

The Effectiveness of Police Intelligence in Handling Mining-Related Crimes: Evidence from Kutai Kartanegara (2023-2025)

Original Article

Redika Adytia Silalahi^{1*}, Surya Nita², Sylvia Prisca Delima³

¹⁻³Police Science Studies, School of Strategic and Global Studies, Universitas Indonesia, Indonesia
Email: ¹⁾ redikasilalahi@gmail.com

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Abstract

Illegal mining remains one of the most persistent criminal challenges in Kutai Kartanegara, marked by recurring hotspots, organized operations, and frequent use of heavy machinery. Police records from 2023–2025 show fluctuating yet consistently high activity, totaling twenty cases. While several cases advanced to Stage II (P21) and were transferred to the District Attorney, many remained at the inquiry stage, revealing weaknesses in intelligence detection, evidence gathering, and identification of broader criminal networks. This study examines how police intelligence investigations are conducted, the operational challenges encountered, and the effectiveness of intelligence-led policing against illegal mining. Using qualitative field research, the study combines non-participatory observation and semi-structured interviews with key officials, including the heads of the Criminal Investigation Unit, Intelligence Unit, and General Crime Sub-Unit. Primary field data are supported by police documents, regulations, and previous academic literature, then analyzed through descriptive qualitative methods and triangulation. Findings show strong tactical capability in detecting active sites and advancing cases to Stage II. However, major limitations persist: difficult access to remote areas, limited surveillance technology, weak inter-agency coordination, and difficulty mapping networks beyond field operators. Consequently, illegal mining repeatedly occurs in the same locations, indicating current intelligence practices are insufficient for long-term prevention. Strengthening analytical capacity, improving technological support, and enhancing collaboration are essential to increase enforcement effectiveness.

Keywords: Field Investigation, Kutai Kartanegara Police, Illegal Mining, Intelligence-Led Policing.

1. Introduction

Mining related crimes have emerged as a serious concern in Indonesia, particularly in resource rich regions such as Kutai Kartanegara. Illegal mining activities, known as *Pertambangan Tanpa Izin* or PETI, have created significant legal and environmental challenges. These activities disrupt ecological balance, damage river systems, contribute to deforestation, and cause the state to lose substantial revenue. The problem becomes even more severe when illegal mining operations are linked to organized groups that operate discreetly in remote areas. Kutai Kartanegara, with its large coal reserves and strategic economic role in East Kalimantan, faces a high frequency of violations involving mining sites that operate without proper legal permits. These conditions show that mining related crime is not only a matter of administrative non-compliance but also a threat to environmental security, community welfare, and regional stability (Kostić & Matić Bošković, 2025).

The vast territory of Kutai Kartanegara makes it difficult for law enforcement agencies to monitor illegal mining activities effectively. Many unlawful mining sites are located deep within forests, hills, and riverbanks, areas that are not easily accessible through routine



supervision. Moreover, illegal mining actors often adopt sophisticated methods to conceal their operations, such as moving extraction sites, using unofficial access routes, or operating at night (Yeboah, 2023). These factors make conventional law enforcement measures insufficient. As a result, the intelligence division within the police institution plays a crucial role in identifying early indications of illegal mining, collecting field based information, monitoring suspicious movements, and producing intelligence reports that guide subsequent enforcement actions (Manungkalit, 2025).

In order to strengthen the urgency of this study, a space is reserved for the insertion of mining related crime data from the most recent three year period. These data will illustrate whether illegal mining activities have increased, remained stable, or declined within the Kutai Kartanegara region. The information will later be integrated into the narrative to support the argument regarding the importance of intelligence operations in addressing mining violations. Below is the designated space for these data, which will be filled once the relevant information is provided. As shown in Table 1, the number of illegal mining cases handled by the Kutai Kartanegara Police fluctuated but remained consistently high, totaling 20 cases between 2023 and 2025.

