

The Role of Expert Opinions at the Investigation Stage in Efforts to Uncover Illegal Gold Mining Crimes Based on Article 120 of the Criminal Procedure Code in West Kalimantan

Susi Turti^{1*}, Adi Nur Rahman²

¹ Program Studi Magister Ilmu Hukum, Fakultas Hukum, Universitas Bhayangkara Jakarta, Indonesia;
Email: susitutri@gmail.com

² Program Studi Magister Ilmu Hukum, Fakultas Hukum, Universitas Bhayangkara Jakarta, Indonesia;
Email: adirurahman@gmail.com

* Corresponding Author : Susi Turti

Abstract: This study examines the critical role of expert opinions from the Ministry of Energy and Mineral Resources during the investigation phase in uncovering gold mining without permit crimes under Article 120 of the Indonesian Criminal Procedure Code in West Kalimantan. The research employs a normative-empirical approach, analyzing legal provisions, government reports, and judicial practices to assess how experts contribute to establishing the material truth of cases. Findings reveal that expert opinions are indispensable for verifying the absence of permits, assessing environmental damage, and quantifying state losses, thereby strengthening evidentiary frameworks for prosecutors and judges. However, challenges persist, including coordination gaps between law enforcement and, insufficient technical capacity among investigators, and potential threats to expert independence. The study concludes that optimizing the use of ESDM expertise is not merely procedural but strategic for effective, accountable, and just enforcement against which remains a significant threat to national resource sovereignty and environmental sustainability.

Keywords: Article 120; Expert Opinion; Gold Mining Without Permit; Investigation Phase; West Kalimantan.

Received: October 15, 2025

Revised: November 25, 2025

Accepted: December 28, 2025

Published: December 30, 2025

Curr. Ver.: December 30, 2025



Copyright: © 2025 by the authors.
Submitted for possible open
access publication under the
terms and conditions of the
Creative Commons Attribution
(CC BY SA) license
(<https://creativecommons.org/licenses/by-sa/4.0/>)

1. Introduction

The illegal gold mining activities in West Kalimantan are not merely an economic issue for local communities but have evolved into a serious threat to the nation's sovereignty over its mineral resources, environmental sustainability, and the enforcement of national law. These operations have caused extensive ecosystem damage and resulted in state losses amounting to trillions of rupiah annually, as reported by the Directorate General of Minerals and Coal (Minerba). (Asri and Henda, 2019).

This phenomenon indicates that legal violations in the mining sector have transformed from individual acts into part of an organized informal economic structure, often involving criminal networks and gaining social tolerance as they are perceived as alternative sources of livelihood for economically disadvantaged communities. (Umam, Pawennai and Razak, 2023) In such circumstances, law enforcement can no longer rely solely on conventional repressive approaches, such as administrative inspections or witness testimonies. Illegal mining offenses are technical and complex in nature, thus requiring a scientific approach to bridge the gap between formal legal aspects and technical facts in the field. (Kristiawan and Wahyuningsih, 2018).

The expert role of the Ministry of Energy and Mineral Resources is crucial in assisting investigators to prove the elements of a criminal act, particularly the element of “without a permit,” which constitutes the core of the criminal provisions in Article 158 of Law Number 3 of 2020 concerning the Amendment to Law Number 4 of 2009 on Mineral and Coal Mining (the Mining Law). This article stipulates criminal sanctions of up to five years’ imprisonment and a fine of up to one hundred billion rupiah for illegal mining offenders. (Gosal, 2024).

2. Literature Review

Perri Yanto, in his thesis entitled “*Law Enforcement Against the Criminal Act of Illegal Gold Mining in the Jurisdiction of Kuantan Singingi Police Department (Case Study 2017–2018)*”, explains the mechanism of law enforcement from the investigation stage to the transfer of case files to the prosecutor’s office, focusing on obstacles such as the community’s economic conditions and the low level of legal awareness. (Yanto, 2021).

In his thesis “*Law Enforcement of Illegal Mining (PETI) in Wonosobo Regency*”, Budi Raharjo analyzes the factors that influence the effectiveness of law enforcement, including the substance of the law, institutional aspects, and the legal culture of the community, although he does not specifically discuss the role of expert opinions from the Ministry of Energy and Mineral Resources (ESDM) or the implementation of Article 120 of the Criminal Code. (Raharjo, 2018).

Kontu, Harmen Rivaldi dkk. dalam studi kasus Putusan Nomor 107/Pid.Sus/2023/PN.Thn, mengkaji peran penegakan hukum terhadap pelaku PETI, namun analisisnya lebih terfokus pada aspek putusan pengadilan daripada proses penyidikan dan peran ahli pada tahap tersebut (Kontu *et al.*, 2025)

Sabali, Lindawati et al. examined the role of the Pohuwato District Police investigators in handling illegal mining activities (PETI) within the nature reserve area; however, their study did not explore the technical aspects that require systematic expert opinions from the Ministry of Energy and Mineral Resources (ESDM). (Sabali, U. Puluhulawa and Taufiq Zulkifli Sarson, 2023).

