

Reframing Artisanal Small-Scale Gold Mining Regulations: Integrating Local Values and Sustainability for Environmental Security in Gorontalo

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Article Info

Submitted: September 18, 2025
Revised: June 22, 2026
Accepted: July 7, 2026

Keywords:

ASGM; Environmental restorative justice; Gorontalo; Participatory governance; Tiered licensing.

How to cite [Chicago Manual of Style 17th edition (full note)]: Fenty U Puluhulawa, Zuchri Abdussamad, Moh. Rusdiyanto Puluhulawa, Dewa Nyoman Sugiaditya, Elsoghair Mahdy, "Reframing Artisanal Small-Scale Gold Mining Regulations: Integrating Local Values and Sustainability for Environmental Security in Gorontalo" *Jambura Law Review* 8, no. 1 (2026): 431–458.

Abstract

Artisanal and small-scale gold mining (ASGM) in Gorontalo—particularly in Bone Bolango, Boalemo, and Pohuwato—presents complex intersections between local livelihoods, ecological risks, and regulatory governance. This study reframes ASGM policy by integrating cultural values and sustainability principles through an adaptive and participatory legal model. Employing a normative–empirical approach, the research examines Indonesia’s evolving mining regulations (post–Law No. 3/2020 and Perpres No. 55/2022) alongside field-based evidence gathered from diverse mining settings, including underground hard-rock operations in Bone Bolango and alluvial open-pit sites in Pohuwato and Boalemo. Three central findings are highlighted. First, the centralization of licensing mechanisms has widened socio-institutional gaps, complicating formalization efforts and sustaining informality. Second, the alignment of regulatory tools with local cultural norms—such as kabilasa, tiered licensing, community monitoring, and restorative justice practices—enhances compliance, legitimacy, and conflict resolution. Third, cooperative records illustrate ASGM’s continuing importance to local economies and its susceptibility to governance gaps. The study proposes an integrated policy framework that bridges state law with community norms, embeds proportionate environmental safeguards, and applies performance-based auditing across ecological, social, and security dimensions, thereby supporting a just and sustainable transition for ASGM in Gorontalo.

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Introduction

Artisanal and small-scale gold mining (ASGM) activities in Gorontalo—particularly in the districts of Bone Bolango, Boalemo, and Pohuwato—operate within a dialectical tension between community economic needs, ecological sustainability, and national defense and security interests. On the one hand, small-scale mining serves as a crucial pillar of livelihood and sustains local economic circulation; on the other hand, practices that are often insufficiently regulated generate risks of environmental degradation, inequitable distribution of health hazards, and social vulnerabilities that may disrupt security stability. For local communities, small-scale mining constitutes a vital source of subsistence. Moreover, ASGM contributes to the regional economy by creating employment opportunities and providing a significant source of income for the population.¹ The presence of high-potential gold-bearing areas, favorable for future exploration, indicates substantial economic opportunities.² While small-scale mining represents a significant economic potential, it simultaneously generates adverse impacts.³ ASGM activities have the potential to cause severe ecosystem degradation, contaminate water resources, and trigger the displacement or marginalization of local communities from their traditional habitats.⁴ Community-based gold mining contributes to environmental degradation, encompassing alterations in soil morphology, accelerated soil erosion, and the contamination of water resources.⁵ Environmental degradation generated by ASGM may undermine environmental security through water contamination, ecological instability, and resources conflicts. Air and water pollution constitute common by-products of mining activities, with contamination resulting from mining operations having already generated public health problems and diminished agricultural productivity.⁶ Miners are exposed to substantial health risks arising from prolonged contact with hazardous substances.⁷

¹ Oktarian W. Lusantono and Yolanda N. Hantari, “Artisanal and Small-Scale Gold Mining in Indonesia: A Case Study of Tobongon, East Bolaang Mongondow District, North Sulawesi Province,” 2020, 090010, <https://doi.org/10.1063/5.0006812>.

² Orlando Alex Siccha-Ruiz, “Multicriteria SIG Methodology for the Evaluation of the Potential of Gold Resources in the Alto Chicama Basin – La Libertad,” *Revista Ciencia y Tecnología* 20, no. 4 (2024): 33–47, <https://doi.org/10.17268/rev.cyt.2024.04.03>.

³ Franklin W. Schwartz et al., “A Review of the Scope of Artisanal and Small-Scale Mining Worldwide, Poverty, and the Associated Health Impacts,” *GeoHealth* 5, no. 1 (2021), <https://doi.org/10.1029/2020GH000325>.

⁴ Yuliya Zabyelina, “The Harms and Crimes of Mining,” in *Oxford Research Encyclopedia of Criminology and Criminal Justice* (Oxford University Press, 2023), <https://doi.org/10.1093/acrefore/9780190264079.013.766>.

⁵ Nefilinda Nefilinda et al., “The Impact of Gold Mining Activities on the Environment and Community in Nagari Tambang, IV Jurai District, South Pesisir District,” *International Journal of Social Science and Human Research* 7, no. 07 (2024), <https://doi.org/10.47191/ijsshr/v7-i07-119>.

⁶ Meghan Albriton et al., “‘Dying of Thirst, Like Fish in the Sea’: / ‘Muriéndonos de Sed, Como Peces En El Mar’: Syndemic Health Impacts and Environmental Risk Perceptions Associated with Mining among the Ch’orti’ of Eastern Guatemala / Impactos Sindémicos En La Salud y Percepcion,” *Journal of Latin American Geography* 23, no. 1 (2024): 48–79, <https://doi.org/10.1353/lag.2024.a929687>.

⁷ Enayatollah Seydi et al., “Occupational Exposure in Lead and Zinc Mines Induces Oxidative Stress in Miners Lymphocytes: Role of Mitochondrial/Lysosomal Damage,” *Main Group Metal Chemistry* 43, no. 1 (2020): 154–63, <https://doi.org/10.1515/mgmc-2020-0019>.

According to UNDP data cited in Meutia's work, artisanal and small-scale gold mining (ASGM) serves as an important source of income for approximately 300,000 miners in Indonesia.⁸ It is estimated that more than 2,700 ASGM sites are dispersed across various regions of Indonesia.⁹ Previous studies have been conducted in three regions identified as ASGM sites in Gorontalo Province, Indonesia, namely Bone Bolango, Boalemo, and Pohuwato Regencies. It is estimated that Bone Bolango Regency alone accommodates approximately 7,000 mining workers.¹⁰ ASGM activities represent a potential driver of local economic advancement, particularly in remote areas with limited access to education, markets, and alternative livelihood opportunities, where mining is often perceived as the sole realistic means of survival. For instance, ASGM operations such as those in Tobongon make a substantial contribution to the local economy by providing employment opportunities and generating income.¹¹

The complexities of artisanal and small-scale gold mining (ASGM) are difficult to measure comprehensively, as these activities often operate without formal licensing, resulting in the absence of reliable documentation concerning environmental impacts, health risks, economic potential, and income levels. Environmental degradation extends beyond the contamination of water, soil, and air; it also undermines community well-being by restricting access to clean and healthy resources essential for sustaining quality of life.¹² Research findings indicate that the difficulty in obtaining mining permits does not stem from community unwillingness, but rather from the complexity of administrative procedures and the substantial costs involved.¹³ This situation is further compounded by the centralization of mining permit administration. Such centralization is contentious, as it restricts the involvement of local governments and communities in the licensing process, thereby posing risks to local interests and well-being.¹⁴ Mining communities in remote areas generally face limited access to transportation, low levels of education, and minimal experience in administrative procedures. Under such circumstances, the centralization of small-scale mining permit processes becomes a major obstacle, as it entails substantial costs and bureaucratic requirements that are beyond the reach of local

⁸ Ami A. Meutia et al., "Indonesian Artisanal and Small-Scale Gold Mining—A Narrative Literature Review," *International Journal of Environmental Research and Public Health* 19, no. 7 (2022): 3955, <https://doi.org/10.3390/ijerph19073955>.

⁹ Annisa Fitri Mustafa, "Konflik Tambang Emas Sulawesi Utara: Pertambangan Emas Tanpa Izin (PETI)," *Penelitian Ilmu Pengetahuan Sosial* 1, no. 1 (2024), <https://doi.org/10.61511/pips.v1i1.2024.571>.

¹⁰ Amanda Adelina Harun, "Prinsip Keseimbangan Antara Ekologi Dan Ekowopi Dalam Peraturan Perundang-Undangan Serta Implementasinya Di Taman Nasional Bogani Nani Wartabone" (Universitas Islam Indonesia, 2025); Christopel Paino, "Ada 7.000 an Penambang Rakyat Di TN Bogani Nani Wartabone," <https://www.mongabay.co.id/2013/03/28/ada-7-000-an-penambang-rakyat-di-tn-bogani-nani-wartabone/>.

