

Formalization of ASGM in the Frame of Economic and Environmental Sustainability

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Abstract. Artisanal small-scale gold mining (ASGM), owned by individuals, is one form of mineral mining that has been regulated by law. The dilemma in the management of ASGM lies in its dual nature, serving as both an economic potential and a source of environmental harm. This study aims to analyze the existence of ASGM and its impact on economic, environmental, and social sustainability. This juridical normative research employs a statute approach, conceptual approach, and comparative approach. The study's results revealed the existence of ASGM, which, until the present day, has generally been conducted without permits. In order to mitigate its environmental impacts while preserving it as an economic resource, ASGM needs to be formalized, enabling its activities to be monitored and the law to be enforced.

Keywords: ASGM Formalization; Economic Value; Environmental Protection

1 Introduction

Indonesia is a country endowed with renewable and non-renewable natural resources, including mineral deposits, rocks, oil, and gas. Due to their scarcity, mineral resources are non-renewable and require regulation by law [1]. Gold is one of the natural resources discovered in Indonesia. According to statistical data from 2020, the total production of gold mineral commodities was 65,890.00 kg [2]. Gold potential is found in various regions of Indonesia, including the Gorontalo provinces, such as Bone Bolango Regency, North Gorontalo Regency, Gorontalo Regency, and Pohuwato Regency. In addition to corporate mining, there are also mining areas operated by local communities known as small-scale artisanal mining (ASGM).

The 1945 Constitution of Indonesia, notably Article 33 (paragraph 3), states that natural resources, including land and water, are the property of the state and must be utilized for the benefit of the populace. Paragraph 4 states that the national economy and the environment should be managed based on principles of economic democracy, including togetherness, efficiency, justice, sustainability, vision, and national economic unity, while ensuring balanced progress. These constitutional provisions play a crucial role in the utilization of Indonesia's mineral resources for national economic development. One of

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Indonesia's significant resources is gold, a natural resource with a substantial economic impact on both local communities and the country. Therefore, its management should adhere to good mining governance practices to prevent adverse effects on environmental sustainability.

Law Number 3 of 2020 concerning Mineral and Coal Mining, a revision of Law Number 4 of 2009 (UUPMB), serves as a legal instrument to protect mineral and coal resources in Indonesia. It is also expected to meet the general population's needs, contribute significantly to national economic growth, and ensure sustainable development at both national and regional levels. Establishing legal regulations is necessary as an implementation of the provisions of the law to ensure compliance with the principles outlined in the 1945 Constitution, specifically Article 33, paragraphs (3) and (4).

According to Ramli Utina's findings, mining in Indonesia has existed since the Dutch colonial era [3], [4], and artisanal mining is one of the types of mining that has been practiced since ancient times and regulated by laws. In general, its management is handled by local communities using basic technologies, offering economic potential and advantages for the local artisanal mining workforce. However, these mines typically operate without permits, leading to uncontrolled operations such as the use of harmful substances, namely mercury, and improper waste disposal processes, which have negative effects on the environment. The excessive and uncontrolled exploitation of resources by humans has implications for the environment and the well-being of many individuals. Bentham argues that a notion of a good legal category can effectively provide the greatest happiness for the greatest number [5]. Furthermore, when associated with artisanal mining, regulations should ideally focus on ensuring benefits for society in relation to community mining. These benefits encompass both economic and ecological aspects, particularly long-term sustainability. The ecological aspect is crucial because of the interconnected relationship between human activities regulated by law and the environment [6]. This study seeks to determine the existence of artisanal mining following the revision of Law Number 4 of 2009 concerning Mineral and Coal Mining Management.

1.2 Problem Statement

This research aims to address two primary objectives. The first one is how is the existence of AGSM in Indonesia? and the second is how ASGM impacts the economy, environment, and environmental sustainability.

2 Methods

This normative legal research employed a legislative approach, case study, and legal comparison, while the findings were analyzed descriptively.

