



Regulatory Interventions by Local Authorities Addressing Unauthorized Artisanal Mining: A Case Study of Jayapura, Indonesia

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Abstract: This study examines unauthorized mining activities in the Waena Camping Area of Jayapura City, Indonesia. The research focuses on community-based mining operations that emerged in 1998 during Indonesia's economic crisis, as individuals sought alternative sources of household income through informal mining practices, colloquially referred to as illegal mining. The investigation employs a normative juridical research methodology, utilizing an approach that analyzes legal materials, principles, concepts, and relevant legislation pertinent to the study's scope. Findings indicate significant environmental degradation, including alterations to the natural landscape, ecosystem disruption, and adverse impacts on river watersheds in proximity to the mining sites. Initially, miners employed rudimentary tools such as crowbars, hoes, and cauldrons. However, to enhance productivity, operations expanded to include heavy machinery, specifically excavators. Furthermore, regional government investigations revealed the utilization of mercury (Hg) for ore purification, raising additional environmental and health concerns. This research contributes to the understanding of the environmental and legal implications of unauthorized mining activities in the region, highlighting the need for improved regulatory frameworks and enforcement mechanisms.

Keywords: Administrative Law, Environmental Impact, Legal Implications, Unauthorized Mining Activities.

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1. Introduction

The proliferation of small-scale mining operations in developing nations has sparked significant concerns regarding health implications and long-term environmental threats (Hilson & Maconachie, 2020). These small-scale mining activities often escape scholarly scrutiny due to a bias towards large-scale mining operations, which account for approximately 90% of total exploitation (Adu-Baffour et al., 2021; Dery Tuokuu et al., 2020; Hilson & Maconachie, 2020). Thus, it is unsurprising that small-scale and artisanal mining contributes to weak regulatory frameworks. The establishment of legal instruments to govern this sector has become a critical issue. Institutionalizing regulations in the mining sector amplifies the formality and management of micro-scale mining operations. Adu-Baffour et al. (2021) identify the primary stakeholders in this sector as private entities, government bodies, and local communities. Adu-Baffour posits that these three parties interact in a hierarchical order. When private entities face

challenges in managing this sector, governmental and local community actors may assume this role. At this juncture, it becomes imperative for governments to legislate frameworks and mitigate various environmental impacts from subsectors dispersed across multiple locations.

In Indonesia, artisanal mining has proliferated in several regions, as documented by various studies (Bakung et al., 2023; Jamin et al., 2023; Muslihudin et al., 2020; Samosir, 2019). The majority of these studies highlight vertical tensions between government entities and local communities. However, only a small portion of this research addresses the challenges faced by local governments in enforcing regulations on artisanal mining. For instance, the study by Bakung et al. (2023) is limited to examining areas permitted by local governments for such activities. Therefore, the case study presented in this article focuses on the regulatory framework guiding local government roles in managing small-scale mining in Papua, including an examination of governmental actions to address existing tensions.

The role of local government is in a constant state of flux, evolving in response to the dynamic needs of communities (Muttaqin, 2023; Ohoiwutun, Muttaqin, Tebay, et al., 2023; Suryanti et al., 2023). This evolution is intrinsically linked to the government's fundamental purpose of providing public services. Legal frameworks adapt to these changes, aiming to influence and regulate the developmental dynamics within society (Asmorojati, 2020; Cotterrell, 2017). The centrality of law in this context cannot be overstated; it must maintain a consistent presence in society, functioning as an instrument to ensure order, particularly in the utilization of available natural resources. The pressure to exploit natural resources is an inevitable challenge. Despite the abundance of these resources, their utilization necessitates stringent regulation to ensure that the process of resource extraction genuinely benefits the surrounding communities (Horowitz et al., 2024). Article 28 H, Paragraph (1) of the 1945 Constitution of the Republic of Indonesia underscores this principle, stating, "Every person has the right to live in physical and spiritual prosperity, to have a place to live, to have a good and healthy living environment, and has the right to receive health services." This constitutional provision implies that activities resulting in environmental degradation or harm to others constitute a violation of human rights. The increasing demand for resources to meet various aspects of human needs often conflicts with the imperative of natural resource conservation (Githiria & Onifade, 2020; Mensah et al., 2015). This conflict is particularly acute among populations with irregular incomes, leading to unsustainable exploitation practices that jeopardize resource sustainability, even if the full extent of the impact remains undetermined.