¹¹ Lusantono and Hantari, "Artisanal and Small-Scale Gold Mining in Indonesia: A Case Study of Tobongon, East Bolaang Mongondow District, North Sulawesi Province."

¹² Novendri M. Nggilu et al., "Legislative Omission: Portrait of Regional Waste Management Arrangements in Gorontalo Province-Indonesia," *IOP Conference Series: Earth and Environmental Science* 1270, no. 1 (2023): 012008, <https://doi.org/10.1088/1755-1315/1270/1/012008>.

¹³ Based on the findings of the focus group discussions and interviews conducted in July 2025 with community members from several villages in Pohuwato Regency and Boalemo Regency, Gorontalo Province, Indonesia.

¹⁴ Novita Eka Utami, "Sentralisasi Terhadap Kewenangan Pemerintah Daerah Dalam Perizinan Tambang Pasca Pemberlakuan Undang-Undang Mineral Dan Batubara," *Jurnal Lex Renaissance* 8, no. 2 (2023): 360–78, <https://doi.org/10.20885/JLR.vol8.iss2.art10>.

communities. Moreover, the expenses associated with obtaining a mining license remain unpredictable.¹⁵ The centralization of licensing, without due consideration of the structural limitations faced by local communities, ultimately widens the gap in access to legality and legal protection.

The prevailing regulatory framework tends to be top-down, fragmented, and primarily oriented toward formal compliance, thereby frequently failing to accommodate local values—such as the principles of deliberation and community-based ecological ethics—as sources of legitimacy and social capital for equitable mining governance. A repressive legal approach risks criminalizing downstream actors without providing transitional mechanisms toward safer, greener, and more accountable practices. Moreover, ambiguities within legal provisions create space for interpretations detrimental to communities, particularly in the mining sector, where long-standing local practices rooted in tradition are often construed as violations of formal industrial interests.¹⁶ This situation underscores the imbalance in relations among the state, corporations, and indigenous communities, wherein those most affected are paradoxically the least involved in decision-making processes. Strengthening community rights over their living spaces and resource management is thus imperative to ensure that mining policies do not marginalize them as primary actors in their own territories. The urgency of reframing small-scale mining regulations lies in the need for policy designs that integrate local wisdom, sustainability principles (ecological-economic-social), and security perspectives. Such reframing necessitates a paradigm shift from a purely prohibitive model of law enforcement toward adaptive, collaborative, and community-based governance—encompassing realistic licensing schemes, participatory monitoring, incentives for clean technologies, and restorative justice instruments aimed at repairing environmental damage and restoring social relations.

Problem Statement

The persistence of artisanal and small-scale gold mining (ASGM) in Gorontalo reflects a complex interplay between economic survival, environmental degradation, and legal frameworks that remain misaligned with local realities. Despite its contribution to community livelihoods, ASGM generates severe ecological damage, including deforestation, soil degradation, and water contamination. These challenges highlight the urgency of a regulatory framework that is not only sustainable but also inclusive of community voices. Against this background, two fundamental problem statements emerge, (1), how can the regulation of small-scale gold mining in Gorontalo be structured to integrate local values and sustainability principles in a balanced way that ensures environmental justice and regional security? (2), what alternative policy models can be formulated to reformulate the legal approach toward ASGM so that it becomes more adaptive, participatory, and socially responsive?

¹⁵ Based on discussions conducted in July 2025 with respondents from communities in several villages across Pohuwato Regency and Boalemo Regency, Gorontalo Province, Indonesia.

¹⁶ Lade Sirjon, "Legal Ambiguity and Its Impact on Community Criminalization in Mining Obstruction Cases: An Inclusive Legal Perspective," *Rechtsidee* 11, no. 1 (2023), <https://doi.org/10.21070/jihr.v12i1.979>.

Methods

This research applies a mixed normative–empirical legal design. On the normative side, it systematically analyzes Indonesia’s mining law framework, including Law No. 4/2009 and its amendments, Law No. 3/2020, Law No. 2/2025, and Perpres No. 55/2022, in order to trace authority distribution, licensing pathways, and openings for legal pluralism.¹⁷ Empirically, the study employs purposive sampling across Gorontalo’s mining districts—Bone Bolango, Pohuwato, and Boalemo—to capture contrasting mining typologies, from hard-rock underground sites to alluvial open-pit operations. Data collection methods include non-participant observation of mining practices, semi-structured interviews with miners, local leaders, cooperative managers, and government officers, as well as analysis of documentary evidence such as cooperative financial ledgers, community by-laws, and enforcement reports. Thematic coding was applied to field data using categories of compliance, legitimacy, equity, and risk, while doctrinal synthesis structured the legal analysis. Triangulation across legal texts, field evidence, and community records reinforced validity, while reflexive documentation minimized researcher bias. Cross-case comparison allowed identification of context-specific regulatory strategies—particularly tiered licensing, community-based monitoring, and restorative justice—as key mechanisms for sustainable ASGM governance.

Regulatory Centralization and the Legality Gap in Gorontalo ASGM

Mining activities in Indonesia are governed by the Mineral and Coal Mining Law, which has undergone several amendments (revisions) over time.¹⁸ The primary regulation was formulated to adapt to policy dynamics, the demands of natural resource management, as well as technological and environmental developments. The sequence of amendments to the mining regulation is as follows:

- 1) Law No. 4 of 2009 on Mineral and Coal Mining;
- 2) Law No. 11 of 2020 on Job Creation;
- 3) Law No. 3 of 2020 amending Law No. 4 of 2009 on Mineral and Coal Mining;
- 4) Law No. 6 of 2023 stipulating Government Regulation in Lieu of Law No. 2 of 2022 on Job Creation as Law; and
- 5) Law No. 2 of 2025 as the Fourth Amendment to Law No. 4 of 2009 on Mineral and Coal

¹⁷ Marolop Pandiangan et al., “The Conflict between Mining Law and Anti-Corruption Law in Indonesia’s Extractive Sector: A Study of Legal Justification and Judicial Reasoning,” *Volksgeist: Jurnal Ilmu Hukum Dan Konstitusi*, May 15, 2026, 111–26, <https://doi.org/10.24090/volksgeist.v9i1.14411>; Basri Mulyani and M. Helmi, “Justice and Sustainability: Legal Perspectives on Mining and Tourism in Raja Ampat,” *Jurnal IUS Kajian Hukum Dan Keadilan* 13, no. 3 (2025): 638–55, <https://doi.org/10.29303/ius.v13i3.1840>; Ikbal Ikbal et al., “Environmental Management Strategy in the Golden Era of the Poboya Village Mining Area, Mantikulore District, Palu City,” *Administrative and Environmental Law Review* 7, no. 1 (2026): 93–106, <https://doi.org/10.25041/aclr.v7i1.4592>; Erma Rusdiana et al., “The Potential for Corporate Corruption in Mining Licensing Policies for Religious Organizations in Indonesia,” *Lex Scientia Law Review* 9, no. 2 (2025): 1587–636, <https://doi.org/10.15294/lslr.v9i2.21551>.

¹⁸ “Legal Culture, Environmental Non-Compliance, and the Persistence of Illegal Mining in Paningkaban,” *IJCLS (Indonesian Journal of Criminal Law Studies)* 10, no. 1 (2025), <https://doi.org/10.15294/ijcls.v10i1.24008>.

Mining.

Mining law in Indonesia formally recognizes ASGM as a distinct form of extractive activity, characterized by its scale of operations, the technology employed, and the objectives underlying mineral and coal resource management. The legal framework governing mining permits has undergone significant transformations, with the central government now assuming a dominant role in regulatory authority.¹⁹ The amendment introduced by Law No. 3 of 2020 eliminated the authority of local governments in issuing mining business permits, thereby centralizing the entire licensing process under the jurisdiction of the central government with the stated aim of creating a more integrated and efficient regulatory framework.²⁰

The central government now holds the authority to designate Mining Business Permit Areas (WIUP) and to issue Mining Business Permits (IUP), a responsibility that was previously under the jurisdiction of local governments.²¹ The centralization of mining policy is intended to address licensing challenges and facilitate investment in order to stimulate economic growth; however, it has drawn criticism for prioritizing economic interests over local welfare and environmental sustainability.²² The enactment of Law No. 3 of 2020 in Indonesia centralized mining licensing authority under the central government, thereby diminishing the role of local governments and establishing a more centralized bureaucratic structure. This policy has generated disharmony between central authorities and regional governments due to the significant reduction of local governments' control over mining activities within their jurisdictions.²³ The limited involvement of local governments and the lack of community participation in the licensing process risk creating misalignments between the needs and aspirations of local populations and the policies imposed by the central government.²⁴

The majority of ASGM activities operate without official permits, even within areas

¹⁹ Aminuddin Kasim et al., "Mining Business Licensing in Indonesia: Perspective Administrative Law After The Revision of The Mineral and Coal Law," *Russian Law Journal* 11, no. 3 (2023), <https://doi.org/10.52783/rlj.v11i3.1538>.