Victoria Sherly Endrico Putri, in her case study conducted in Kutai, analyzes the criminal prosecution of unlicensed coal mining activities, which is thematically relevant but differs in terms of research object and location. (Endrico Putri, 2021)

From the above study, the author delves deeper into the role of expert opinions from the Ministry of Energy and Mineral Resources at the investigation stage, which serves as the legal and technical foundation for the entire subsequent law enforcement process. This research focuses on the implementation of Article 120 of the Indonesian Criminal Procedure Code, which explicitly grants investigators the authority to seek expert assistance in clarifying a criminal act and identifying its perpetrator. Thus, the opinion of an expert is not merely an administrative complement but a strategic instrument that strengthens the legal legitimacy of the investigation results, reinforces the evidentiary process, and enhances the overall effectiveness of the investigation. (Kristiawan and Wahyuningsih, 2018). In this study, the aim is to address the identified analytical gap by providing a comprehensive analysis of how energy and mineral resources (EMR) expert opinions are applied in practice in West Kalimantan, the challenges they encounter, and the solutions that can be proposed to strengthen their role within the criminal justice system.

Therefore, the urgency of this writing is remarkably high. Firstly, illegal gold mining (PETI) in West Kalimantan has become a highly complex phenomenon involving economic, social, and political dimensions, as well as causing severe environmental degradation such as river water pollution from mercury used in the amalgamation process which has been proven to affect both public health and the local ecosystem. (Fathoni, Nanik and Ridwan, 2014)

Secondly, law enforcement against illegal mining often fails because investigators lack the technical competence to verify the status of mining business permits, mining methods, or the resulting environmental impacts. Therefore, strong support is needed from experts in the Ministry of Energy and Mineral Resources who possess expertise in geology, mining, and environmental management. (Umam, Pawennai and Razak, 2023) Third, without an objective and independent expert opinion, the investigation process may become biased, susceptible to political or economic interference, and potentially result in unfair legal decisions for both the perpetrator and the state or society that has suffered harm. (Budiardjo, Politik and Revisi, 1998) Therefore, this research is crucial to understand the actual role of expert opinions from the Ministry of Energy and Mineral Resources in the investigation stage of illegal mining criminal cases, as well as how this role can be strengthened to bridge the gap between legal norms and the realities of law enforcement in the field.

The purpose of this writing is to understand and conduct an in-depth analysis of the role of expert opinions from the Ministry of Energy and Mineral Resources at the investigation stage in uncovering illegal gold mining criminal acts in West Kalimantan. Furthermore, this study aims to identify and analyze the obstacles and efforts made by law enforcement officials in optimizing the use of expert opinions based on the provisions of Article 120 of the Indonesian Criminal Procedure Code (KUHAP). Finally, this research seeks to examine and analyze concrete measures that can be taken to overcome the challenges in uncovering illegal gold mining offenses under the provisions of Article 120 of the Criminal Procedure Code in West Kalimantan in West Kalimantan, so that law enforcement can be carried out more effectively, professionally, and fairly.

3. Proposed Method

The writing approach used in this article employs a combination of normative and sociological approaches in this study (Ali, 2021, p. hlm, 76) The normative approach is used to analyze and interpret relevant legal norms, particularly Article 120 of the Indonesian Criminal Procedure Code and Article 158 of the Mineral and Coal Mining Law (Minerba Law), as well as the technical guidelines issued by the Ministry of Energy and Mineral Resources (ESDM). The purpose is to understand the legal basis and conceptual framework governing the role of expert opinions in the investigation process.

The sociological approach is employed to analyze the empirical reality in the field, specifically how the opinions of experts are actually implemented in the investigation practices of illegal mining cases in West Kalimantan, including the challenges, obstacles, and coordination dynamics among the institutions involved.

Data collection techniques were carried out through literature study and documentation by utilizing various secondary data sources. The primary data sources used were official documents from the Ministry of Energy and Mineral Resources, such as the *2024 Annual Report on Illegal Gold Mining in West Kalimantan* and the *Technical Guidelines for Handling Illegal Mining Cases* issued by the Directorate General of Mineral and Coal. In addition, the author also examined reports from other relevant agencies, such as the West Kalimantan Environmental Agency and the West Kalimantan Provincial Office of Energy and Mineral Resources, as well as relevant court decisions. Secondary data were obtained from various legal literatures, including textbooks, scientific journals, and legal articles discussing topics such as law enforcement against, the role of experts in the criminal justice system, and the implementation of Article 120 of the Indonesian Criminal Procedure Code, which were taken from the provided reference list.

The data analysis technique was carried out qualitatively using the content analysis method, which involves analyzing the content of the collected communication and information to reflect the principles and values contained within them, and then aligning

these with the research objectives (Budiardjo, Politik and Revisi, 1998) The data analysis began by organizing the data into specific values related to the role of expert opinions from the Ministry of Energy and Mineral Resources at the investigation level. Subsequently, data reduction was performed according to the research objectives, followed by analysis and conclusion drawing to represent social (factual) reality in addressing the research problem formulation.