Table 1. Illegal Mining Cases Handled by Kutai Kartanegara Police

Year	Number of Cases	General Status	Key Notes
2023	10 cases	Stage II, Investigation	Concentrated in Loa Kulu; many heavy equipment (excavators) found
2024	4 cases	Stage II	More varied locations; recurring cases with similar patterns
2025	6 cases	Under Inquiry & Investigation	Indication of rising illegal mining activity

These data indicate a consistent pattern: illegal mining never completely stops; it merely shifts in intensity and modus operandi. Most cases occur in the Loa Kulu area, particularly in Blok C8, which has become a hotspot for illegal mining operations. Almost all cases involve the use of heavy machinery such as Hitachi, Komatsu, XCMG, Sunward, and Zoomlion excavators, demonstrating that these activities are conducted in an organized manner and on a medium to large operational scale. Moreover, the recurrence of the same reporting individuals, such as Saptanto Puguh W., suggests that certain actors or groups routinely monitor mining activities, while also indicating that similar criminal patterns reoccur in the same locations and are likely linked to the same networks of perpetrators.

The situation becomes more complex because several cases remain at the inquiry stage, particularly in 2025. This condition suggests difficulties in identifying field operators, tracing the ownership of heavy equipment, and linking illegal mining activities to higher-level actors. This pattern reflects an important gap: illegal mining activities are evolving more rapidly than the ability of police intelligence units to conduct early detection, analysis, and preventive action (Wulandary, 2021).

In addition, the adaptive characteristics of illegal mining such as the rapid relocation of heavy equipment, the use of freelance operators, and the shifting of mining sites create further challenges for intelligence officers of the Kutai Kartanegara Police. Field information is often fragmented, inter-unit coordination requires time, and the transformation of intelligence findings into formal investigative processes frequently involves lengthy stages. These operational gaps show that although law enforcement efforts are ongoing, early detection mechanisms are not yet sufficiently effective in preventing new cases from emerging.

For these reasons, it is essential to examine more deeply how intelligence investigations are carried out, what obstacles are encountered, and to what extent intelligence operations contribute strategically to the enforcement of illegal mining laws (Alkadrie & Fitriani, 2025). Such analysis is crucial because the success of uncovering illegal mining cases does not solely rely on criminal investigation, but begins with the ability of intelligence officers to recognize patterns, map actors, and identify potential criminal activity before it expands into larger operations.

Despite its strategic importance, the intelligence function at the Kutai Kartanegara Police encounters several operational obstacles. Geographic barriers limit access to illegal mining locations, especially in regions with dense forest cover and rugged terrain. Intelligence officers also face limitations in equipment, surveillance tools, and transportation resources. Coordination with external institutions, including the regional mining office, environmental agencies, and local government bodies, is not always optimal. The complexity of interests surrounding mining activities, including economic incentives and community involvement, adds further difficulty to intelligence operations. These realities highlight the importance of studying how intelligence investigations are conducted in actual field conditions and to what extent these investigations contribute to law enforcement effectiveness.

Given the complexity of the issue, this research utilizes a qualitative approach combined with field research to capture the real conditions of intelligence work related to mining crime. Primary data will be collected through non participatory observation and semi structured interviews with intelligence officers and relevant stakeholders. Through observation, the researcher will witness first-hand how intelligence activities are conducted, how officers collect information, how operational decisions are made, and how field based constraints influence the process. Meanwhile, semi structured interviews will provide more detailed explanations from intelligence personnel regarding internal challenges, decision making techniques, information analysis methods, and the procedures used to monitor illegal mining operations.

The combination of observation and interviews provides a comprehensive approach to understanding intelligence led policing in the context of illegal mining. This research aims not only to describe field findings but also to assess the effectiveness of intelligence operations in detecting, preventing, and responding to mining related crimes in Kutai Kartanegara. The study also seeks to identify potential improvements that can strengthen intelligence capabilities, enhance interagency collaboration, and develop early detection mechanisms for mining violations.

The study is expected to contribute both academically and practically. Academically, it expands the discussion on intelligence functions within natural resource crime enforcement, an area that requires deeper attention in Indonesia's regulatory and policing landscape. Practically, the findings can support the Kutai Kartanegara Police and other relevant institutions in strengthening their intelligence strategies, improving field operations, and designing more effective responses to illegal mining activities. By examining the realities of intelligence work, this research helps illuminate the challenges and opportunities in protecting natural resources and maintaining environmental security in regions vulnerable to mining related crimes.