²⁰ Fendi Haryono, "Tin Mining Licensing in the Era of Local Government Reform," *International Journal of Multicultural and Multireligious Understanding* 9, no. 2 (2022): 149, <https://doi.org/10.18415/ijmmu.v9i2.3355>; Elsa Ardhilia Putri et al., "Penguatan Prinsip Transparansi Dalam Sentralisasi Izin Usaha Pertambangan Minerba Guna Meminimalisir Korupsi," *Arena Hukum* 16, no. 3 (2023): 557–82, <https://doi.org/10.21776/ub.arenahukum.2023.01603.6>.

²¹ I. Made Sudharma and I. Wayan Parsa, "Kewenangan Pemerintah Provinsi Bali Dalam Pemberian Perizinan Terhadap Usaha Pertambangan Mineral Bukan Logam Dan Batuan," *Jurnal Magister Hukum Udayana (Udayana Master Law Journal)* 11, no. 4 (2022): 882, <https://doi.org/10.24843/JMHU.2022.v11i04.p12>.

²² Abdillah Dalimunte et al., "Legal Problems Related to Mineral and Coal Mining Permits," *Jurnal Cakrawala Hukum* 14, no. 1 (2023): 76–85, <https://doi.org/10.26905/idjch.v14i1.9872>.

²³ Probojati Bayu Herlambang et al., "PROBLEMATICS OF CHANGES IN MINING AND BANK PROVISIONS IN MINING LICENSING AUTHORITY," *Jurnal Meta-Yuridis* 6, no. 2 (2023): 40–48, <https://doi.org/10.26877/m-y.v6i2.14291>; Eka Utami, "Sentralisasi Terhadap Kewenangan Pemerintah Daerah Dalam Perizinan Tambang Pasca Pemberlakuan Undang-Undang Mineral Dan Batubara."

²⁴ Pandu Adi Cakranegara et al., "Distribution of Authority for Mining Business Permits between the Central Government and Regional Governments After the Enactment of the Minerba Law Number 4 of 2009," *Journal of Progressive Law and Legal Studies* 1, no. 02 (2023): 88–96, <https://doi.org/10.59653/jplls.v1i02.46>; Eka Utami, "Sentralisasi Terhadap Kewenangan Pemerintah Daerah Dalam Perizinan Tambang Pasca Pemberlakuan Undang-Undang Mineral Dan Batubara."

formally designated as Small-Scale Mining (ASGM) Zones (WPR). The centralization of licensing authority exacerbates the obstacles faced by ASGM in navigating administrative procedures, where the complexity and lengthy duration of the licensing process risk delaying mining operations and hindering formalization efforts—measures that are essential for minimizing environmental impacts and improving miners' working conditions.²⁵ The transfer of licensing authority from local to central government has resulted in procedural changes accompanied by greater governance complexity. This process entails intricate legal and administrative requirements, making it difficult for stakeholders to navigate the licensing stages effectively.²⁶ Communities encounter significant difficulties in obtaining permits due to the complexity of procedures, compounded by uncertainties regarding the duration of completion and the overall costs incurred throughout the process.

Legal Pluralism, Local Values and Environmental Justice in Community-Based ASGM Gorontalo

The research focused on three regions in Gorontalo Province identified as ASGM sites, namely Bone Bolango, Boalemo, and Pohuwato Regencies. Each of these regencies demonstrates distinct characteristics of ASGM. The differences extend not only to the scale and techniques of mining but also to geographical conditions that influence accessibility, methods of resource exploitation, and the environmental risks encountered.²⁷ The diversity of geographical settings further shapes the patterns of social interaction and the organizational structures of mining communities in each area. Likewise, the local values embedded within mining communities across these regions are far from uniform, reflecting unique cultural contexts shaped by historical trajectories, kinship structures, and the communities' relationship with their natural environment.²⁸

²⁵ Graham W. Prescott et al., "Formalizing Artisanal and Small-Scale Gold Mining: A Grand Challenge of the Minamata Convention," *One Earth* 5, no. 3 (2022): 242–51, <https://doi.org/10.1016/j.oneear.2022.02.005>; Taşkın Deniz YILDIZ, "RECOMENDATIONS FOR AUTHORIZED ADMINISTRATION ORGANIZATION IN THE MINING OPERATION PERMIT PROCESS IN TURKEY," *Trakya Üniversitesi Sosyal Bilimler Dergisi* 22, no. 1 (2020): 117–43, <https://doi.org/10.26468/trakyasobed.533814>.

²⁶ Sudharma and Parsa, "Kewenangan Pemerintah Provinsi Bali Dalam Pemberian Perizinan Terhadap Usaha Pertambangan Mineral Bukan Logam Dan Batuan"; Aminuddin Kasim et al., "Mining Business Licensing in Indonesia: Perspective Administrative Law After The Revision of The Mineral and Coal Law."

²⁷ Nurhasan et al., "The Role of Local Wisdom in Realizing The Principle of Environmental Sustainability Principles in Indonesia," *LITIGASI* 26, no. 1 (2025): 382–408, <https://doi.org/10.23969/litigasi.v26i1.19691>; Zico Junius Fernando et al., "Transnational Environmental Crime in the Context of International Criminal Law and Victim-Centered Environmental Justice," *Lampung Journal of International Law* 7, no. 1 (2025): 15–30, <https://doi.org/10.25041/lajil.v7i1.4338>; Zico Junius Fernando et al., "Reconstructing Environmental Criminal Law in Indonesia Through a Comparative Zemiological Legal Study," *Trunojoyo Law Review* 8, no. 1 (2026): 95–126, <https://doi.org/10.21107/tr.v8i1.31912>; Istislam Istislam et al., "ADAPTIVE ENVIRONMENTAL GOVERNANCE WITHIN A LEGAL PLURALISM FRAMEWORK: A Case Study of The Tengger Indigenous Community in Indonesia," *Jurisdictie: Jurnal Hukum Dan Syariah* 17, no. 1 (2026), <https://doi.org/10.18860/j.v17i1.41228>.

²⁸ Isharyanto Isharyanto and Deva Mahendra Caesar Bimantya, "Reformulation of the Cultural Heritage Law for Climate Adaptation Based on Local Wisdom," *Jambe Law Journal* 9, no. 1 (2026): 341–68, <https://doi.org/10.22437/08st1g52>; Bagio Kadaryanto et al., "Reconstruction of Indigenous Community Inclusion in Village Autonomy Policy: Towards a Substantive Autonomy Model in Indonesia," *Al-Risalah: Forum Kajian Hukum Dan Sosial Kemasyarakatan* 25, no. 1 (2025): 1–19, <https://doi.org/10.30631/alrisalah.v25i1.1845>; Erniwati Erniwati et al., "Customary Sanctions for

Such variations constitute a critical dimension for understanding ASGM practices and highlight the importance of context-sensitive policymaking. Based on interviews and community discussions conducted during the study, several key points can be drawn regarding ASGM in the three regencies.

1. Bone Bolango Regency

Mining communities in Bone Bolango Regency²⁹ are situated within both coastal and mountainous landscapes. The type of gold extracted through ASGM activities in Bone Bolango is classified as hard-rock gold, which requires underground operations involving the excavation of shafts or tunnels—either vertically or horizontally—in order to access the concealed ore bodies.³⁰ The extraction process is rendered more complex by geological characteristics that demand technical expertise and the use of appropriate equipment. ASGM sites are located at mountain summits, accessible only through steep cliffs, which makes entry highly challenging. Reaching the mining areas requires approximately three hours of travel on foot. As an alternative to walking, miners may rely on motorcycle taxis (*ojek*) or on hired laborers known as “kijang”—modified two-wheeled vehicles designed to transport both passengers and goods across extreme terrains.³¹ The routes leading to the mining sites are typically narrow dirt paths that are slippery and muddy, with steep inclines that further limit accessibility. In several sections, the trails run along cliff edges, rendering them passable only to highly experienced drivers. Restricted access to mining locations constitutes one of the major challenges of ASGM activities. The technical difficulty of the mining methods employed further compounds operational barriers for local communities. Collectively, these factors contribute to the relatively low number of individuals engaged in mining activities.

The number of miners in Molotabu and Taludaa Villages remains relatively low, as mining does not constitute the primary source of livelihood. The majority of those engaged in ASGM are fishermen or farmers who turn to mining only during certain seasons when natural conditions hinder fishing or agricultural activities, thereby adopting it as an adaptive strategy to meet economic needs. ASGM in Bone Bolango is generally carried out by small community groups using traditional methods, primarily manual excavation of shafts. These practices unfold within a social environment marked by a spirit of mutual cooperation (*gotong royong*) and reciprocal respect among miners. Social structures dominated by kinship ties foster harmonious patterns of interaction, resulting in minimal social conflict within the mining community. Dispute resolution mechanisms are conducted informally at the village level, with the village head serving as a trusted mediator. The genealogical connection between the village head and the majority of the

Strengthening Moral Order and Social Harmony in South Sumatra Communities,” *De Jure: Jurnal Hukum Dan Syar’iah* 17, no. 2 (2025): 417–37, <https://doi.org/10.18860/j-fsh.v17i2.32262>.