The monetary crisis of 1997 in Indonesia precipitated an increase in gold panning activities in Jayapura City, particularly in upstream river areas (Dawson, 2021; Ohoiwutun, Muttaqin, Ilham, et al., 2023; Rantetampang & Mallongi, 2014). The persistence of these activities has resulted in river siltation, notably affecting the Anafre River. The mining location in the Waena Jayapura camping area remains a contentious issue, with initial individual prospecting efforts evolving into widespread community engagement in gold extraction. The burgeoning interest in mining activities has led to escalating environmental concerns, including the risk of landslides and the sedimentation of Lake Sentani due to the influx of excavated materials (Ratang et al., 2016). The potential presence of hazardous waste, particularly mercury used in gold purification, exacerbates these environmental threats. The absence of effective governmental oversight has contributed to the proliferation of uncontrolled mining activities. Typically, such operations should be subject to governmental supervision to mitigate environmental risks. The issuance of permits serves as a mechanism for control, with local government actions potentially including preventive measures and educational initiatives to inform miners about the environmental impacts of their activities. Article 1 (Figure 32) of Law Number 4 of 2009 concerning Mineral and Coal Mining defines People's Mining Areas (WPR) as designated zones within Mining Areas (WP) where artisanal mining is permitted. The mining activities at the Waena Jayapura Camping Grounds (Buper) fail to meet these legal criteria, providing local authorities with a solid basis for prohibiting such operations from their inception.

2. Theoretical Overview of the Main Concepts

The Concept and Implementation of Law Enforcement in Indonesia

The definition of law enforcement, according to the Indonesian Dictionary (KBBI), encompasses a broad scope, including both preventive and repressive aspects. This comprehensive approach aligns with the Indonesian context, where governmental entities actively participate in enhancing public legal awareness. Satjipto Rahardjo (2014) conceptualizes law enforcement as a process of transforming legal aspirations into reality. These aspirations are embodied in the intentions of legislative bodies, as articulated in legal regulations. The formulation of these legal precepts significantly influences the execution of law enforcement. Consequently, the efficacy of law enforcement ultimately culminates in its implementation by law enforcement officials themselves. This perspective suggests that the success or failure of law enforcement efforts is largely predetermined by the very regulations that officials are tasked with enforcing.

Soerjono Soekanto (2012) posits that the law enforcement process is influenced by five key factors: (1) legal or statutory factors; (2) law enforcement personnel, particularly their mentality; (3) supporting facilities and infrastructure; (4) societal factors, including the social environment in which laws are applied and the public's legal awareness and compliance; and (5) cultural factors, encompassing human creativity, initiative, and emotion within social interactions. Satjipto Rahardjo (2014) offers an alternative framework, categorizing influential elements in law enforcement based on their proximity to the process. He identifies three primary components: (1) legislative bodies responsible for law-making; (2) law enforcement agencies, including police, prosecutors, and judges; and (3) environmental factors, comprising individual citizens and social dynamics. This discourse highlighting additional factors that impact law enforcement, including political biases, economic considerations, moral judgments, and personal sympathies and antipathies. Lawrence M. Friedman (1969) presents a systemic view of law enforcement success, emphasizing the interdependence of three components: legal structure, legal substance, and legal culture. Friedman later introduced a fourth component, legal impact, which addresses the consequences of legal decisions. Roger Cotterrell elaborates on the concept of legal culture, explaining how it elucidates the diversity of legal ideas across societies and their position within the social order. This cultural dimension can potentially explicate the varied functioning of seemingly identical legal institutions in different societal contexts. The substance of law, manifested in legislation, has been accepted as an official instrument for addressing contemporary social issues. This pragmatic orientation aligns with Roscoe Pound's concept of "law as a tool of social engineering," or what is termed in legal discourse as the function of law in facilitating societal change (Susanto, 2019). This responsive legal character is often described as emancipatory, indicating a democratic and egalitarian nature that prioritizes the protection of human rights and empowers socially, economically, and politically marginalized groups to participate more fully in all aspects of societal, national, and state life.