2. Literature Review

2.1. Illegal Mining as Environmental and Organized Crime

Illegal mining, commonly referred to in Indonesia as *Pertambangan Tanpa Izin* (PETI), is categorized as a form of environmental and natural-resource crime (Ihsan et al., 2025). Unlike conventional criminal offenses, these activities combine economic motivation, environmental damage, and organized operational patterns. Environmental criminology explains that resource crimes frequently emerge in areas with weak supervision, strong market demand, and high economic incentives. Because offenders can repeatedly operate in the same location, enforcement cannot rely solely on reactive investigation but requires preventive mechanisms capable of identifying patterns and anticipating criminal behavior.

Illegal mining also demonstrates characteristics of organized activity. Operations typically involve multiple roles such as field operators, equipment owners, transporters, financiers, and buyers (Williams, 2014). Consequently, arresting individuals at the site often does not stop the activity, since the broader network remains intact. This condition makes illegal mining a persistent crime rather than an isolated violation.

2.2. Intelligence-Led Policing

Intelligence-Led Policing (ILP) is a policing framework that shifts law enforcement from incident-based response to information-based prevention. Lowenthal describes intelligence as a cycle consisting of planning, collection, processing, analysis, dissemination, and feedback. Through this cycle, intelligence supports decision-making rather than merely documenting crime events (Ovsianiuk, 2024).

Ratcliffe (2016) emphasizes that ILP prioritizes identifying repeat offenders, crime networks, and geographic concentrations to guide resource allocation. In environmental crime cases, ILP becomes particularly relevant because perpetrators often adapt quickly by relocating sites or changing methods. Therefore, intelligence must function not only to detect crimes but also to predict and prevent their recurrence.

2.3. Network-Based Intelligence and Inter-Agency Coordination

Studies on resource crime show that enforcement frequently fails when investigations focus only on field actors (Schneider, 2006). Effective prevention requires mapping financial flows, equipment ownership, and distribution chains. Network-based intelligence enables law enforcement agencies to target organizers and financiers, reducing the likelihood of repeated operations (Strang, 2014).

Coordination is also crucial because environmental crime involves multiple authorities such as police, mining regulators, and environmental agencies. Weak information sharing often results in fragmented enforcement actions (Barrett & White, 2017). Collaborative intelligence mechanisms improve data integration and strengthen legal follow-through.

2.4. Hotspot Policing and Preventive Strategy

Environmental criminology demonstrates that crime tends to concentrate in specific geographic locations due to accessibility, opportunity, and economic value (Bottoms & Wiles, 2020). Hotspot policing allows authorities to predict where offenses are likely to occur and deploy preventive measures. However, mapping locations alone is insufficient if not accompanied by strategic intervention addressing the networks operating behind the sites (Fernandez et al., 2019).

2.5. Operational Constraints in Intelligence Work

Previous research highlights common limitations affecting intelligence effectiveness, including geographic barriers, limited surveillance technology, inadequate analytical tools, and bureaucratic coordination challenges (Al Waroi, 2024). In many developing regions, intelligence remains tactical, focused on detecting incidents, rather than strategic, focused on prevention. As a result, enforcement may successfully uncover cases but fail to reduce recurrence.

Based on these perspectives, the effectiveness of intelligence in handling illegal mining depends on three dimensions: detection capability (tactical intelligence), pattern and network analysis (analytical intelligence), and collaborative prevention mechanisms (strategic intelligence). This framework forms the basis for evaluating intelligence operations in mining-related crime enforcement.

3. Methods

This research uses a qualitative field research design to examine how the Kutai Kartanegara Police conduct intelligence operations in addressing illegal mining. The qualitative approach allows the researcher to explore operational practices and institutional challenges directly in their real context. Primary data are collected through non participatory observation and semi structured interviews. Non participatory observation is conducted to understand how intelligence activities are carried out in daily practice without the researcher being involved in operational tasks. This method enables the researcher to observe workflows, information gathering processes, and practical constraints in monitoring illegal mining. Semi structured interviews are conducted with three key informants who play central roles in mining related law enforcement. These informants are the Head of the Criminal Investigation Unit (AKP Ecky Widi Prawira), the Head of the Intelligence Unit (AKP Andy Wahyudi), and the Head of the General Crime Sub Unit (Ipda I Putu Rinda).