²⁹ The study was conducted in Molotabu Village and Taludaa Village.

³⁰ Yulin Zhang et al., “Enhancing Safety, Sustainability, and Economics in Mining through Innovative Pillar Design: A State-of-the-Art Review,” *Journal of Safety and Sustainability* 1, no. 1 (2024): 53–73, <https://doi.org/10.1016/j.jsasus.2023.11.001>; Xingdong Zhao et al., “Optimization Drift Support Design Based on Engineering Geological and Geotechnical Analysis in Deep Hard-Rock Mine: A Case Study,” *Applied Sciences* 12, no. 20 (2022): 10224, <https://doi.org/10.3390/app122010224>.

³¹ Diah Irawati Dwi Arini Diah and Isdomo Yuliantoro Isdomo, “Perception of Local Community of Pinogu Toward Forest and Its Utilization,” *Jurnal Wasian* 6, no. 2 (2019): 111–23, <https://doi.org/10.62142/7qbgnp11>.

community reinforces both the legitimacy and effectiveness of community-based conflict resolution.

2. Pohuwato Regency

In contrast to Bone Bolango, where ASGM involves hard-rock gold, ASGM in Pohuwato is characterized by alluvial gold. Alluvial gold deposits are formed through the weathering of gold-bearing parent rocks in upstream areas, with the particles subsequently transported by water flow and accumulated on riverbeds or along the banks of other water bodies.³² ASGM in Pohuwato Regency is generally conducted in open-pit areas using heavy machinery such as excavators and operates on a much larger scale compared to similar practices in Bone Bolango. The use of such equipment is predominantly facilitated by capital-owning actors, resulting in a mining structure largely controlled by a small number of entrepreneurs. Local communities primarily participate as laborers within this semi-formal organizational system. Nevertheless, Pohuwato communities uphold a cultural value known as *kabilasa*—a practice of granting local residents the opportunity to mine independently with simple tools as an expression of social solidarity and equitable access to resources. *Kabilasa* embodies a social tradition that reflects solidarity and inclusiveness in resource distribution among local mining communities. This practice allows individuals without capital or heavy equipment to still derive economic benefits from mining through the use of basic tools.

ASGM in Pohuwato Regency generates a substantial economic impact on local communities, particularly by stimulating financial circulation within village-level enterprises. Cooperative reports indicate a marked increase in turnover across Village-Owned Enterprises (BUMDes), reflecting the mining sector's role as a key driver of rural economic activity. Community engagement in ASGM is generally more pronounced than in agriculture, as farming requires a cultivation period of four to six months and carries a considerable risk of crop failure. By contrast, mining is widely regarded as more promising, offering the possibility of relatively immediate returns, in some cases within a single day, thereby becoming the preferred livelihood strategy for meeting household economic needs.

3. Boalemo Regency

ASGM activities in Boalemo Regency share similarities with those in Pohuwato, particularly in the exploitation of alluvial gold accumulated in water bodies. The linkage between ASGM and local economic dynamics is evident through its contribution to the circulation of goods and services in surrounding areas. Field discussions highlight a striking contrast in the intensity of community economic activities between periods of active mining and periods of suspension. ASGM generates multiplier effects for micro-entrepreneurs, such as food vendors and fuel suppliers, who experience increased demand during active mining operations.

In Boalemo, alongside manual extraction, ASGM practices employing heavy equipment

³² Spyridon Mathioudakis et al., "Alluvial Gold Mining from Argonauts to Agricola," *RawMat* 2023 (Basel Switzerland), October 25, 2023, 23, <https://doi.org/10.3390/materproc2023015023>.

such as excavators are also present. Although these activities contribute to local economic turnover, they are subject to enforcement measures by authorities due to the absence of formal permits. The suspension of mining operations has a direct impact on declining community income, particularly among small-scale entrepreneurs whose livelihoods rely on the continuity of mining activities. This situation illustrates the close interdependence between the informal mining sector and the economic resilience of local communities, which remain heavily dependent on natural resource-based livelihoods.

Table 1: Comparative Typology of ASGM in Bone Bolango, Pohuwato, and Boalemo

Dimension	Bone Bolango Regency	Pohuwato Regency	Boalemo Regency
Type of Gold	Hard-rock gold (extracted underground through vertical or horizontal shafts/tunnels).	Alluvial gold (originating from deposits carried by river flows and accumulated in water bodies).	Alluvial gold (originating from deposits accumulated in water bodies).
Location & Accessibility	Mountain summits, steep cliffs, difficult access ($\approx$ 3 hours on foot or via <i>ojek</i> or modified transport). Trails are narrow, muddy, and run along cliff edges.	Open sites, easier access, use of heavy machinery.	Open sites, similar to Pohuwato; relatively easier access, though some operations have been suspended.
Mining Methods	Manual, small groups, traditional (manual shaft excavation).	Use of heavy equipment (excavators) combined with manual methods for <i>kabilasa</i> (community solidarity-based independent mining).	Use of heavy equipment (excavators—currently prohibited) alongside manual extraction methods.
Scale & Management	Small-scale, community-based, informally organized.	Large-scale, semi-formal, controlled by capital owners; local communities mostly as labor.	Small-to-medium scale; some operations lack formal permits but exert significant influence on the local economy.
Main Livelihoods	Predominantly fishermen/farmers, mining only seasonally (adaptive strategy).	Many shift to mining due to faster returns compared to agriculture.	Community livelihoods strongly tied to the continuation of mining; disruptions directly affect local small-scale entrepreneurs.
Cultural & Social Values	Strong kinship ties, mutual cooperation (<i>gotong royong</i>), minimal conflict, disputes resolved informally by village head.	<i>Kabilasa</i> tradition: granting locals access to mine independently with simple tools as a form of solidarity.	No specific tradition noted; however, economic dependence on mining remains significant.
Economic Impact	Limited, due to smaller number of miners and mining not being the primary source of livelihood.	Significant, reflected in cooperative-based economic turnover and increased circulation in local trade.	Significant during active mining periods; sharp decline in income during suspension.
Key Challenges	Difficult access, complex	Dependence on large	Issues of mining legality and

extraction methods, few miners, and issues of legality.	capital, risks of unequal access to resources, and licensing barriers.	income fluctuations following suspension of mining operations.
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Source: Data processed by the author

Small-scale gold mining (ASGM) has emerged as a source of livelihood, yet at the same time it generates environmental degradation and social conflict, thereby raising doubts about its long-term sustainability.³³ The sustainability of small-scale mining practices within the communities of Bone Bolango, Pohuwato, and Boalemo requires serious attention due to their interconnected implications for ecological balance, economic continuity, and regional social stability. ASGM activities not only reflect short-term economic survival strategies but also shape the socio-cultural dynamics and patterns of community interaction. The differing characteristics of mining in these three regions highlight variations in the intensity of resource exploitation, community involvement, and environmental pressures. Bone Bolango, where small-scale hard-rock gold mining is conducted in remote and less accessible areas, tends to exert lower ecological stress. In contrast, Pohuwato and Boalemo, where large-scale alluvial gold extraction—including the use of heavy machinery—is more prevalent, present significant challenges for environmental preservation and socio-economic equilibrium. These ecological, technical, and social distinctions across regions underscore the necessity of management strategies tailored to local characteristics. Strengthening regulatory frameworks, enhancing community capacity, and implementing responsible mining practices constitute essential prerequisites for ensuring environmental, economic, and social sustainability in these ASGM areas.

The centralization of mining licensing authority under Law No. 3 of 2020 in Indonesia carries significant implications for local community participation, social legitimacy, and the sustainability of informal artisanal and small-scale gold mining (ASGM) practices. This regulatory shift transfers authority from local governments to the central government, thereby undermining the earlier spirit of decentralization that had allowed greater involvement of local communities in mining governance.³⁴ This centralization reduces opportunities for communities to engage actively in decision-making processes, which in turn diminishes social legitimacy in mining governance. When communities perceive themselves as marginalized, there is a growing tendency for informal ASGM practices to proliferate, serving as a local strategy to bypass bureaucratic barriers while maintaining access to gold resources.³⁵ The rigid model of full centralization, which initially restricted regional participation, has undergone a slight adjustment with the

³³ Eleanor Fisher et al., “Transforming Matters: Sustaining Gold Lifeways in Artisanal and Small-Scale Mining,” *Current Opinion in Environmental Sustainability* 49 (2021): 190–200, <https://doi.org/10.1016/j.cosust.2021.06.010>.