Environmental law enforcement is a particularly compelling area of study due to its relevance to all aspects of human existence and its role in supporting life on Earth. Key Indonesian legislation pertaining to environmental protection includes Law No. 32 of 2009 on Environmental Protection and Management, Law No. 5 of 1990 on Conservation of Natural Resources and Ecosystems, Law No. 41 of 1999 on Forestry, Law No. 7 of 2004 on Water Resources, and Law No. 11 of 1967 on Basic Mining Provisions. Law No. 32 of 2009 specifically outlines sanctions for violators and categorizes environmental law enforcement into three domains: administrative law, civil law, and criminal law.

The role of local government

The responsibility for mitigating natural resource damage falls primarily on regional governments (Muttaqin, 2022; Sayuti et al., 2023). As mandated by statutory provisions Article 12 paragraph (2) letter e designates environmental concerns as a mandatory matter unrelated to Basic Services, while paragraph (3) letter e classifies energy and natural resources as optional matters. Article 33 paragraph (3) of the Constitution affirms state control over natural resources, emphasizing their utilization for the maximum benefit of the populace. This concept of state control encompasses the right to regulate and determine resource allocation, implying elements of control from the perspectives of damage prevention, utilization purpose, and quantity of exploitation. One of the normative authorities possessed by the government in environmental protection and management is the enforcement of administrative law, which allows for

direct law enforcement without judicial procedures and, if necessary, the use of physical coercion to align factual situations with existing norms (Hadjon, 2010).

Administrative environmental law enforcement must adhere to four elements as outlined by Hadjon (2010):

1. Legitimacy
2. Juridical Instruments
3. Administrative Law Norms
4. Cumulation of Sanctions

The utilization of People's Mining Areas (WPR) has become a significant environmental concern, with artisanal mining activities posing serious threats to ecological integrity. These operations, often conducted with rudimentary tools, have led to substantial environmental degradation.

3. Methodology

This study examines the regulatory response of local government to artisanal mining activities in the Waena Jayapura Campground area. The central research question posits: "To what extent does the regional government contemplate prohibitory measures against community mining operations in the specified locale?" This inquiry seeks to elucidate the governance dynamics surrounding informal resource extraction in a designated recreational zone.

The investigation employs a Normative Juridical research methodology, characterized by its reliance on library-based legal research and the examination of secondary data sources (Sophar Maru et al., 2018; Suyanto, 2023). This approach, as elucidated by Diantha (2016), exclusively utilizes bibliographic materials and secondary data for analysis. The study adopts a deductive reasoning framework, progressing from general principles to specific conclusions, thereby facilitating a comprehensive understanding of the legal and policy landscape surrounding artisanal mining in the region.

4. Discussion

Historical Context and Socioeconomic Drivers: The research reveals a protracted history of artisanal mining activities in the region, with origins dating back to 2007, and some accounts suggesting inception as early as the 1997 Indonesian economic crisis (Robinson, 2016; Rosyida et al., 2018; Savirani & Wardhani, 2022). This temporal context illuminates the enduring nature of these informal extractive practices and their deep-rooted socioeconomic underpinnings. The 1997 monetary crisis emerges as a critical juncture, catalyzing the proliferation of alternative livelihood strategies, including artisanal gold mining, in response to acute economic pressures.

Economic Viability and Operational Dynamics

The study delineates the economic attractiveness of artisanal mining, with participants reporting daily yields of 8 to 10 grams of gold, valued at approximately Rp. 400,000 per gram. This high profitability ratio elucidates the persistent engagement in such activities despite associated environmental and legal risks. The research further explicates the operational dynamics, characterizing the mining processes as rudimentary yet accessible, requiring minimal capital investment in basic tools such as hoes, cauldrons, and sieves.