4. Results And Discussion

The Strategic Role of Expert Opinions as Evidence in the Investigation Process

From a juridical perspective, an expert opinion constitutes a form of testimony provided by an individual possessing specialized expertise in the field of energy **and** mineral resources. This testimony serves to assist investigators, public prosecutors, and judges in understanding the technical and scientific aspects related to a criminal case, particularly in matters concerning illegal gold mining offenses (Sakti Agi, 2022). Legally, expert testimony is regulated under Article 186 of the Criminal Procedure Code, which states that expert testimony is what an expert declares in a court hearing. (Pamungkas, 2018). However, at the investigation stage, the expert's opinion still holds significant legal value, as it serves to assist investigators in uncovering the material truth before the case is transferred to the prosecution stage.

(Aryatmaja, Sugiarta and Widyantara, 2023) In cases involving illegal mining, expert opinions are used to ensure that the mining activities conducted indeed violate licensing regulations, as well as to assess the environmental impact and the potential losses suffered by the state resulting from such activities.(Kusdarmaji, 2022). Thus, an expert's opinion is not merely an administrative complement, but serves as a strategic evidentiary tool that reinforces the legal legitimacy of the investigation's findings..

Secara normatif peranan pendapat ahli pada tahap penyidikan merupakan implementasi langsung dari Pasal 120 KUHAP, yang menyatakan bahwa penyidik dapat meminta bantuan kepada ahli dalam rangka membuat terang suatu tindak pidana.(Sembiring, Sahlepi and Saragih, 2024). Ketentuan ini menegaskan bahwa pendapat ahli menjadi bagian integral dari alat bantu penyidikan guna mengungkap kebenaran materiil. Dalam kasus PETI, ahli ESDM dapat menjelaskan batas wilayah izin usaha pertambangan, metode eksplorasi yang digunakan, serta jenis mineral yang diambil. Hal tersebut penting karena banyak kegiatan penambangan rakyat dilakukan di wilayah yang sebenarnya telah diberikan izin kepada perusahaan besar, atau di lokasi yang sama sekali tidak memiliki izin usaha pertambangan(Rosadi and Jailani, 2023) Tanpa keterangan ahli, penyidik akan kesulitan membuktikan unsur "melakukan kegiatan pertambangan tanpa izin" sebagaimana dimaksud dalam Pasal 158 UU Minerba, yang merupakan elemen pokok dari tindak pidana tersebut (Gosal, 2024).Dengan demikian, Pasal 120 KUHAP menjadi jembatan antara penegakan hukum pidana (criminal justice) dan aspek teknis keilmuan (scientific expertise) yang diperlukan untuk menegakkan keadilan secara substantive (Sembiring, Sahlepi and Saragih, 2024)

From the perspective of evidentiary law, expert opinions serve as an essential instrument to bridge the technical and normative aspects in criminal cases related to environmental and mining issues. Without expert testimony, investigators and judges would face difficulties in determining whether a mining activity indeed falls under the category of "unauthorized" operations and whether such conduct has caused actual ecological damage. (Nahuddin, 2016) Therefore, expert opinions serve a dual function: as a means of fact-finding and as a means of forming legal conviction for investigators and public prosecutors.

The statement or opinion of a legal expert possesses additional evidentiary value (adjuvant evidentiary value), meaning that it does not stand alone but serves to strengthen other pieces of evidence such as witness testimony, documents, and physical evidence. (Nahuddin, 2016). In the course of an investigation, expert opinions serve as one of the key components in preparing the Official Investigation Report, as they provide scientific clarity regarding the characteristics of minerals, mining methods, and the extent of environmental damage resulting from illegal gold mining activities. (Asri and Henda, 2019) Thus, the expert's opinion serves not only to assess technical accuracy but also to reinforce the evidentiary indications that support the determination of a suspect (Pamungkas, 2018).

In addition to its role in the process of evidence examination, expert opinion also serves preventive and evaluative functions. The preventive function is reflected in providing technical input to law enforcement officers to avoid errors in assessing community activities related to mineral resource exploration. For example, when communities engage in small-scale exploration for local needs, experts can offer technical guidance on whether such activities can be categorized as criminal acts or remain within the scope permitted by law. Meanwhile, the evaluative function lies in the expert's ability to explain the extent to which unlicensed mining activities affect environmental damage and the safety of surrounding communities. (Angga Prasetyo, Vesna Madjid, and Fahmiron, 2024)

An expert can provide a quantitative analysis of the amount of extracted minerals taken without authorization, the extent of environmental damage, and the potential loss of non-tax state revenue (Soesilo, 2022). This information is very important to strengthen the case file, especially in assessing the severity of the suspect's actions and in determining the appropriate legal article to be applied. (Arif, Abdaud and Huzaiman, 2023) In practice, expert testimonies are often used to reinforce the official investigation report and serve as part of the circumstantial evidence supporting the determination of a suspect. (Nahuddin, 2016)

Implementation of Article 120 of the Criminal Code in the Investigation Practices of Unlicensed Gold Miners in West Kalimantan.