³⁴ Ahmad Redi and Luthfi Marfugah, “Perkembangan Kebijakan Hukum Pertambangan Mineral Dan Batubara Di Indonesia,” *Undang Jurnal Hukum* 4, no. 2 (2021): 473–506, <https://doi.org/10.22437/ujh.4.2.473-506>; Nur Oktavia Benedicta et al., “Preferensi Dan Kesiediaan Membayar Konsumen Terhadap Kantong Belanja Ramah Lingkungan Di Provinsi DKI Jakarta,” *Jurnal Ilmu Lingkungan* 22, no. 1 (2023): 155–62, <https://doi.org/10.14710/jil.22.1.155-162>.

³⁵ Sri Suatmiati et al., “Proliferation of Unlicensed Mining in Indonesia When the Minerba Law Was Enacted,” *Jurnal Sosial Dan Sains* 2, no. 11 (2022): 1222–26, <https://doi.org/10.59188/jurnalsosains.v2i11.527>.

enactment of Presidential Regulation No. 55 of 2022. This regulation introduces new opportunities by delegating authority over ASGM Permits (IPR) and oversight functions to provincial governors, although the central government retains control over Mining Business Licenses (IUP) and Metal Mining Business License Areas (WIUP).

In addition, the regulatory emphasis on investment facilitation and the extension of mining licenses has exacerbated environmental degradation, as it prioritizes investor interests over the well-being of local communities.³⁶ The neglect of community rights and environmental standards within this regulatory framework has created fertile ground for the proliferation of ASGM practices, which have become increasingly difficult to regulate, thereby reinforcing cycles of exploitation and disorder.³⁷ Thus, although intended to promote economic growth, this policy has in fact reversed the progress of local empowerment and sustainability, while underscoring the urgent need for regulatory reform that genuinely integrates community voices and the principles of sustainable environmental governance.³⁸

The centralization of mining licensing authority in Indonesia through Law No. 3/2020 critically affects local communities and environmental justice in regions dependent on natural resources. This shift curtails local autonomy and constrains community participation in decision-making processes, thereby generating a deficit of social legitimacy and eroding trust in state mechanisms. Feelings of marginalization within communities frequently trigger resistance and conflict dynamics surrounding ASGM practices, as ASGM is often perceived as a survival strategy in response to regulatory neglect and socio-economic marginalization.³⁹ Moreover, this law has the potential to intensify environmental degradation and social inequality, as large-scale, centralized operations tend to prioritize economic gains over ecological sustainability. Such conditions often perpetuate cycles of conflict, particularly when communities are confronted with environmental damage and the social consequences of inadequately regulated ASGM activities.⁴⁰ As a result, this shift not only undermines the pursuit of

³⁶ Asrul I. Nur et al., "Revitalising Indigenous Rights Participation in Mining Lawmaking Process: Evaluation and Proposal for Indonesia," *Law Reform* 20, no. 1 (2024): 188–210, <https://doi.org/10.14710/lr.v20i1.63684>; Nancy S. A. Wondal et al., "The Law of Natural Resources Management for Economic Prosperity: A Critical Analysis of Law No. 3 of 2020 on Mineral and Coal Mining," *Ijcs* 1, no. 12 (2024): 952–63, <https://doi.org/10.55927/ijcs.v1i12.12044>; Amanda Adelina Harun et al., "Indonesian Mining Regulations Shift as a Potential Sector in Developing the Economy," *Jurnal Pamator: Jurnal Ilmiah Universitas Trunojoyo* 16, no. 2 (2023): 419–34, <https://doi.org/10.21107/pamator.v16i2.20114>.

³⁷ Ahmad Redi, "Responsive Law Enforcement in Preventing and Eradicating Illegal Mining in Indonesia," *Journal of Law and Sustainable Development* 11, no. 8 (2023): e1436, <https://doi.org/10.55908/sdgs.v11i8.1436>; Absori Absori et al., "Government Policies for the Natural Resource Management of Minerals and Coal Based on Social Welfare," *Pena Justisia Media Komunikasi Dan Kajian Hukum* 20, no. 1 (2022), <https://doi.org/10.31941/pj.v20i1.1715>.

³⁸ Redi, "Responsive Law Enforcement in Preventing and Eradicating Illegal Mining in Indonesia"; Ivan F. Agustinus, "Mineral and Coal Mining Business and Management in Indonesia From the Indonesian Constitutional Viewpoint," *Journal of World Science* 1, no. 7 (2022): 500–510, <https://doi.org/10.36418/jws.v1i7.68>.

³⁹ Suatmiati et al., "Proliferation of Unlicensed Mining in Indonesia When the Minerba Law Was Enacted"; Meutia et al., "Indonesian Artisanal and Small-Scale Gold Mining—A Narrative Literature Review."

⁴⁰ Meutia et al., "Indonesian Artisanal and Small-Scale Gold Mining—A Narrative Literature Review"; Luthfi Marfugah et al., "Implementing Spatial Planning Based on Environmental Sustainability in the Mining

equitable resource governance but also exacerbates tensions between local communities and state authorities, thereby complicating the path toward sustainable development and social harmony.⁴¹

Reformulating the Legal Approach: Towards Adaptive and Community-Based ASGM Policies

Mineral resources are positioned as high-value commodities that are finite in nature and entail substantial ecological impacts.⁴² The mining industry faces profound environmental challenges, including soil degradation, deforestation, and greenhouse gas emissions, thereby making sustainable mining practices contingent upon reducing resource and energy consumption as well as minimizing waste generation across all stages of mining operations.⁴³ Artisanal and small-scale mining (ASGM) presents similarly acute environmental threats, such as deforestation, soil degradation, and water contamination, which contribute to climate change and biodiversity loss, ultimately hindering the achievement of environmental sustainability in mining areas. Although ASGM activities often generate significant adverse impacts, the potential for sustainability remains attainable through the adoption of systemic approaches that integrate social, environmental, and economic responsibilities, alongside improved occupational safety, the application of cleaner mining practices, effective waste management, and the reduction of ecological footprints.

Governance plays a pivotal role in advancing sustainability, where the application of good governance principles, the strengthening of social acceptance, and the integration of mining activities with broader socio-economic systems are essential conditions for achieving sustainable development in mining regions.⁴⁴ The cessation of mining activities may trigger challenges such as depopulation and rising poverty, yet simultaneously opens opportunities for sustainable redevelopment through targeted and context-sensitive policies and planning strategies. Mining operations frequently generate social conflict and displacement, particularly in developing countries. Unregulated artisanal and small-scale mining (ASGM) lacking clear boundaries and licensing frameworks is also

Area," *International Journal of Humanities Education and Social Sciences (Ijhess)* 3, no. 4 (2024), <https://doi.org/10.55227/ijhess.v3i4.935>; Fenty U. Puluhalawa and Amanda Adelina Harun, "Biodiversity Protection from the Impact of Illegal Gold Mining for Sustainability," *IOP Conference Series: Earth and Environmental Science* 519, no. 1 (2020), <https://doi.org/10.1088/1755-1315/519/1/012031>.

⁴¹ Suatmiati et al., "Proliferation of Unlicensed Mining in Indonesia When the Minerba Law Was Enacted"; Mohammad Jhanattan et al., "Mining Management of Nonmetallic Minerals and Rocks Based on Government Policy," *International Journal of Environmental Impacts Management Mitigation and Recovery* 6, no. 4 (2023): 165–81, <https://doi.org/10.18280/ijei.060402>; T. Haq et al., "Sustainable Environmental Recovery Policy: Redesigning Sand Mining Policy in Indonesia," *Journal of Law and Sustainable Development* 11, no. 7 (2023): e1311, <https://doi.org/10.55908/sdgs.v11i7.1311>.

⁴² Fenty U. Puluhalawa and Amanda Adelina Harun, "Policy Formalization of Artisanal and Small-Scale Gold Mining (ASGM) Post-Ratification of Minamata Convention for Sustainability (Case Study of ASGM Gorontalo)," *E3S Web of Conferences* 125 ICENIS, 2019, 1–7, <https://doi.org/10.1051/e3sconf/2019>.

⁴³ Paul Atagamen Aidonojie et al., "Constitutional and Legislative Frameworks for Green and Sustainable Environmental Governance in Uganda," *International Journal of Constitutional and Administrative Law* 1, no. 1 (2025): 1–20.