Extraction Techniques and Environmental Implications: The artisanal mining process, as documented in this study, involves the identification and extraction of auriferous rocks, followed by manual crushing and mercury-based gold extraction. This description underscores the rudimentary nature of the operations and highlights potential environmental hazards, particularly the risk of mercury contamination. The simplicity of these techniques, coupled with their effectiveness, has facilitated widespread community engagement in mining activities.

Socioeconomic Accessibility and Community Engagement: The research emphasizes the low barriers to entry characterizing artisanal mining in the region, both in terms of required capital and technical expertise. This accessibility has rendered mining an attractive livelihood option, especially for individuals lacking stable income sources. Consequently, artisanal mining has evolved from a crisis-induced coping mechanism to a primary economic activity for segments of the local population.

The evolution of artisanal mining as a livelihood strategy in the region is characterized by a gradual, long-term shift rather than an abrupt change. This observation aligns with the findings of Purnomo et al. (2021), who elucidate the complex interplay between economic policies, development initiatives, and the proliferation of informal mining activities. Purnomo et al. (2021) posit that the transformation of local economies towards artisanal mining was precipitated by crisis-era policies, followed by extensive development across various sectors. Paradoxically, this development trajectory contributed to the exacerbation and diffusion of poverty, thereby intensifying the appeal of informal mining as an economic lifeline for marginalized communities. A critical insight from Purnomo et al. (2021) is the characterization of artisanal mining as a short-term adaptive strategy, rather than a sustainable long-term solution. This perspective highlights a significant policy challenge: the immediate economic benefits of artisanal mining are prioritized over the potential long-term environmental degradation it may cause.

Environmental Impact of Unauthorized Mining Activities in Jayapura City

1. Environmental Degradation

Recent observations reveal that mining operations in the region have evolved beyond traditional methods, now employing heavy machinery for excavation. This technological shift has significantly exacerbated soil structure damage, resulting in the formation of numerous water-filled depressions across the landscape.

Field investigations at the mining sites confirm the utilization of heavy equipment, such as excavators, which categorically elevates these operations beyond the scope of traditional or community mining practices. The deployment of such machinery typically necessitates official governmental authorization.

The environmental consequences of these activities have become increasingly severe and uncontrolled. Soil degradation manifests in the form of irregular excavations, cavities, and collateral damage to surrounding forest ecosystems. The impact extends to nearby water systems, with the river basin connected to the mining area and Lake Sentani experiencing daily discoloration due to sediment influx from excavation sites. From an environmental management perspective, these developments pose a significant threat to ecological sustainability, providing the government with a compelling rationale for intervention. Potential courses of action range from implementing prohibitions to, where feasible, granting regulated permissions. The camping ground area (Buper), which serves as a critical buffer zone for the Cyclops Nature Reserve, has been particularly vulnerable to anthropogenic pressures, including forest encroachment and mineral excavations. The Cyclops area was officially designated as a Nature Reserve (CA) in 1978 through Decree No.56/Kpts/Um/I/1978, later reaffirmed in 1987 via Decree No.365/Kpts-II/1987, initially encompassing 22,500 hectares. In 2012, the protected area was expanded to 31,479.89 hectares through Ministerial Decree number 782/MenHut-II/2012. These legislative actions provide a legal framework for governmental intervention.

Empirical evidence demonstrates an alarming rate of deforestation in the Cyclops mountain buffer zone, an area of critical importance for sustaining local livelihoods, particularly as a source of potable water for Jayapura Regency and Jayapura City. Given the region's population growth dynamics and current challenges in clean water provision, especially in Jayapura City, there is an urgent need for the regional government to augment water resources. The local water utility has recently encountered significant obstacles in meeting the urban population's water demands.