The implementation of Article 120 of the Criminal Code in West Kalimantan, within the context of law enforcement against unlicensed gold miners, demonstrates a complex dynamic in which legal theory often clashes with field realities. Legally, Article 120 of the Criminal Code provides investigators with the authority to obtain objective information based on technical, scientific, and professional expertise. (Sembiring, Sahlepi and Saragih, 2024). However, in practice, investigators often face difficulties in obtaining valid scientific evidence to prove the element of "conducting mining activities without a permit. (Suhendra, Kamarullah and Nafsiatun, 2023). The Indonesian National Police investigators require an expert opinion to assess whether an activity is considered illegal, in accordance with the provisions of Article 158 of the Mineral and Coal Mining Law (Minerba Law), which stipulates that any person who conducts mining activities without a permit may be subject to criminal sanctions. (Gosal, 2024). However, in practice, the process of requesting and obtaining expert opinions is often slow, bureaucratic, and sometimes unresponsive to the needs of investigators in the field who require quick decisions.

One of the main challenges is inter-institutional coordination. The investigation of illegal gold mining offenses involves multiple parties, including the Indonesian National Police (Polri), the Attorney General's Office, relevant Ministries, the National Land Agency, and the Environmental Agency (Diah, 2017). Each institution has its own mandate and working procedures, which are often asynchronous. For example, National Police investigators may have identified the location of an unlicensed gold miner and want to immediately seek expert opinion, but the administrative process for assigning an expert can take weeks. Furthermore, communication between investigators and experts is often ineffective, as investigators don't always understand the technical language used by experts,

and conversely, experts may not understand the urgency and timeframes under which investigators are examining the investigation. This causes delays in the investigation process and has the potential to reduce the effectiveness of law enforcement. (Sabali, U. Puluhalawa and Taufiq Zulkifli Sarson, 2023).

Investigator capacity is also a crucial factor. Many investigators in the regions, including West Kalimantan, lack adequate educational background or training in mining or the environment. (Nahuddin, 2016) As a result, they often don't know what to ask experts, or are unable to understand and interpret the expert opinions provided. This creates an over-reliance on experts, which, if not balanced with strict oversight, can lead to biased or non-objective investigations. Furthermore, investigators often lack access to adequate evidence, such as GPS equipment to determine the coordinates of mine locations, or laboratory equipment to analyze soil or water samples, leaving them heavily reliant on expert opinion to verify technical facts on the ground. (Wijayanti and Sari, 2021)

According to Barda Nawawi Arief, (Arief, 2007) The existence of experts in the criminal justice system serves not only as evidence, but also as a moral instrument to uphold substantive justice based on scientific truth. In the case of the Unlicensed Gold Miners, the independence of experts must be maintained so that their opinions are not biased towards the perpetrator or any particular party, but are purely intended to assist investigators in discovering the material truth. For example, if an expert has close ties to a mining company that holds a permit in the same area as the Unlicensed Gold Miners, their opinion could be biased, even if technically correct. Therefore, a clear mechanism is needed to guarantee the independence and objectivity of experts, for example by assigning experts from outside the region or through an independent institution not affiliated with the Ministry.

Analysis of Barriers and Efforts to Optimize the Role of Expert Opinions in Enforcing the Law on Unlicensed Gold Mining

While expert opinions are crucial from a legal and theoretical perspective, in practice in West Kalimantan, various obstacles hinder their optimal implementation. These obstacles can be grouped into three categories: structural barriers, technical barriers, and normative barriers.

1. Structural barriers relate to inter-institutional coordination and human resource capacity. As previously explained, the coordination process between the National Police, the Prosecutor's Office, and the Environmental Agency is often ineffective due to the lack of an integrated, information technology-based coordination mechanism. (Budiardjo, Politik and Revisi, 1998) Each institution operates independently, leading to duplication of work, delays, and legal uncertainty. Furthermore, human resources at the regional level, both within the police and government, are often inadequate. Many investigators in the regions lack specialized training in handling technical cases such as illegal gold mining, while the number of competent experts prepared to go into the field is very limited, especially in remote areas of West Kalimantan. (Marbun, Gunawan and Rahsia, 2025) This causes a bottleneck in the investigation process, where requests for expert opinions are often directed to just a few people, who are certainly unable to handle all incoming cases. Hambatan teknis berkaitan dengan ketersediaan dan aksesibilitas data serta alat bukti. Penyidik sering kali kesulitan mendapatkan data spasial yang akurat mengenai lokasi dan status kegiatan pertambangan. Data dari ESDM, BPN, atau Dinas Lingkungan Hidup sering kali tidak terintegrasi, tidak update, atau tidak mudah diakses oleh penyidik di lapangan (Said al Rofi, 2019). Selain itu, penyidik sering kali tidak memiliki akses ke alat-alat bukti yang modern, seperti drone untuk pemetaan udara, peralatan GPS, atau peralatan laboratorium portabel, yang sangat dibutuhkan untuk mengumpulkan bukti teknis di lokasi PETI. Tanpa alat-alat ini, penyidik

sangat bergantung pada pendapat ahli untuk memverifikasi fakta-fakta teknis, yang tentunya memperlambat proses penyidikan dan mengurangi akurasinya.