Their insights provide a comprehensive understanding of how intelligence information is produced, analyzed, and used in responding to illegal mining cases. Secondary data are obtained from academic literature, police documents, mining regulations, and previous studies relevant to environmental and resource related crimes. All data are analyzed using a descriptive qualitative technique by categorizing themes and patterns based on the three research questions. Triangulation of observation and interview data is used to strengthen credibility and ensure consistency of findings. This methodological approach provides a concise yet reliable understanding of intelligence led policing in illegal mining cases within Kutai Kartanegara.

4. Results and Discussion

4.1. Research Results

Illegal mining in Kutai Kartanegara continues to present a complex and persistent challenge for law enforcement, despite ongoing efforts to detect, monitor, and prosecute offenders. The dataset of twenty illegal mining cases recorded by the Kutai Kartanegara Police between 2023 and 2025 reflects both the operational strengths and structural limitations of intelligence-led policing in this region. These cases reveal not only the scale and organization of illegal mining activities often involving industrial machinery such as excavators but also the dynamic and adaptive nature of the actors behind them. Understanding how intelligence investigations are conducted, what obstacles they face, and how effective they are in

supporting law enforcement requires integrating empirical data with relevant intelligence and policing theories. In the Indonesian criminal justice system, cases move through Stage I when being examined by the police, and Stage II (P21) when the case file is declared complete and officially transferred to the District Attorney. This procedural distinction is crucial because intelligence effectiveness can be partially assessed through the number of cases successfully progressing to Stage II. Cases that remain in the inquiry phase (*lidik*) often indicate that the intelligence process encountered obstacles in gathering evidence, identifying actors, or establishing the elements of the crime.

Between 2023 and 2025, a clear pattern of fluctuations in illegal mining cases emerges. In 2023, the police handled ten cases, most of which were successfully moved to Stage II. The year 2024 saw a decline to four cases, all of which also reached Stage II, suggesting a period of relatively effective intelligence operations and investigative follow-through. However, the number rose again in 2025 to six cases, three of which remained in inquiry status. These incomplete cases, particularly those lacking detailed location or equipment information, reveal the beginning of a significant gap in intelligence effectiveness. The data also reveal geographic concentration: multiple cases in 2023, 2024, and 2025 occurred in or around Loa Kulu, with Blok C8 repeatedly appearing as a hotspot. This suggests that intelligence officers have successfully mapped recurring zones of illegal mining activity, aligning with Lowenthal’s conception of intelligence as a cycle beginning with information gathering and culminating in analytical interpretation that aids decision-making. However, while hotspot mapping is consistently achieved, deeper intelligence analysis that identifies the networks, financiers, and equipment suppliers behind illegal mining operations remains limited. This reflects a partial functioning of the intelligence cycle, where tactical information is gathered but strategic layers of the operation remain obscured. The detailed case distribution is presented in Tables 2, 3, and 4.

Table 2. Summary of Cases for the Year 2023 (Total 10 Cases)

No.	Status (Case Progress)	Number of Suspects	Location	Evidence
1	Stage II	1	Loa Kulu	Hitachi Excavator, Mobile Phone
2	Stage II	1	Margahanyu Village	XCMG Excavator
3	Stage II	1	Loa Kulu, Block C8	Zoomlion Excavator
4	Stage II	4	No location provided	Sunward Excavator
5	Stage II	1	No location provided	Shovel
6	Stage II	1	Loa Kulu	Komatsu Excavator
7	Stage II	1	Loa Kulu	Excavator
8	Stage II	1	No location provided	Coal samples
9	Investigation (Sidik)	1	Jonggon Jaya Village	Plastic bag containing coal
10	Investigation (Sidik)	1	Loa Kulu	Komatsu Excavator

Table 3. Summary of Cases for the Year 2024 (Total 4 Cases)

No.	Status (Case Progress)	Number of Suspects	Location	Evidence
1	Stage II	1	Margahanyu	Hitachi Excavator, Mobile Phone
2	Stage II	1	Not available	XCMG Excavator
3	Stage II	1	Not available	Komatsu Excavator
4	Stage II	1	Not available	Mobile Phone

Table 4. Summary of Cases for the Year 2025 (Total 6 Cases)