The regional administration has conducted a comprehensive forestry inventory to assess the ecological potential of the Cyclops Mountains Nature Reserve. This assessment, coupled with the area's formal designation as a Nature Reserve, confers clear jurisdictional authority to the regional government

regarding forest management in this zone. Article 17 of Law Number 4 of 1999 concerning Forestry mandates the establishment of the smallest forest management units, which must function optimally to ensure the preservation of Nature Reserve forests in the Cyclops Mountains, including buffer areas. This aligns with the broader principles of sustainable forest development. It is noteworthy that the genesis of these mining activities can be traced back to the 1997 monetary crisis in Indonesia, which catalyzed community-driven gold panning in the upstream rivers of Jayapura City. While these activities initially yielded significant economic benefits for participants, often exceeding the Papuan Minimum Wage (UMP), the long-term environmental repercussions persist, manifesting in river sedimentation, particularly evident in the Anafre River bisecting Jayapura City.

Jayapura City Regional Regulation Number 4 of 2001 addresses human activities in development projects that exploit natural resources. This legislation underscores the necessity for robust environmental management policies to maintain ecosystem equilibrium within Jayapura City. The establishment of the Jayapura City Environmental Impact Management Agency (Bapedalda), pursuant to this regulation, represents a strategic institutional response aimed at realizing environmentally sound development practices.

5. Governmental Response to Unauthorized Community Mining Activities in Jayapura City

1. Factual Government Actions

In Dutch administrative law, the term "Feitelijk Handelingen" refers to unilateral government actions undertaken without prior public consent (Susanto, 2019). In the context of unauthorized mining activities, local authorities can implement educational initiatives to elucidate the ramifications of unlicensed resource extraction. This approach represents a manifestation of governmental responsibility towards citizens engaged in potentially illicit activities. The absence of official approval from Jayapura City's regional government for these mining operations, coupled with their potential to compromise public interests, categorizes them as unlawful acts (Ohoiwutun, Muttaqin, Tebay, et al., 2023). A judicious governmental response could involve conducting informational sessions for miners, elucidating the risks associated with illegal mining practices. The objective of such interventions would be to facilitate the cessation of these activities by fostering comprehension of the attendant risks among participants. It is imperative to communicate to community members involved in unauthorized mining the extensive environmental consequences of their actions, including soil degradation and water pollution from mud and mercury discharge, which ultimately impacts Lake Sentani. This approach to law enforcement through education and persuasion represents a more nuanced strategy than immediate judicial intervention. It aligns with the principles of modern governance in welfare states, where governments bear the responsibility of actively safeguarding citizen welfare.

2. Government Actions Based on Legal Framework (Rechthandelingen)

The welfare state paradigm has expanded governmental purview, necessitating proactive engagement with diverse community activities to ensure their alignment with public welfare objectives (Andriansyah et al., 2021; Arifin et al., 2024; Percival et al., 2021). The implementation of decentralization in Indonesia reflects the state's commitment to realizing public welfare through authority delegation. As a unitary state with significant geographical expanse, Indonesia requires a governance structure that distributes authority between central and regional administrations. Regional governments are vested with the right to formulate local regulations in pursuit of regional autonomy, providing a legal basis for governmental action in local affairs.

Regarding the proliferation of community mining activities in Papua Province, specifically in Jayapura City, the municipal government possesses the legal authority to intervene. A holistic assessment is required to determine whether these activities warrant governmental support, considering the area's status as a buffer zone for the Mount Cyclops forest. If deemed compatible with sustainable development principles, these activities could potentially constitute a source of local original income (PAD),

encompassing taxes, levies, and proceeds from regionally owned enterprises. Article 9, paragraph (3) of Law Number 23 of 2014 concerning Regional Government delineates the legal authority of regional governments in implementing Regional Autonomy. Legislative instruments serve as crucial tools for social control. The persistence of unauthorized community mining activities since 1998 underscores the inadequacy of existing legal frameworks. These unregulated mining operations pose significant environmental hazards, particularly the contamination of rivers and Lake Sentani with heavy metals. The discoloration of the Jembatan Dua River, which intersects the main thoroughfare connecting Jayapura Regency and Jayapura City, serves as a visible indicator of environmental degradation.