2. Normative obstacles relate to legal interpretation and legal certainty. Although Article 120 of the Civil Code authorizes investigators to request expert opinions, there are no more detailed regulations regarding the procedures, standards, and criteria for assessing the appropriateness and validity of such expert opinions. (Sembiring, Sahlepi and Saragih, 2024). As a result, legal uncertainty arises regarding when and how expert opinions should be requested, and how to assess their credibility and objectivity. Furthermore, differing interpretations often arise among investigators, prosecutors, and judges regarding the weight and evidentiary value of expert opinions. Some may consider expert opinions to be very strong evidence, while others may consider them merely supporting or even irrelevant.

To overcome these obstacles, concrete, systemic, and integrated efforts are needed. First, a more effective inter-institutional coordination mechanism needs to be established, for example through the establishment of a special task force comprising representatives from the National Police, the Prosecutor's Office, the State Audit Agency, and the Environmental Agency, tasked with facilitating communication, coordination, and collaboration in handling cases of Unlicensed Gold Mining. This task force could also be tasked with coordinating expert assignments and ensuring that the process is swift and transparent. Second, human resource capacity building is needed, both for investigators and experts. Investigators need to be given specific training in handling technical cases such as Unlicensed Gold Mining, including training in understanding technical terminology, understanding procedures for requesting expert opinions, and understanding how to assess the credibility of expert opinions. Meanwhile, experts need to be trained in communication and presentation skills so that their opinions can be easily understood by investigators and prosecutors. Third, more detailed regulations or technical guidelines need to be created regarding the procedures, standards, and criteria for requesting and assessing expert opinions, which can serve as a reference for all parties involved in the investigation process.

The Role of Expert Opinions from the Energy and Mineral Resources Sector in Achieving Effective, Professional, and Just Law Enforcement

Expert opinions from the Energy and Mineral Resources sector play a crucial role in the investigation process of illegal mining crimes in West Kalimantan. The presence of these expert testimonies is an integral part of efforts to achieve effective, professional, and just law enforcement. Effective legal handling of illegal mining requires more than a repressive approach; it must be supported by a scientific approach that can bridge the disparity between the law and the technical facts on the ground. (Sabali, U. Puluhalawa and Taufiq Zulkifli Sarson, 2023)

As a crucial instrument, expert testimony from Energy and Mineral Resources experts provides investigators with objective scientific data and analysis. This information is essential for formulating sound and accurate legal decisions. Thus, expert contributions go beyond helping investigators understand the technical aspects of mining, contributing to increased investigation effectiveness, ensuring a fair legal process, and strengthening the evidence in cases involving unlicensed gold miners in West Kalimantan. (Rachmad, 2019)

Professionalism in law enforcement against Illegal Mining relies heavily on the role of expert opinion in the Energy and Mineral Resources sector. This indicates that the investigation process must be carried out objectively, scientifically, and based on relevant technical competence, so as to avoid intervention by political considerations, economic interests, or disproportionate public pressure. The opinion of Energy and Mineral Resources experts consisting of academics, practitioners, or technical officials at the Ministry of Energy

and Mineral Resources who have competence through educational background and experience in the fields of geology, mining, or the environment serves as an essential guarantee for the professional implementation of the investigation process. (Sembiring, Sahlepi and Saragih, 2024)

In addition, expert opinion also strengthens the legal aspects of the investigation, because it helps investigators understand and apply legal provisions appropriately, especially in assessing the elements of criminal acts as regulated in Article 158 of the Minerba Law. (Gosal, 2024) Thus, the opinion of Energy and Mineral Resources experts becomes an instrument that ensures investigations are conducted objectively, scientifically and accountably, in line with the principles of a state based on law that upholds certainty and justice. (Raharjo, 2018)

Fairness in law enforcement against unlicensed gold miners means that the legal process must provide equal protection for all parties, including perpetrators, victims, and the affected community. Expert opinions in the Energy and Mineral Resources sector play a crucial role in this regard, as they are able to provide objective analyses of the environmental impacts and state losses caused by mining activities, which can be used as a basis for determining the amount of criminal penalties or fines imposed on perpetrators. Furthermore, expert opinions can also help determine whether a mining activity can be categorized as a crime or whether it is still within the scope of law, thereby preventing errors in law enforcement that harm communities that did not intend to violate the law. Therefore, expert opinions in the Energy and Mineral Resources sector serve not only to enforce the law but also to uphold justice, both procedural and substantive. (Suhendra, Kamarullah and Nafsiatun, 2023).

