communities respond through strategies of adaptation or resistance. This perspective frames socio-ecological change not as an "inevitable" outcome of modernization, but as the result of political and economic choices that can be questioned and challenged.

Air, Land, and Water under Siege: Community Perceptions of Environmental Risk in Extractive Frontiers

The transformation of the Belayan River encapsulates the multi-scalar socio-ecological disruptions engendered by extractive capitalism. Once a dependable source of drinking water and a productive aquatic for river fishers, the river is now characterized by turbidity, chemical contamination, and the near-collapse of freshwater biodiversity. Residents attribute these changes to sedimentation, mine effluents, and the intensification of coal barge traffic, which has displaced traditional transport of agricultural produce. The decline of fish stocks has dismantled a generational livelihood system, compelling many to enter precarious wage labor within the mining economy. This shift signifies not merely an occupational transition, but a structural reconfiguration of the local economy toward extractive dependency, wherein the very resources that underpinned subsistence have been systematically degraded.

Figure 2: Neighboring Settlement with Coal Mining Concession, Settlement Opposite the Coal Storage



Source: Observation Data Collection, December 2024

Gunung Asri is surrounded by at least three major corporate actors: PT Tambang Raya (a pseudonym, operating through subcontractors), PT Mega Mineral Sejahtera (MMS), and PT Agro Rimba Nusantara (ARN). The operations of MMS and Agro Mulia Berkah (a subsidiary of ARN) began around 2011–2012, with business permits covering 3,205 and 3,993 hectares respectively. Their operations span both coal mining and oil palm cultivation. Although these enterprises have absorbed a portion of the local workforce, no public data discloses the precise extent of local labor integration. According to the village head, local employment has indeed increased, yet the majority of workers continue to be recruited from outside the community.

Table 1: Chronological Overview of Environmental, Socio-Ecological, and Corporate-linked Impacts of Coal Mining Expansion in Gunung Sari Village

Impact Category	Specific Indicators	Year & Landscape Change	Related Company (Pseudonym)	Incurred Losses	Data Source
Dust and air pollution	Dust levels and particulate matter	Since 2006 – Increased airborne dust from overburden hauling and coal transport; respiratory complaints among residents.	MMS, PT Bara Energi Mandiri (BEM), PT Tambang Raya	Increased cases of respiratory illness and skin irritation	Local health data, field observation



/Land ownership conflict	Dispute over oil palm plasma land rights	Ongoing since 2006 – Persistent uncertainty over land rights related to plasma schemes, generating prolonged community disputes.	PT Tambang Raya and subcontractors	Uncertainty over oil palm plasma land rights	Resident interviews, legal document review
Traffic accidents	Accident risk along transport routes	Since 2006 – Elevated accident risk due to heavy mining truck and coal barge traffic through village roads.	M,MS, BEM	Elevated risk of accidents along mining transport routes	Resident interviews, photographic documentation
Soil degradation	Topsoil erosion and sediment deposition	Since 2010 – Loss of fertile topsoil in agricultural plots; sediment accumulation along riverbanks altering hydrological flows.	MMS, IP	Reduced agricultural yields and river navigability	Farmer interviews, field observation
Vegetation loss	Forest and riparian cover	Since 2010 – Significant reduction of riparian and upland tree cover; habitat loss for riparian and terrestrial fauna.	MMS, SBS	Decline in biodiversity and loss of ecosystem services	Field observation, satellite imagery analysis
Land eviction	Loss of community agricultural land	2011–2014 – Confiscation and exploitation of ±40 hectares of community land without fair compensation.	PT Sumber Bakti Sejahtera (SBS), subsidiary of PT Agro Rimba Nusantara (ARN)	±40 hectares of community land exploited without compensation	Farmer interviews, village land records
Flooding due to deforestation	Flood frequency and intensity	May 2022 – Marked increase in flood events reaching residential areas during heavy rainfall; linked to upstream deforestation and sedimentation.	PT Mega Mineral Sejahtera (MMS), PT Indah Pratama (IP)	4,910 families displaced	Resident interviews, flood incident reports

Source: Indepth Interviews Data Collection, December 2024

The presence of these corporations has undeniably reshaped Gunung Asri's socio-spatial landscape. Road construction, installation of public street lighting, scholarship provision, school development, and the establishment of healthcare facilities, such as a community health post supported through MMS's corporate social responsibility (CSR) program, represent tangible infrastructural benefits. Nevertheless, such contributions coexist with unresolved grievances, notably land dispossession by PT Sumber Bakti Sejahtera (a subsidiary of ARN) since 2011 and heightened flood risks reportedly linked to upstream mining activities. These developments exemplify a broader pattern wherein rural modernization, when driven by extractive logics, coexists with ecological degradation and the reproduction of socio-political inequality.