⁴⁴ I. Gede Agus Kurniawan et al., "Trademark Protection and Sustainable Development: A Comparative Study of Indonesia, Oman, and the Philippines," *Indonesia Private Law Review* 7, no. 1 (2026): 13–34, <https://doi.org/10.25041/iplr.v7i1.4775>.

prone to socio-environmental conflict due to competition over natural resources. Excessive dependence on the mining sector—especially operations outside the formal legal framework—heightens vulnerability to global gold price fluctuations and regulatory enforcement. Moreover, the unequal distribution of economic benefits often marginalizes local communities. The economic viability of mining operations is a key element of sustainability, as these activities may stimulate development through job creation and income generation, while at the same time posing challenges in the form of resource dependency and economic instability in mining regions. Given the complexity of issues encompassing environmental, economic, and social dimensions at the local level, the reformulation of legal approaches in ASGM governance has become an urgent necessity. The dynamics of ASGM activities in Bone Bolango, Pohuwato, and Boalemo reveal that uniform policies are insufficient to accommodate the diversity of regional characteristics, community capacities, and risk potentials. An adaptive and community-based legal approach is therefore required to balance economic interests with environmental protection and maintain social stability, while ensuring the sustainability of natural resource management. The integration of local values, community empowerment, and the strengthened role of local governments constitutes a strategic foundation for developing ASGM policies that are more equitable, inclusive, and responsive to the challenges of non-traditional security.

A significant shift in Indonesia's mining governance was marked by the enactment of Law No. 3 of 2020, which consolidated licensing authority under the central government. This reform was intended to enhance procedural efficiency by establishing a more integrated licensing system and reducing overlapping authorization practices that had previously been administered by local governments.⁴⁵ However, this centralization policy presents a serious dilemma, particularly in the artisanal and small-scale gold mining (ASGM) sector, as it diminishes opportunities for local community participation and undermines the social legitimacy of the prevailing regulatory framework.⁴⁶ The limited space for communities to articulate their interests has led segments of the population to feel alienated, thereby driving the expansion of informal mining practices as a survival mechanism in response to bureaucratic barriers.⁴⁷ Field research conducted in Gorontalo Province—covering Bone Bolango, Pohuwato, and Boalemo Regencies—reveals significant variations in ASGM practices. In Bone Bolango, mining activities are predominantly characterized by underground (hard-rock gold) operations with limited accessibility and high levels of risk, whereas in Pohuwato and Boalemo, alluvial mining practices are more prevalent, often involving the use of mechanical equipment such as excavators.⁴⁸ Presidential Regulation No. 55 of 2022 introduced an important shift in the governance of ASGM in Indonesia. Under this regulation, a portion of authority is

⁴⁵ Redi and Marfugah, "Perkembangan Kebijakan Hukum Pertambangan Mineral Dan Batubara Di Indonesia"; Nur et al., "Revitalising Indigenous Rights Participation in Mining Lawmaking Process: Evaluation and Proposal for Indonesia."

⁴⁶ Derita P. Rahayu et al., "Environmental and Social Injustice: Impact and Sustainability of Small Scale Tin Mining Under Indonesia's New Mineral and Coal Regulation," *Cepalo* 7, no. 2 (2023): 119–30, <https://doi.org/10.25041/cepalo.v7no2.3137>.

⁴⁷ Suatmiati et al., "Proliferation of Unlicensed Mining in Indonesia When the Minerba Law Was Enacted."

⁴⁸ Wahyu Garinas et al., "Mercury Content in Mining Waste and Its Effect on the Surrounding Environment (Case Study: Small-Scale Gold Mining Locations-West Sumbawa)," *Iop Conference Series Earth and Environmental Science* 1201, no. 1 (2023): 12047, <https://doi.org/10.1088/1755-1315/1201/1/012047>.

delegated to provincial governments, particularly with respect to the issuance of ASGM Permits (IPR) and the implementation of guidance and supervision of mining activities. Nevertheless, strategic authority concerning Mining Business Licenses (IUP) and the designation of Mining Business License Areas (WIUP) for metal commodities remains vested in the central government. This institutional configuration implies that the design of participatory governance forums should be situated at the provincial level, while incorporating district and village networks in both consultative and coordinative capacities. Such an approach is expected to integrate formal legal legitimacy with the social legitimacy of communities, while simultaneously ensuring compliance with the prohibition on sub-delegating authority to district and municipal governments. In the context of Pohuwato, a local social practice known as *kabilasa* has emerged, functioning as a system of shared mining access that enables community members without substantial capital to earn income from mining activities. The findings indicate that *kabilasa* constitutes more than a localized cultural practice; it functions as a community-based governance mechanism that regulates access to mineral resources through socially recognized norms. Under this arrangement, individuals who lack financial capital or access to mechanized mining equipment are granted opportunities to participate in mining activities using simpler methods, thereby enabling a more equitable distribution of economic benefits within the community. The practice reflects deeply embedded values of solidarity, reciprocity, and social responsibility, which contribute to maintaining social cohesion and reducing the risk of exclusion among local residents. From a legal pluralism perspective, *kabilasa* represents a living normative institution that operates alongside formal state regulations in governing resource access and utilization. Although not formally codified within statutory law, its legitimacy derives from sustained community acceptance and its effectiveness in managing social relations surrounding mining activities. The existence of *kabilasa* demonstrates that governance arrangements in artisanal and small-scale gold mining are shaped not only by state-centred legal frameworks but also by locally embedded norms that influence resource allocation, conflict management, and collective decision-making. Consequently, recognizing *kabilasa* within a broader regulatory framework may strengthen social legitimacy, enhance community compliance, and support the development of a more adaptive, participatory, and context-sensitive approach to artisanal and small-scale gold mining governance. Such local values illustrate the presence of cultural dimensions that cannot be disregarded in the formulation of policy.⁴⁹ Thus, uniform regulations are ill-suited to address diverse needs and often serve instead to widen the gap between formal legal frameworks and the socio-economic realities of local communities.

The role of law becomes crucial in regulating environmental protection, which is constitutionally guaranteed.⁵⁰ The concept of an adaptive legal framework underscores

⁴⁹ Prince Amoah and Gabriel Eweje, "Barriers to Environmental Sustainability Practices of Multinational Mining Companies in Ghana: An Institutional Complexity Perspective," *Corporate Governance* 22, no. 2 (2021): 364–84, <https://doi.org/10.1108/cg-06-2021-0229>; Ana M. R. Leung and Jinky L. Lu, "Work Process and Hazard Analysis in Small-Scale Gold Mining in Northern Philippines," *Acta Medica Philippina* 56, no. 1 (2022), <https://doi.org/10.47895/amp.v56i1.3871>.

⁵⁰ Fenty U. Puluhalawa and Amanda Adelina Harun, "Enabling Circular Economy: Towards Sustainable Electronic Waste Management Regulation," *Jambura Law Review* 6, no. 01 (2024): 33–65, <https://doi.org/https://doi.org/10.33756/jlr.v6i1.24024>; Fenty Puluhalawa et al., "Legal Culture of Local

the necessity of aligning regulations with local socio-ecological conditions. Evidence from studies in Ghana demonstrates that the decentralization of resource management enhances sustainability by strengthening the active roles of local governments and traditional institutions.⁵¹ A similar approach may be applied in the Indonesian context by formulating tiered licensing schemes that align regulatory requirements with the scale and environmental impact of mining activities.⁵² Within this model, miners in Bone Bolango could be required to prioritize occupational safety standards in underground mining, whereas in Pohuwato and Boalemo the emphasis could be placed on tailings management and erosion control. Such an adaptive framework enables more context-sensitive policies, facilitates the legalization of small-scale operations, and simultaneously upholds environmental standards.

Research findings indicate that the reformulation of ASGM policies grounded in participatory and collaborative governance constitutes a key element in addressing socio-ecological complexities and sustainability challenges in small-scale mining regions. The literature further emphasizes that participatory frameworks can enhance social legitimacy while strengthening community engagement in resource management. Evidence from studies in Ghana and the Philippines demonstrates that co-management models involving traditional councils, village organizations, and miners' associations are effective in reducing conflict and fostering a stronger sense of community ownership over mining policies.⁵³ In the Indonesian context, the idea of establishing an ASGM Governance Forum at the district level provides a platform for dialogue that brings together the central government, local governments, village authorities, and mining communities. Such a forum holds the potential to accommodate conflict mediation, license evaluation, and environmental monitoring, thereby ensuring that communities are no longer merely objects of policy but active actors in resource governance. Beyond the imperative of participation, this study also underscores the relevance of alternative policy instruments to support formalization and sustainability. Tiered licensing, for instance, enables the differentiation of permits according to the scale of operations and level of risk. This approach has proven effective in several countries, as it allows small-scale operators to function legally under proportional standards.⁵⁴ Moreover, community-based monitoring mechanisms have proven effective in strengthening environmental compliance, particularly when they draw upon local knowledge and engage communities in the systematic recording of basic data on water quality, land reclamation, or

Community in Plastic Waste Management," *KnE Social Sciences* (Malang) 2022, no. October (2022): 183–91, <https://doi.org/10.18502/kss.v7i15.12089>.

⁵¹ James N. Adam et al., "Decentralization for Increased Sustainability in Natural Resource Management? Two Cautionary Cases From Ghana," *Sustainability* 13, no. 12 (2021): 6885, <https://doi.org/10.3390/su13126885>.