To achieve effective, professional, and equitable law enforcement, synergy between various parties is required. Police investigators need to understand the importance of involving and utilizing expert opinions from Energy and Mineral Resources from the initial stages of the investigation so that the process of uncovering criminal acts of unlicensed mining can be carried out appropriately and legally. The results of this study can be used as a guideline for investigators in understanding the importance of expert opinions as a scientific basis for assessing the presence or absence of elements of a crime, as well as strengthening the evidence as referred to in Article 184 of the Criminal Code. For the Prosecutor's Office, expert opinions from Energy and Mineral Resources serve as the basis for ensuring the fulfillment of formal and material aspects of the investigation results before the case is submitted to the court. For local governments and related agencies, this study provides practical benefits in formulating policies to combat unlicensed gold mining that are more effective and coordinated with law enforcement officials. And for the public and academics, this research can serve as knowledge and legal education materials to understand how collaboration between law enforcement and technical experts plays a vital role in protecting natural resources from illegal mining practices that harm the state and the environment.

5. Conclusion

Based on the analysis conducted, it can be concluded that the role of expert opinions from the Ministry of Energy and Mineral Resources during the investigation stage is crucial and strategic in uncovering illegal gold mining activities in West Kalimantan. Such expert opinions are not merely administrative complements but serve as evidentiary tools with additional probative value to strengthen other evidence such as witness statements, documents, and physical proof. Legally, this role is governed by Article 120 of the Criminal Procedure Code, which authorizes investigators to seek expert assistance to clarify criminal acts and identify the perpetrators. In cases of illegal gold mining, expert opinions are used to

verify the absence of mining permits, assess environmental impacts, and calculate state losses caused by the activities. Therefore, expert opinions act as a vital instrument bridging the gap between formal legal facts and complex technical realities in the field, ensuring that investigations are based not only on administrative aspects but also on scientific accuracy.

However, the implementation of expert opinions in West Kalimantan still faces several obstacles, including structural barriers such as poor inter-agency coordination, technical limitations like insufficient investigator capacity and restricted access to data and evidence, and normative challenges such as legal uncertainty in procedures and assessment standards. These issues often result in slow and ineffective investigations, potentially leading to unjust legal outcomes. To strengthen the role of expert opinions, concrete measures are needed, such as establishing inter-agency coordination task forces, improving human resource capacity through training, and creating more detailed regulations or technical guidelines on the procedures and standards for expert assessments. In the long term, optimizing this role will not only enhance the effectiveness of law enforcement against illegal gold mining but also promote a more professional and fair justice system one that is objective, scientific, and competence-based, ensuring justice for both society and the environment.

The author provides the following recommendations: The central and regional governments should promptly establish a special task force (Satgas) composed of representatives from the National Police (Polri), the Attorney General's Office, the Ministry of Energy and Mineral Resources, the State Audit Agency (BPK), and the Environmental Agency to facilitate coordination and collaboration in handling illegal gold mining cases, including in the process of requesting and following up on expert opinions from the Energy and Mineral Resources authority. Intensive training should be provided for regional investigators, particularly in West Kalimantan, on the technical aspects of handling illegal gold mining cases and on how to request and evaluate expert opinions from the Energy and Mineral Resources authority. The Ministry of Energy and Mineral Resources should issue more detailed technical guidelines on procedures, standards, and criteria for requesting and assessing expert opinions from the Energy and Mineral Resources authority, which can serve as a reference for all parties involved in the investigative process. An integrated information system should be developed to facilitate investigators' access to spatial data on the locations and status of mining activities, as well as environmental data managed by relevant agencies. The independence of Energy and Mineral Resources experts must be maintained and strengthened through transparent and accountable assignment mechanisms and through continuous professional ethics training.

Bibliography

Ali, Z. (2021) *Metode penelitian hukum*. Sinar Grafika.

Angga Prasetyo, D., Vesna Madjid, N., and Fahmiron (2024) "Fungsi Keterangan Ahli Psikolog Klinis Dalam Mengungkap Tindak Pidana Perkara Pembunuhan di Tingkat Penyidikan," *Jurnal Sakato Ekasakti Law Review*, 3(2), pp. 82–90. Available at: <https://doi.org/10.31933/dy9mkk45>.

Arief, B.N. (2007) *Masalah penegakan hukum dan kebijakan hukum pidana dalam penanggulangan kejahatan*. Ed. 1., cet. 1. Rawamangun, Jakarta: Kencana Prenada Media Group.

Arif, M., Abdaud, F. and Huzaiman, H. (2023) "The Role of Forensic Science in Proving Murder Cases at the Investigation Stage," *AL-MANHAJ: Jurnal Hukum dan Pranata Sosial Islam*, 5(1), pp. 1019–1024. Available at: <https://doi.org/10.37680/almanhaj.v5i1.2989>.