Table 2. Socio-Ecological Changes in Gunung Asri Village Before and After Coal Mining Expansion

Aspect	Condition Before Mining	Condition After Mining	Data Source
Water Quality	River water was clear, potable, and widely used for domestic needs.	River water is now turbid, foul-smelling, and unsafe for drinking; rising incidence of waterborne and skin diseases.	Resident interviews, field observation, local health reports
Agricultural Land	Fertile soils sustained rice cultivation and diverse horticultural crops.	Significant reduction of farmland due to land acquisition for mining and overburden dumping; declining agricultural productivity.	Farmer interviews, village agricultural records
Transformation of the Belayan River's Function	Served as a source of clean water, primary livelihood base for river fishers, and a transportation artery for agricultural products and inter-village mobility.	Water is polluted and non-potable; collapse of freshwater fish stocks; river now dominated by coal barges, restricting community access and disrupting mobility.	Fisher and resident interviews, field observation
Biodiversity	Abundant freshwater fish populations and diverse riparian fauna.	Sharp decline in fish populations; disappearance of several endemic species.	Fisher interviews, community ecological records
Local Economy	Anchored in agriculture, river fisheries, and small-scale trade of agricultural produce.	Shift toward dependency on wage labor in the mining sector and informal, precarious work.	Village leaders' interviews, local economic data
Transportation Infrastructure	River routes and village roads served daily mobility and agricultural distribution.	River routes dominated by coal barges; road damage from heavy mining trucks.	Resident interviews, photographic documentation
Disaster Risk	Low flood risk; river flow regulated by intact upstream forests.	Increased flood frequency and severity due to sedimentation and upstream deforestation.	Resident interviews, flood incident reports

Source: Indepth Interviews Data Collection, December 2024

Community perceptions of the health, safety, and environmental (HSE) impacts of mining activities at Gunung Asri indicate a significant gap between official performance metrics and ecological realities. A report by the local NGO Japsika (2024, unpublished) noted that aggregate HSE perception scores appeared relatively high, ranging from 3.32 to 3.43, while company-based evaluations revealed predominantly negative assessments. Meanwhile, PT Bara Energi Mandiri's (BEM) HSE Index was only 2.62, with common complaints including dust pollution, foul odors, pest outbreaks, and increasing crop failures. These reports underscore the environmental burden borne by local residents, characterized by deteriorating air quality, limited access to clean water, and increased health risks. The gap between statistical indicators and community narratives highlights the urgent need for participatory, transparent, and community-based environmental monitoring mechanisms.

Since the 1970s, the incursion of logging, palm oil, and coal mining companies has drastically transformed the ecological integrity of Gunung Asri. The conversion of primary forests into extractive zones has resulted in widespread environmental degradation. A particularly devastating outcome was the 2022 flood, which displaced 4,910 families, an event attributed to upstream deforestation and mining activities along the Belayan River. Air pollution caused by coal operations, particularly those linked to MMS, BEM, and Tambang Raya, remains a persistent concern.

Perception indices related to air quality, especially dust levels, range from 1.52 to 2.00 on a 5-point scale, reflecting an acute sense of environmental vulnerability among residents.

Land conflict constitutes another significant dimension of extractive expansion. Since 2011, residents have faced dispossession by Sumber Bakti Sejahtera. In one case from 2014, approximately 40 hectares of farmland belonging to individuals such as Sabran and Maulana were appropriated without compensation. The structural shift from agriculture and fishing toward wage labor in extractive industries has deepened villagers' dependency on volatile commodity markets, exposing them to heightened economic precarity. Although corporate CSR programs, such as the construction of clinics and provision of scholarships, have introduced some welfare benefits, these are unevenly distributed and tend to marginalize support for religious and cultural activities

Figure 1: Former RT 03, which has been Evicted and turned into a Coal Storage for Two Coal Companies



Source: Observation Data Collection, December 2024

In relation to HSE concerns, anxieties over air pollution, noise, and water contamination remain high. Survey data reveal average HSE perception scores ranging from 2.59 to 3.12, indicating widespread apprehension. Complaints include respiratory issues, foul odors, skin irritation, and increased traffic accidents linked to mining transport. These accounts cast serious doubt on the adequacy of corporate mitigation efforts and underscore the necessity for stronger, enforceable environmental accountability frameworks.