No.	Status (Case Progress)	Number of Suspects	Location	Evidence
1	Inquiry (Lidik)	0	Not available	None
2	Investigation (Sidik)	1	Karya Merdeka Village	Komatsu Excavator
3	Stage II	1	Not available	Mobile Phone, Safety Boots
4	Inquiry (Lidik)	0	Not available	None
5	Stage I	1	Not available	Mobile Phone
6	Inquiry (Lidik)	0	Not available	None

4.2. Discussion

The process of intelligence investigation in these cases typically begins with early detection, which relies primarily on human intelligence (HUMINT). Several cases originated from reports submitted by the same individuals, such as Saptanto Puguh W, whose repeated involvement indicates the existence of a small but active group of informants. This reliance on community-based information aligns with traditional policing patterns in areas where local residents serve as the first observers of illegal activity. Once a report is received, intelligence personnel typically conduct field verification, wherein officers observe active or abandoned mining sites, identify machinery, and document the presence of workers. Many 2023 and 2024 cases resulted in the seizure of excavators Hitachi, Komatsu, XCMG, Sunward, and Zoomlion demonstrating that field verification was successful in capturing physical evidence of illegal mining activity. The presence of heavy machinery not only strengthens the evidentiary basis of a case but also illustrates the organized and financially structured nature of operations, which further underscores the need for intelligence approaches capable of mapping broader illegal networks (Kurniawan & Dharma, 2025).

However, not all intelligence processes result in successful evidence collection. The 2025 dataset includes several cases (Case 15, Case 18, and Case 20) where location information was incomplete or missing entirely, preventing the cases from progressing beyond inquiry. This suggests challenges in accessing remote forested areas, difficulty in responding quickly enough before operations relocate, or limitations in monitoring tools available to intelligence officers. Illegal mining operations often employ mobile strategies, shifting locations rapidly and transporting machinery stealthily, which poses a significant challenge to intelligence units that lack real-time surveillance technologies. These operational gaps are consistent with Bayley's theory that policing effectiveness is constrained by logistical and geographic realities. Without the ability to reach or monitor remote areas efficiently, intelligence officers may fail to collect

timely or accurate information, resulting in cases stalling at early stages of the investigative process.

Resource constraints further complicate intelligence work. The repeated involvement of heavy machinery suggests that illegal mining operations possess substantial financial backing, yet the intelligence unit lacks advanced technological tools such as drones, satellite imagery, or geospatial mapping systems that would allow continuous surveillance of vast land areas. As a result, intelligence personnel rely heavily on physical presence, patrols, and manual observations, all of which consume time, energy, and operational funds. This imbalance between the sophistication of illegal actors and the limited technological capacity of the police creates an environment in which illegal mining can flourish even in areas that are known hotspots. The inability to track machinery movements or map underground financial flows further shows that strategic intelligence, including network or financial intelligence, remains underdeveloped. According to Friedman's legal system theory, the effectiveness of law enforcement depends heavily on institutional structures supporting policing; in this context, insufficient technological and logistical support weakens the enforcement mechanism (Febrian, 2020).

Intelligence operations also face challenges related to inter-agency coordination. Illegal mining investigations often require collaboration with land authorities, environmental agencies, and mining regulatory bodies to confirm land status and legal permits. Delays in obtaining official confirmation about mining licenses or land ownership records can hinder intelligence reporting and investigative progress (Candra, 2024). This issue contributes to the stagnation of cases in the inquiry stage. The absence of clear inter-agency coordination mechanisms results in intelligence officers shouldering a disproportionate share of investigative responsibility, which is not sustainable in the long term. Soekanto's theory emphasizes that law enforcement effectiveness is influenced by legal substance, structure, culture, and society (Soekanto, 2004). In the context of illegal mining, weaknesses in the institutional structure such as fragmented coordination directly reduce the effectiveness of both intelligence gathering and procedural enforcement.

Socio-economic factors further complicate intelligence operations. Many of the individuals encountered at illegal mining sites are machine operators or laborers with limited economic opportunities. These workers are often hired on a daily basis and have no knowledge of the broader organization behind the mining operation. This makes intelligence gathering difficult because field workers cannot provide meaningful information about the networks financing illegal mining. The socio-economic dependency of local communities on mining activities also reduces community willingness to cooperate with intelligence officers. If illegal mining offers economic benefits, either through direct employment or indirect local revenue, communities may be reluctant to report activities or may even obstruct intelligence investigations. This phenomenon aligns with Soekanto's observation that societal conditions shape the effectiveness of law enforcement, as public attitudes and economic pressures often determine the degree of cooperation between civilians and police.