- Aryatmaja, I.K., Sugiarta, I.N.G. and Widyantara, I.M.M. (2023) “Kedudukan Keterangan Ahli Sebagai Alat Bukti Dalam Penyelesaian Perkara Tindak Pidana Korupsi di Pengadilan Tipikor,” *Jurnal Interpretasi Hukum*, 4(1), pp. 14–19.
- Asri, R.F.C. and Henda, R. (2019) “Aspek Yuridis Penerapan Tindak Pidana Lingkungan Dalam Penambangan Tradisional Berdasarkan Undang-Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral Dan Batubara (Studi Putusan Nomor 134/Pid.B/LH/2018/PN Sbr),” *Hukum Responsif*, 10(2). Available at: <https://doi.org/10.33603/responsif.v10i2.5063>.
- Budiardjo, M., Politik, D.-D.I. and Revisi, E. (1998) *Dasar-Dasar Ilmu Politik*, and Edisi Revisi, Jakarta, 2009. Jakarta: Gramedia pustaka utama.
- Diah, M.E. (2017) *Penegakan Hukum Terhadap Kegiatan Pertambangan Berdasarkan Undang-Undang Nomor 4 Tahun 2009 Di Wilayah Wonosobo*. Available at: <http://repository.unissula.ac.id/9552/>.
- Endrico Putri, V.S. (2021) “Analisis Pidana Terhadap Tindak Pidana Pertambangan Batubara Tanpa Izin Usaha Pertambangan Studi Kasus Di Kutai,” *JISIP (Jurnal Ilmu Sosial dan Pendidikan)*, 5(1). Available at: <https://doi.org/10.58258/jisip.v5i1.1754>.
- Fathoni, F., Nanik, T. and Ridwan, R. (2014) *Tanah, Tambang, Dan Masyarakat Adat*. Bandar Lampung: Indepth Publishing. Available at: <http://repository.lppm.unila.ac.id/51731/> (Accessed: December 1, 2025).
- Gosal, R. (2024) “Tinjauan Yuridis Terhadap Pertambangan Ilegal Ditinjau Dari Pasal 158 Undang-Undang Nomor 3 Tahun 2020 Tentang Perubahan Atas Undang-Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral Dan Batubara,” *Lex Administratum*, 12(3). Available at: <https://ejournal.unsrat.ac.id/v3/index.php/administratum/article/view/55652> (Accessed: December 1, 2025).
- Kasidin, S. (2021) “Kajian Hukum Tentang Kekuatan Alat Bukti Yang Dipublikasikan Oleh Seorang Ahli Di Luar Pemeriksaan Persidangan Dihubungkan Pasal 184 Kuhap,” *FOCUS: Jurnal of Law*, 2(2), pp. 1–20. Available at: <https://doi.org/10.47685/focus.v2i1.175>.
- Kontu, H.R. et al. (2025) “Penegakan Hukum terhadap Pelaku Tindak Pidana Pertambangan Emas Tanpa Ijin (Studi Kasus Putusan Nomor 107/Pid. Sus/2023/PN. Thn),” *Lex Journal: Kajian Hukum dan Keadilan*, 1(2), pp. 409–425.
- Kristiawan, A. and Wahyuningsih, S.E. (2018) “Perspektif Tindak Pidana Administrasi Terhadap Tindak Pidana Pertambangan Tanpa Ijin (Peti) Dalam Undang-Undang Nomor 4 Tahun 2009 Tentang Mineral Dan Batubara,” *Jurnal Daulat Hukum*, 1(1). Available at: <https://doi.org/10.30659/jdh.v1i1.2623>.
- Kusdarmaji (2022) “Pengaruh Kompetensi Penyidik Dan Responsivitas Terhadap Kualitas Pelayanan Dimediasi Penanganan Perkara (Studi Kasus Pada Laporan/Pengaduan Tindak Pidana Di Direktorat Reserse Kriminal Umum Polda Kalimantan Selatan),” *Kindai*, 18(1). Available at: <https://doi.org/10.35972/kindai.v18i1.701>.
- Marbun, J., Gunawan, I. and Rahsia, S. (2025) “Rekayasa Lingkungan Dalam Pemulihan Pencemaran Tanah Pada Lahan Bekas Penambangan Emas Tanpa Ijin Di Desa Kayu Ara Kecamatan Mandor Kabupaten Landak Kalimantan Barat,” *Jurnal Rekayasa Lingkungan*, 25, pp. 9–19. Available at: <https://doi.org/10.37412/jrl.v25i1.372>.
- Nahuddin, Y.E. (2016) “Pembuktian Dalam Perspektif Hukum Lingkungan,” *Jurnal Cakrawala Hukum*, 7(2), p. 147–155. Available at: <https://doi.org/10.26905/idjch.v7i2.1944>.
- Niwele, A.V., Mataheru, F. and Taufik, I. (2022) “Penanggulangan Penambangan Emas Illegal,” *SANISA: Jurnal Kreativitas Mahasiswa Hukum*, 1(2), p. 54. Available at: <https://doi.org/10.47268/sanisa.v1i2.758>.
- Pamungkas, D.P. (2018) “Efektivitas penyidikan tindak pidana penambangan emas tanpa izin di kabupaten solok selatan (studi pada direktorat reserse kriminal khusus kepolisian daerah sumatera barat),” *UNES Law Review*, 1(2), pp. 134–147. Available at: <https://doi.org/10.31933/law.v1i2.22>.
- PPNS Ditjen Minerba Limpahkan Kasus Tambang Emas Tanpa Izin di Ketapang ke Kejaksaan (no date) ESDM. Available at: <https://www.esdm.go.id/en/media-center/news-archives/ppns-ditjen-minerba-limpahkan-kasus-tambang-emas-tanpa-izin-di-ketapang-ke-kejaksaan> (Accessed: December 1, 2025).