From Progress to Precarity: Taxonomy of Social Disruption in Resource-Rich Villages

The presence of extractive companies in the vicinity of Gunung Asri has triggered complex social transformations. Drawing on Merton's (1957) theory of social change, these transformations can be functional, dysfunctional, or entirely non-functional for local communities. In Gunung Asri, this is manifested in the improvement of village infrastructure and increased access to education. However, these positive developments coexist with emerging social problems, including land conflicts, rising drug abuse, and the unequal distribution of corporate assistance (Berger, 1963; field data, 2025). These contradictory dynamics underscore a non-uniform pattern of social change, where some community members benefit while others suffer losses or experience social exclusion.

Land-related conflict represents one of the most acute social issues in the area, exacerbated by the ambiguous status of land, much of which remains designated as Forest Cultivation Zones (KBK) without formal certification. The available data reveal overlapping land claims between villagers, between neighboring villages, and

between villagers and corporations (see Table 2). This reflects a broader failure in land governance, reinforcing the view that insecure tenure rights are a chronic source of social tension in rural settings (Sikor & Lund, 2009). Moreover, employment-related grievances, particularly resentment over the hiring of migrant laborers, have generated horizontal tensions that threaten the village’s social cohesion.

Another major concern is the deterioration of educational quality. Despite the existence of primary and junior secondary schools in Gunung Asri, field observations from 2025 reveal poor teacher discipline and low educational motivation among residents, especially in RT 4. This situation signals institutional failure in delivering quality education, resonating with UNESCO’s (2021) findings on the challenges of schooling in rural areas.

Taken together, the presence of extractive corporations in Gunung Asri has resulted in a pattern of polarized development, where economic benefits are accompanied by rising social fragmentation and the marginalization of vulnerable groups.

No	Category	Description	Social Impact
1	Agrarian Conflict	Overlapping land claims, KBK status, inter-villages disputes	Social tension, criminalization of residents
2	Employment	Recruitment of non-local labour without local participation	Perceived injustice, risk protest
3	Education	Teacher absenteeism, low student motivation	High dropout rates, low-quality human capital
4	Environment	Dust Pollution. Flooding, lack of clean water	Decline in resident’s quality human capital
5	Sosial ill	Drug abuse, gambling, cover prostitution	Erosion of social values, rising crime
6	Village governance	Allegation of misappropriated corporate aid funds	Loss of trust in village authority

Source: Indepth Interviews Data Collection, December 2024

Patrimonial Power and the Hollowing of Village Institutions

Patrimonial power is a form of authority in which political relationships are deeply personalized, often structured around kinship, loyalty, and informal networks rather than formal-rational bureaucratic systems. Max Weber originally conceptualized patrimonialism as a subtype of traditional authority, where the ruler's power is treated as an extension of personal property and governance operates through personal bonds rather than institutionalized rules (Weber, 1978). In patrimonial systems, access to resources, influence, and decision-making is typically mediated by one's proximity to the central power holder, often a patriarch or elite figure, rather than through transparent, rule-based procedures.

The case of Gunung Asri can be aptly described as patrimonial because the core power dynamics are embedded in familial and business ties among local elites, rather than functioning through open, participatory governance structures. The village head's formal legitimacy is overshadowed by informal economic elites whose influence stems from personal trust and extra-local networks. Decisions regarding public resources and development are filtered through this closed network, with loyalty and familial affiliation determining access, mirroring patrimonial tendencies where public office serves private interests more than collective welfare.

The inter-elite relationships in Gunung Asri village have consolidated into a tightly knit yet exclusionary power network. Key figures such as “Rafiq” (Village Head), “Marlan” (a successful entrepreneur), and “Nasir” (Customary Council Leader) form a power circle heavily shaped by kinship and business interests. While Rafiq holds formal administrative legitimacy as the village head, his actual influence on the ground is considerably overshadowed by actors like Marlan and another local businessman, “Ilham.”

This elite network is characterized by a high degree of internal cohesion, yet its benefits are largely confined to the inner circle, marginalizing political rivals such as “Darmawan” (Village Consultative Body Chair) and “Surya” (a respected former village head). This pattern of elite exclusion has fostered social and political polarization within

the village. The dominance of familial and entrepreneurial ties over democratic accountability reflects a patrimonial form of authority, wherein legitimacy is derived more from personal loyalty and material control than from participatory governance.

The relationship between the village elites and the general population is predominantly functional and administrative, rather than participatory or inclusive. Rafiq, for instance, is frequently absent from the village and delegates substantial administrative duties to his secretary. For most ordinary residents, the village administration is perceived less as a public institution and more as a family-run syndicate, inaccessible to those outside its immediate circle.