The Jayapura City government's delayed response—officially prohibiting these activities only after June 26, 2020—raises questions about administrative efficacy. This intervention, resulting in the detention of 17 individuals including the landowner, came after a protracted period of inaction. From a legal perspective, local governments can leverage various statutory regulations to assess the permissibility of unlicensed mining activities. Triwulan Point and Ismu Gunadi Widodo emphasize that governmental actions must be predicated on legal mandates that reflect public aspirations. Article 1, number (32) of Law Number 4 of 2009 concerning Mineral and Coal Mining ("Minerba Law") defines a People's Mining Area (WPR) as a designated zone for community mining activities, to be determined by the regent/mayor in consultation with the district/city Regional People's Representative Council. These provisions necessitate prompt decision-making by the Jayapura City government regarding the status of ongoing mining activities. Article 22 of the aforementioned law stipulates criteria for establishing a people's mining area. The absence of these criteria precludes the regional government and the Regional People's Representative Council from initiating licensing discussions. Such deliberations are crucial for mitigating environmental risks and protecting public interests, particularly given the ecological significance of the Cyclops Mountains Nature Reserve as a repository of biodiversity and a vital water source for Jayapura Regency and City.

The concept of Liability Rule (LR) pertains to compensation mechanisms for losses arising from activities such as pollution. This principle, often articulated as "polluter pays" or in some instances "pollutee pays," has gained widespread acceptance in industrial societies. It posits that regions engaging in excessive natural resource extraction should compensate affected areas. The degradation of the Cyclops Mountain buffer zone has far-reaching implications for both ecological sustainability and community livelihoods. Consequently, the Regional People's Representative Council, as the voice of the populace, must consider these factors in their deliberations.

The collaborative discussion between the Jayapura City government and its Regional People's Representative Council should aim to:

1. Establish legal certainty regarding mining activities in the Cyclops mountain area.
2. Ensure environmental protection, considering: a. The impact of mining on local river basin structures; b. Delta formation at the mouth of the second bridge river; c. Heavy metal pollution affecting Lake Sentani.

Siahaan (2004) argues that granting permits without prior Environmental Impact Assessment (Amdal) is legally untenable. For activities requiring reliability assessments, Amdal approval must accompany the permit application (Akhyar, 2024; Meutia et al., 2022; Sembiring et al., 2020; Sood, 2021). Article 22 of the Mining and Coal Law outlines several criteria for designating Community Mining Areas (WPR), which must be publicly announced by the local regent/mayor:

1. Presence of secondary mineral reserves in rivers or between riverbanks;
2. Primary metal or coal reserves at a maximum depth of 25 meters;
3. Terrace deposits, flood plains, and ancient river deposits;
4. Maximum area of 25 hectares for a community mining area;

5. Type of commodity to be mined;
6. Areas with a minimum 15-year history of community mining activities.

6. Conclusions

The ongoing unauthorized mining activities in Jayapura City since 1998 have proceeded without adequate governmental oversight, resulting in significant environmental degradation, including pollution of river basins flowing into Lake Sentani. To mitigate further environmental damage and address the impact on watersheds, the Jayapura City government, in collaboration with the Regional People's Representative Council, should conduct a comprehensive assessment to determine whether the area qualifies as a legitimate People's Mining Area (WPR) or should be declared an illegal operation. This decision should be based on thorough scientific analysis and consideration of sustainable development principles.

7. Limitations, Implications, and Further Directions of Research

The current study on unauthorized mining in Jayapura City, while informative, has some limitations. It mainly looks at environmental impacts and laws, but might miss some important social and economic factors. The research relies heavily on observations and existing rules, which means it might not have all the detailed numbers on environmental damage or economic effects. It covers a long time period but might not include the most recent changes. Also, it focuses mostly on the government's view and doesn't include much from miners or local communities. To improve future research, it would be helpful to do more precise measurements of environmental damage, study the economic reasons behind mining, and look at how well current policies are working. Talking to more people involved, like miners and community members, would give a fuller picture. It would also be useful to compare Jayapura with other places facing similar issues, look at alternative jobs for miners, and study how technology could help monitor mining. By doing these things, future studies could give a more complete understanding of the mining problem and help create better solutions.

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