- Rachmad, A. (2019) "Peranan Laboratorium Forensik Dalam Mengungkap Tindak Pidana Pada Tingkat Penyidikan," *Jurnal Hukum Samudra Keadilan*, 14(1), pp. 15–24. Available at: <https://doi.org/10.33059/jhsk.v14i1.1078>.
- RAHARJO, B. (2018) *Penegakan Hukum Tindak Pidana Pertambangan Tanpa Ijin (Peti) Di Kabupaten Wonosobo*. masters. Fakultas Hukum UNISSULA. Available at: https://doi.org/10/11/pernyataan_publikasi.pdf.
- Rosadi, O. and Jailani, A.K. (2023) "Efektivitas Penegakan Hukum Terhadap Pelaku Perusakan Lingkungan Hidup Akibat Penambangan Emas Tanpa Izin Pada Satreskrim Polres Sijunjung," *Unes Journal of Swara Justisia*, 7(1), pp. 1–15. Available at: <https://doi.org/10.31933/ujsj.v7i1.305>.
- Sabali, L., U. Puluhulawa, F. and Taufiq Zulkifli Sarson, M. (2023) "Peran Penyidik Kepolisian Polres Pohuwato Dalam Menangani Tindak Pidana Pertambangan Emas Tanpa Izin Di Kawasan Cagar Alam," *Journal of Comprehensive Science (JCS)*, 2(5), pp. 1429–1437. Available at: <https://doi.org/10.59188/jcs.v2i5.360>.
- Said al Rofi, 15421042 (2019) "Penguasaan Hak Tanah Masyarakat Adat Dayak Jalai, Kabupaten Ketapang, Provinsi Kalimantan Barat Perspektif Pasal 5 Undang-Undang Nomor 5 Tahun 1960 Tentang Peraturan Dasar Pokok-Pokok Agraria Dan Hukum Islam." Available at: <https://dspace.uir.ac.id/handle/123456789/16908> (Accessed: December 1, 2025).
- SAKTI Agi, A. (2022) "Kontroversi Pengelolaan Mineral Dan Batubara Ditinjau Dalam Aspek Yuridis."
- Sembiring, D.S., Sahlepi, M.A. and Saragih, Y.M. (2024) "implementasi pasal 120 undang-undang nomor 4. tahun 2023 tentang pengembangan dan penguatan sektor keuangan terkait barang hasil kejahatan (studi penelitian pt. indonesia gadaai oke)," *NUSANTARA: Jurnal Ilmu Pengetahuan Sosial*, 11(5), pp. 2181–2190. Available at: <https://doi.org/10.31604/jips.v11i5.2024.2181-2196>.
- Suhendra, A., Kamarullah, K. and Nafsiatun, N. (2023) "Penegakan Hukum Terhadap Pertambangan Emas Tanpa Izin (Peti) Sebagai Upaya Pengendalian Dampak Lingkungan Di Kecamatan Sintang Kabupaten Sintang," *EnviroScienteeae*, 19(3), pp. 55–63. Available at: <https://doi.org/10.20527/es.v19i3.17262>.
- Tapada, R. (2022) "Akibat Hukum Penerapan Undang-Undang Nomor 3 Tahun 2020 Tentang Perubahan Atas Undang-Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral Dan Batubara Terhadap Peningkatan Nilai Tambah Pertambangan," *LEX PRIVATUM*, 10(4). Available at: <https://ejournal.unsrat.ac.id/v3/index.php/lexprivatum/article/view/42407> (Accessed: November 30, 2025).
- Umam, W.S., Pawennai, M. and Razak, A. (2023) "Efektivitas Penegakan Hukum Terhadap Pelaku Penambangan Pasir Tanpa Izin (Studi Pada Kepolisian Resor Pangkep)," *Innovative: Journal Of Social Science Research*, 3(4), pp. 2244–2259.
- Wijayanti, I.P. and Sari, E.K. (2021) "Pertambangan Emas Yang Dilakukan Oleh Perorangan (Matdani) Tanpa Izin Pertambangan Rakyat Di Desa Nanga Belimbing, Kabupaten Melawi, Kalimantan Barat (Studi Putusan Pengadilan Negeri Sintang Nomor: 293/Pid.B/Lh/2018/Pn/ Stg)," *Metrik Serial Humaniora dan Sains*, 2(2), pp. 96–102.
- Yanto, P. (2021) *Penegakan Hukum Terhadap Tindak Pidana Pertambangan Emas Tanpa Izin (PETI) Di Wilayah Hukum Polres Kuantan Singingi (Studi Kasus 2017-2018)*. other. Universitas Islam Riau. Available at: <https://repository.uir.ac.id/12497/> (Accessed: December 1, 2025).