As a result, non-formal actors such as Darmawan and Surya have emerged as alternative channels for political advocacy and community representation. This shift underscores a growing public disillusionment with the formal village apparatus, particularly concerning the lack of transparency in the distribution of social assistance and village development projects. Despite the relatively improved economic conditions in Gunung Asri, largely due to the presence of multiple corporations in the vicinity, the distribution of benefits remains highly uneven, exacerbating existing social inequalities.

Table 4: Elite Constellations and Interest Alignment in a Resource-Extractive Village

No	Pseudonym	Power	Legitimacy	Urgency	Primery Interest
1	Rafiq (Village Head)	Medium	Very strong (Formal administrative)	Village governance	Personal Business interests
2	Marlan (Entrepreneur)	Very strong (economic)	Strong (Trust based)	External business networks	Business expansion
3	Darmawan (BPD Chair)	Moderately strong (regulatory)	Strong (Institutional position)	Village transparency	Oversight and justice
4	Surya (Former Village Head)	Weak (formally retired)	Strong (social legitimacy)	Citizen's aspiration	Maintaining social stability
5	Ilham (Local businessman)	Strong (Local economy)	Moderate	Corporate- community relations	Smooth operation of personal enterprise
6	Dedy (Youth organization leader)	Weak	Moderate	Youth engagement	Youth empowerment

Source: Indepth Interviews Data Collection, December 2024

The entanglement of local actors with external power structures introduces a new layer to the village's political economy. Marlan, for example, maintains business ties that extend to the district and even national level, granting him access and influence that surpass the reach of most local political elites. This external connectivity enhances his structural power, creating a dependency on business elites that weakens the institutional autonomy of the village government. In such a configuration, where economic actors dominate power, and legitimacy and urgency are unevenly distributed, village development efforts are susceptible to elite capture, personal gain, and corruption. Consequently, meaningful community empowerment becomes difficult to achieve unless structural reforms are introduced to democratize village-level political participation.

CINCLUSION

This study yields three main findings. First, coal mining has generated limited and uneven economic benefits, inflicting disproportionate environmental and social costs on local communities. While infrastructure development, job opportunities, and CSR programs have been ongoing, they have also been accompanied by land displacement, decreased agricultural productivity, water and air pollution, and increased health risks. These impacts collectively undermine agricultural-based livelihoods, creating dependency and vulnerability to wage labor in the extractive sector. Second, the socio-ecological degradation in Gunung Asri is inextricably linked to local power relations. Meaningful community participation is hindered by mining benefit distribution and compensation mechanisms mediated through patrimonial elite networks. This elite control not only marginalizes vulnerable groups but also normalizes environmental damage by framing it as an inevitable consequence of development. Third, the transformation of the Belayan River illustrates how environmental degradation operates as a form of socio-economic displacement. The impact is that the erosion of rivers' functions as sources of clean water, fisheries, and mobility infrastructure has destroyed long-standing livelihood systems and increased household vulnerability. This process reflects deliberate political and institutional choices, not an inevitable consequence of modernization.

This research contributes to the study of environmental sociology and political ecology by providing micro-level empirical evidence on how extractive capitalism operates through local governance structures. The study develops an analytical framework linking environmental degradation to the reconfiguration of rural authority and resource access, integrating the concepts of the resource curse, elite capture, and patrimonial power. The findings demonstrate how CSR functions as a hegemonic instrument that suppresses social dissent without addressing structural inequalities. This study strengthens the argument that socio-ecological transformations under extractive development are fundamentally political, dependent on power relations and institutional capacity.

The pressing policy implication is the need for a paradigm shift in mining governance from a compensatory-technocratic approach to a substantive social and ecological justice framework. The government needs to strengthen the enforcement of environmental regulations, ensure transparency and meaningful community participation in licensing, monitoring, and determining compensation schemes, while simultaneously limiting the dominance of local elites in the distribution of mining benefits. CSR must be repositioned as a legally binding mechanism for redistribution and socio-ecological restoration, based on the real needs of communities, and integrated with the agenda of protecting agrarian livelihoods and access to natural resources.

Further research needs to be directed at longitudinal studies of the long-term impacts of post-mining on household socio-ecological resilience, comparative analysis across extractive regions to map variations in local power configurations, and exploration of the perspectives of vulnerable groups—including women, youth, and indigenous communities, who have been marginalized in studies of extractivism. An interdisciplinary approach that combines political ecology, environmental sociology, and public policy studies is crucial for formulating alternatives for post-extractive development that are more just, democratic, and sustainable.

Acknowledgement

This brief reflection is part of a larger social mapping effort made possible through the generous logistical support of Jaringan Pembangunan Sosial Kalimantan (JAPSIKA) and the funding facilitation provided by PT SOMA. Their collaboration has been vital in enabling grounded, community-centered research in the region.

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