⁵² Andri Yanto and Faidatul Hikmah, "Aspek Hukum Hak Menguasai Negara DI Bidang Pertambangan Pasca Pembaruan Undang-Undang Mineral Dan Batubara Di Indonesia," *Jurnal Penelitian Hukum De Jure* 23, no. 4 (2023): 419, <https://doi.org/10.30641/dejure.2023.v23.419-432>.

⁵³ Lou A. Ocampo and Serge Schmitz, "Accumulation by Dispossession and Hazardscape Production in Post-corporate Gold Mining in Itogon, Philippines," *Geographical Research* 61, no. 1 (2022): 44–57, <https://doi.org/10.1111/1745-5871.12565>; Amoah and Eweje, "Barriers to Environmental Sustainability Practices of Multinational Mining Companies in Ghana: An Institutional Complexity Perspective."

⁵⁴ Yanto and Hikmah, "Aspek Hukum Hak Menguasai Negara DI Bidang Pertambangan Pasca Pembaruan Undang-Undang Mineral Dan Batubara Di Indonesia."

occupational safety.⁵⁵ The emphasis on participation is further reinforced by the practice of environmental restorative justice, which prioritizes ecosystem restoration and compensation for affected communities over repressive measures, thereby reducing the potential for conflict and expediting dispute resolution.⁵⁶

Field research in Bone Bolango Regency illustrates the dynamics of ASGM characterized by hard-rock gold extraction. Mining activities in this area take place in mountainous regions with steep and hazardous access routes, requiring advanced technical skills and appropriate equipment. The mining sites can only be reached after hours of walking or by using modified vehicles known locally as “kijang”. The complexity of the terrain and extraction methods has limited the number of miners, most of whom are not full-time workers but rather fishermen or farmers temporarily shifting to mining as a survival strategy. Mining is conducted in small groups based on mutual cooperation, reflecting tightly knit kinship-based social structures. Conflicts are rare, as disputes are informally mediated by the village head, whose social legitimacy is reinforced by genealogical ties to the local community.

In contrast, Pohuwato Regency exhibits a different ASGM model, centered on alluvial gold mined in open fields with the support of heavy machinery such as excavators. Operations are more extensive in scale, with management structures dominated by a small number of capital owners, while local communities often serve as laborers. Nevertheless, a local cultural practice known as *kabilasa* provides nearby residents continued access through simple manual mining. This system embodies strong social solidarity, opens economic opportunities for individuals without capital, and reduces the risk of social exclusion. Economically, ASGM in Pohuwato has considerable impact. Data from the Village-Owned Enterprise (BUMDes) cooperative recorded a cash flow of up to IDR 2.4 billion in 2024, with nearly IDR 1 billion already circulating by mid-2025.⁵⁷ These figures highlight that mining has become more attractive than agriculture, which requires longer timeframes and carries the risk of crop failure. In other words, mining serves as a more adaptive and promising household economic strategy. Boalemo Regency demonstrates a pattern similar to that of Pohuwato, with alluvial gold exploited through both manual and mechanized systems. Mining activities generate multiplier effects on the local economy, such as increased demand for goods and services like food and fuel during operational periods. However, the use of heavy machinery without official permits is often subject to enforcement by authorities, directly reducing community income.

These dynamics highlight the close relationship between the informal mining sector and the economic resilience of local communities, while also underscoring the economic vulnerabilities stemming from heavy dependence on mining activities. The field findings

⁵⁵ Adam et al., “Decentralization for Increased Sustainability in Natural Resource Management? Two Cautionary Cases From Ghana”; Ryota Nakatani et al., “Health Expenditure Decentralization and Health Outcomes: The Importance of Governance,” *Publius the Journal of Federalism* 54, no. 1 (2023): 59–87, <https://doi.org/10.1093/publius/pjad031>.

⁵⁶ Lingzhi Cai and Lei Guo, “Environmental Decentralization, Environmental Regulation and Environmental Pollution: Evidence From China,” *Polish Journal of Environmental Studies* 32, no. 3 (2023): 2053–68, <https://doi.org/10.15244/pjoes/158906>; Absori et al., “Government Policies for the Natural Resource Management of Minerals and Coal Based on Social Welfare.”

⁵⁷ According to Focus Group Discussion in Popaya Regency, Pohuwato, Gorontalo, Indonesia.

align with the literature emphasizing that participatory governance can serve as a mechanism to bridge tensions between local economic needs, formal regulatory frameworks, and environmental protection. Active community involvement in resource management strengthens the sense of collective ownership,⁵⁸ whereas effective communication, including through digital media, can accelerate conflict resolution processes.⁵⁹ Support from local governments, along with the presence of community-based organizations, is likewise essential for enhancing social legitimacy and ensuring the success of ASGM programs.⁶⁰ The co-management model developed within a decentralized framework has proven effective in strengthening community trust in government policies, as evidenced by research in Ghana highlighting the role of grassroots movements in safeguarding the environment from the impacts of informal mining.⁶¹

Several research findings also demonstrate the relevance of applying a polycentric model in resource governance. This approach provides space for multiple actors to participate in decision-making processes while simultaneously enhancing the effectiveness of conflict management.⁶² Community involvement within a participatory governance framework is essential not only for safeguarding the environment but also for addressing the social and economic needs of local populations.⁶³ Accordingly, the reformulation of ASGM policies must be adaptive and community-based, designed to integrate local values, strengthen the role of local governments, and provide legal instruments that are both proportional and realistic. Legal pluralism constitutes a critical perspective for harmonizing state law with customary norms and local systems. Research in Ghana affirms that the integration of customary practices into mining policies leads to higher levels of compliance and improved environmental protection.⁶⁴ A similar model could be adapted in Gorontalo by formally recognizing the practice of *kabilasa* as part of the regulatory framework, thereby strengthening social legitimacy and minimizing unpermitted mining practices. Such integration further underscores the importance of

⁵⁸ Dyah A. Suryaningrum et al., "Analisis Kualitas Layanan Koperasi, Dukungan Pemerintah Daerah, Keterlibatan Masyarakat Dalam Meningkatkan Daya Saing UMKM Di Kota Yogyakarta," *Jurnal Ekonomi Dan Kewirausahaan West Science* 2, no. 02 (2024): 157–67, <https://doi.org/10.58812/jekws.v2i02.1100>.

⁵⁹ Erlinawati Erlinawati and Kukuh Sinduwiatmo, "Peran WhatsApp Dalam Komunikasi Interpersonal Remaja Desa Soki," *Jtsi* 1, no. 3 (2024): 13, <https://doi.org/10.47134/jtsi.v1i3.2515>.

⁶⁰ Ligar Abdillah et al., "Pemberdayaan Komunitas Lokal Dalam Pengembangan Desa Wisata," *Jurnal Ilmu Sosial Dan Ilmu Politik Malikussaleh (Jspm)* 4, no. 2 (2023): 357–71, <https://doi.org/10.29103/jspm.v4i2.10227>; Andika P. Siahaan et al., "Pengembangan Penguatan Keamanan Lingkungan Melalui Digitalisasi Dan Partisipasi Masyarakat (Studi Kasus Desa Sambirejo Timur)," *Jpem* 1, no. 3 (2024): 11, <https://doi.org/10.47134/jpem.v1i3.313>.

⁶¹ "Decentralisation, Informal Mining, and Environmental Health: A Political Ecology Perspective on Ghana's Mineral Wealth Management," *Health Sciences Investigations Journal*, no. Volume 5 Issue 2 (2024), <https://doi.org/10.46829/hsijournal.2024.6.5.2.710-718>.

⁶² Ludomir R. Łożny, "Polycentric Governance as a Practical Strategy for Balanced Policing: A Cross-Cultural Analysis," *Social Evolution & History* 22, no. 2 (2023): 249–84, <https://doi.org/10.30884/seh/2023.02.10>.

⁶³ Maryam R. Bonab et al., "Sustainable Political Commitment Is Necessary for Institutionalizing Community Participation in Health Policy-Making: Insights From Iran," *Health Research Policy and Systems* 22, no. 1 (2024), <https://doi.org/10.1186/s12961-024-01111-z>; Jeferson Cañar and Ignacio Loor, "The Socio-Environmental Aftermath of Gold Mining in the Amazon: The Case of Yutzupino in Napo, Ecuador," *Sustainability in Debate* 14, no. 3 (2023): 219–33, <https://doi.org/10.18472/sustdeb.v14n3.2023.49965>.