Assessing the effectiveness of intelligence operations during the 2023-2025 period requires evaluating accuracy, timeliness, relevance, and contribution to legal outcomes. In terms of accuracy, intelligence officers were generally successful in detecting active illegal mining operations when they could reach relevant locations, as evidenced by the number of cases with seized excavators. However, the inconsistent availability of location information in several cases indicates a decline in accuracy or an increase in the ability of illegal miners to hide their operations (Putri et al., 2024). Timeliness is another key factor: the resurgence of illegal mining cases in 2025 after a decline in 2024 suggests that intelligence-led monitoring

was not sufficiently rapid or continuous to prevent the emergence of new operations. Illegal mining persisted in hotspots previously detected in earlier years, indicating that preventive intelligence intended to stop crimes before they escalate was not functioning optimally.

The relevance and depth of analytical intelligence also appear limited. While intelligence officers consistently identified hotspots like Loa Kulu and Blok C8, the lack of arrests or identification of financiers or organizers shows that intelligence operations remain primarily tactical rather than strategic. Effective intelligence should dismantle actor networks, not merely detect individual occurrences of illegal mining. The recurrence of similar cases year after year suggests that the intelligence process is not reaching higher organizational layers of illegal mining structures.

Despite these shortcomings, intelligence operations have had a measurable impact on legal processes. A significant number of cases reached Stage II, particularly in 2023 and 2024, demonstrating that intelligence work did contribute to building evidentiary bases strong enough to meet prosecutorial standards. However, the persistence of illegal mining in the same areas indicates that prosecution alone is not sufficient to produce deterrent effects. According to Bayley, real policing effectiveness is achieved not only when cases are processed through the criminal justice system, but when crime itself is reduced in frequency (Bayley, 2005). In this regard, intelligence operations in Kutai Kartanegara can be described as moderately effective: successful at enabling prosecutions, but not capable of significantly reducing or preventing illegal mining activity.

In conclusion, the intelligence-led policing model employed by the Kutai Kartanegara Police during the 2023-2025 period shows a mixture of strengths and limitations. Intelligence officers demonstrate strong tactical capabilities in detecting illegal mining operations, gathering physical evidence, and supporting the procedural advancement of cases to Stage II. However, structural constraints including limited technological resources, challenges in accessing remote areas, weak inter-agency coordination, and socio-economic dynamics that discourage community cooperation significantly undermine their ability to perform strategic intelligence functions. Illegal mining continues to recur in established hotspots, demonstrating that the preventive and network-dismantling aspects of intelligence work require substantial improvement. To achieve long-term effectiveness, intelligence operations must evolve beyond site-based detection and integrate advanced surveillance technologies, comprehensive network analysis, and strengthened institutional cooperation. Only through such enhancements can intelligence-led policing meaningfully disrupt illegal mining activities and contribute to sustainable law enforcement outcomes in Kutai Kartanegara.

5. Conclusion

The findings show that intelligence-led policing in Kutai Kartanegara is tactically effective but strategically limited. Intelligence officers are able to detect active illegal mining sites, seize heavy equipment, and support several cases in progressing to Stage II. However, illegal mining continues to recur in the same hotspots, indicating that current intelligence practices have not yet achieved long-term prevention. Many cases in 2025 remained in the inquiry stage, suggesting gaps in early detection and evidence completeness. To enhance effectiveness, the police must strengthen technological capabilities, improve coordination with regulatory institutions, and develop deeper network-based intelligence. Without these improvements, illegal mining will continue to evolve more quickly than law enforcement can respond.

Future research should examine illegal mining enforcement using a broader comparative and interdisciplinary approach, for example by comparing intelligence-led policing practices across multiple regions with similar geographic and socio-economic characteristics to identify best practices and structural differences. Further studies could also integrate criminology, environmental governance, and data analytics to map criminal networks beyond field operators, including financiers and supply chains. In addition, quantitative or mixed-method research measuring the impact of surveillance technology, community reporting systems, and inter-agency collaboration on case clearance and recurrence rates would provide stronger evidence of preventive effectiveness and help design more sustainable long-term enforcement strategies.

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