⁶⁴ Enoch Adranyi et al., "Joined-Up Governance for More Complementary Interactions Between Expanding Artisanal Small-Scale Gold Mining and Agriculture: Insights From Ghana," *Plos One* 19, no. 4 (2024): e0298392, <https://doi.org/10.1371/journal.pone.0298392>.

acknowledging local wisdom as a foundational element in the formulation of national policies.⁶⁵ The reformulation of legal approaches that are adaptive, participatory, and grounded in legal pluralism has direct implications for environmental justice and regional security stability. Centralized authority without community involvement has been shown to generate social tensions and exacerbate informal practices.⁶⁶ Conversely, a policy framework that provides space for participation, acknowledges local values, and ensures the fair distribution of benefits can reduce resistance, strengthen state legitimacy, and safeguard the socio-economic resilience of mining communities. Thus, the success of policy reform should be measured not only by the procedural efficiency of licensing but also by its capacity to preserve social harmony, ensure ecological sustainability, and uphold a sense of justice for local communities.

The reformulation of ASGM policies that are adaptive and community-based is a prerequisite for balancing local economic needs, environmental protection, and social stability. A number of studies highlight the persistently low levels of community participation in mining-related decision-making processes, which often result in dissatisfaction, tensions, and conflicts between residents and authorities.⁶⁷ The prevailing recommendation is to prioritize an inclusive regulatory approach that recognizes the aspirations of indigenous communities as part of the principle of social justice in natural resource management; in doing so, policy orientation extends beyond purely economic motives to also prioritize environmental protection and the safeguarding of community rights.⁶⁸

The operational implication is the necessity of policy strategies that harmoniously integrate economic, environmental, and social dimensions, while simultaneously strengthening regulatory design to ensure that the interests of affected communities are not marginalized.⁶⁹ In line with this, the recognition of local values, participatory mechanisms, and legal pluralism is considered capable of reinforcing social legitimacy

⁶⁵ Juan S. L. Rodríguez and Morgane M. Fritz, "How Does Eliminating Mercury From Artisanal and Small-scale Gold Mining Lead to Achieving Sustainable Development Goals?," *Natural Resources Forum* 47, no. 2 (2023): 214–28, <https://doi.org/10.1111/1477-8947.12279>; Allison Aldous et al., *The Global Challenge of Reducing Mercury Contamination From Artisanal and Small-Scale Gold Mining (ASGM): Evaluating Solutions Using Generic Theories of Change*, 2023, <https://doi.org/10.21203/rs.3.rs-3399501/v1>.

⁶⁶ Meutia et al., "Indonesian Artisanal and Small-Scale Gold Mining—A Narrative Literature Review"; Jhanattan et al., "Mining Management of Nonmetallic Minerals and Rocks Based on Government Policy."

⁶⁷ Nining Hapsari et al., "Implementasi Kebijakan Pengelolaan Pertambangan Minerba Di Kelurahan Poboya, Kecamatan Mantikulore Kota Palu," *Cendekia* 1, no. 5 (2024): 240–53, <https://doi.org/10.62335/er90st86>; Ghaida S. Manganti, "Analisis Partisipasi Masyarakat Dalam Pelaksanaan Kebijakan Publik," *DeCive* 3, no. 11 (2023), <https://doi.org/10.56393/decive.v3i11.2053>; Ni Wayan Desi Budha Jayanti, "Urgensi Partisipasi Masyarakat Dalam Public Governance Di Indonesia," *Journal of Contemporary Public Administration* 3, no. 2 (2023): 51–58, <https://doi.org/10.22225/jcpa.3.2.2023.51-58>.

⁶⁸ Danggur Konradus, "Masyarakat Adat Dalam Pusaran Modal: Studi Penolakan Tambang Batu Gamping Masyarakat Adat Lolok-Luwuk-Flores," *Masalah-Masalah Hukum* 50, no. 4 (2021): 420–33, <https://doi.org/10.14710/mmh.50.4.2021.420-433>; Adirandi M. Rajab et al., "Kewenangan Masyarakat Hukum Adat Dalam Pengelolaan Mineral Dan Batubara Pasca Pemberlakuan UU No 3 Tahun 2020," *Jppadap* 2, no. 1 (2022): 32–46, <https://doi.org/10.36232/jppadap.v2i1.3850>.

⁶⁹ Alfredo Rynaldi et al., "Kajian Kriminologi Hijau Terhadap Studi Kasus Hilirisasi Tambang Nikel," *Kebumian* 1, no. 3 (2024), <https://doi.org/10.47134/kebumian.v1i3.2572>; MUCHAMAD TAUFIQ, "Korelasi Pengelolaan Pertambangan Dengan Cita-Cita Negara Hukum Kesejahteraan," *Social Jurnal Inovasi Pendidikan Ips* 4, no. 3 (2024): 265–73, <https://doi.org/10.51878/social.v4i3.3318>.

and fostering governance that is both equitable and sustainable. A community-based approach creates space for local wisdom and community rights to be meaningfully represented in strategic natural resource decision-making,⁷⁰ whereas participatory mechanisms enhance the sense of ownership over policy outcomes, thereby safeguarding social justice.⁷¹ Within the framework of pluralism, local legal norms—often marginalized by the formal system—can be granted legitimate standing to operate alongside state law.⁷² These measures strengthen social legitimacy while ensuring that mining practices contribute not only to economic value but also to ecological sustainability and social well-being.⁷³ With an architecture that engages all stakeholders—the state, regional and village authorities, miners, and the broader community—the governance of ASGM holds greater potential to adapt to local needs while preserving the values of long-standing indigenous wisdom.

Conclusion

This study demonstrates that reframing ASGM regulation in Gorontalo requires a departure from uniform approaches toward adaptive governance that links statutory law with local norms. Field evidence highlights the heterogeneity of mining typologies (hard-rock versus alluvial), community capacities, and environmental risks, while quantitative data reveal the economic significance of ASGM as both a livelihood anchor and a source of vulnerability. The centralization of licensing has widened social distance, fostered informality, and weakened policy legitimacy. By contrast, the combination of tiered licensing, participatory monitoring, and restorative justice enhances compliance, strengthens accountability, and mitigates conflict, particularly when institutionalized through co-management mechanisms and the recognition of community practices such as *kabilasa*. The principal contribution of this study to the body of knowledge lies in articulating an operational policy model—beyond declarative norms—that weaves together regulatory adaptiveness, meaningful participation, and legal pluralism into a framework amenable to performance auditing. In practical terms, the findings direct both central and regional governments to establish formal legal pathways for small-scale actors while safeguarding contextually proportionate environmental standards. Future research should advance the development of multidimensional performance indicators (ecological, economic, social, and security-related), causal evaluations of the impacts of tiered licensing, and the design of equitable transition financing schemes to reduce overdependence on a single commodity. In sum, the reformulation of ASGM regulation can move beyond the logic of mere enforcement toward a model of governance that is both just and resilient. The recognition of *kabilasa* as a community-based normative practice constitutes one of the study's key contributions, as it demonstrates how local

⁷⁰ Wilda Rasaili et al., "Inovasi Desa Mandiri: Integrasi Agile Governance Dan Pembangunan Berkelanjutan Dalam Tata Kelola Pedesaan," *Matra Pembaruan* 8, no. 1 (2024): 45–60, <https://doi.org/10.21787/mp.8.1.2024.45-60>.

⁷¹ Tri A. Novilasari et al., "Optimalisasi Pemberdayaan Perempuan Dan Pengembangan Umkm: Eksplorasi Tata Kelola Sumber Daya Manusia Di Kelompok P2wkss, Kecamatan Kebon," *Blantika Multidisciplinary Journal* 2, no. 3 (2024): 287–92, <https://doi.org/10.57096/blantika.v2i3.104>.

⁷² Tika Widiastuti et al., "Pembinaan Integrasi Keuangan Sosial Syariah Pada Lembaga Filantropi Islam," *Aksiologi Jurnal Pengabdian Kepada Masyarakat* 6, no. 3 (2022): 439, <https://doi.org/10.30651/aks.v6i3.9912>.

⁷³ Ahmad riadi, *Masa Depan Etika Pemerintahan*, 2023, <https://doi.org/10.31219/osf.io/ajv93>.

values can serve as a legal-policy foundation for equitable resource access, social legitimacy, and conflict-sensitive ASGM governance.

Acknowledgments

Authors gratefully acknowledge the support provided by the Directorate of Research and Community Service (*Direktorat Penelitian dan Pengabdian kepada Masyarakat*), Directorate General of Research and Development (*Direktorat Jenderal Riset dan Pengembangan*), Ministry of Higher Education, Science, and Technology of the Republic of Indonesia (*Kementerian Pendidikan Tinggi, Sains, dan Teknologi Republik Indonesia*). This research was funded under the 2025 Regional Fundamental Research scheme with Master Contract No. 082/C3/DT.05.00/PL/2025 dated May 28, 2025, and Derivative Contract LPPM-UNG No. 722/UN47.D1/PT.01.03/2025 dated May 28, 2025. The implementation of the research was authorized by Decree No. 987/UN47/HK.02/2025 dated May 28, 2025.

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