3 Discussion

3.1 The existence of ASGM (PESK) in Indonesia

Mining resource utilization has been a practice in Indonesia since pre-colonial times [7], and ASGM has been one of the methods employed for this purpose. The issue of artisanal mining has consistently been a topic of intrigue and discussion due to its association with environmental degradation [8], the use of hazardous substances such as mercury, and its economic value as a source of income for miners and employment for workers in the mining sector. Despite legal regulations providing permits for artisanal mining operations,

controversies and debates persist regarding the formalization and informality of ASGM. While some ASGM mines operate illegally and can be subject to prosecution [9], gold mining also serves as a source of economic income for local communities. ASGM has social impacts, including the loss of livelihoods for communities that previously depended on forests or the mining industry [10].

As society develops, natural resource exploitation continues and affects the community. In Indonesia, proper permits are legally required for artisanal mining. However, in reality, artisanal mining in Indonesia often operates without the necessary permits, leading to various problems due to its unauthorized and unregulated nature. One of the problems caused by ASGM is the destruction of the forest's ecosystem, a significant concern in Indonesia, which is considered a high-level deforestation country [11]. On the other side, ASGM serves as an economic resource for local communities [12], [13]. Law reflects the existing conditions of the people [14]. The mining activities, commonly known as Unauthorized Gold Mining (PETI) among the general public, have transitioned from being illegal to obtaining proper permits through the process of legal recognition and formalization. ASGM, or artisanal mining, now refers to mining operations managed by local communities. In pursuit of the goal of enhancing the well-being of its citizens [15], a state is required to balance economic interests with environmental protection [1], particularly in the context of ASGM. According to Article 22 of Law Number 3 of 2020, the criteria for determining areas for artisanal mining are stipulated as follows: (a) the presence of secondary mineral reserves in rivers and/or between riverbanks, (b) the availability of primary metal mineral reserves with a maximum depth of 100 meters, (c) the presence of core deposits, floodplains, and ancient river deposits, (d) Limited to a maximum area of 100 hectares, (e) Specification of the targeted commodities for mining operations, and/or, (f) Compliance with spatial utilization criteria and regulations governing mining activities in designated areas.

The ASGM operations were illegal during the Suharto era [16]. This condition may not occur in Indonesia but applies to other countries with similar activities. Regulations regarding mining in Indonesia began in the 1850s when the *Indische Mijnwet* was enacted, granting exclusive mining exploration rights to the Dutch East Indies government. Subsequently, Law No. 37 Prp. of 1960 was issued concerning the Strategic Excavation Exploitation Permit to state-owned and Indonesian national private companies. The enactment of Tap MPRS Number XIII/MPRS/1967 and the Foreign Investment Law Number 1 of 1967 marked the entry of the first foreign companies. The stipulations of Law Number 11 of 1967 concerning Basic Provisions on Mining have been most recently amended by Law Number 4 of 2009, and further amended by Law Number 3 of 2020 concerning Amendments to Law Number 4 of 2009, which pertains to Mineral and Mining Coal [17]. Artisanal and small-scale gold mining (ASGM) has been a longstanding practice in Indonesia, with its mineral extraction significantly affecting the global environment due to large-scale extraction processes [18]. According to the Directorate General of Mining, Indonesia currently has 2,741 unauthorized mining locations (ASGM). Nine locations have obtained permits, including seven gold mines in several regions, such as Kuantan Sangingi Riau, Kulon Progo, West Lombok, Sumbawa, North Gorontalo, North Minahasa, South Halmahera, and tin mines in Bangka Belitung, as well as a coal mine in Tanjung Enim [19]. Most artisanal mines in Indonesia operate without proper permits, despite continuous initiatives to formalize some mining activities. The existence of unauthorized ASGM poses various problems, including its illegal status and uncontrolled detrimental environmental impacts. The use of hazardous materials such as mercury and unregulated mining waste has long-term consequences for living organisms. However, mining has the potential to be developed as an asset for the people's welfare despite those adverse effects (as stated in Article 33, paragraph 3 of the 1945 Constitution of the Republic of Indonesia. One of the

objectives of state ownership of natural resources is the people's welfare. Thus, similar to mining operations managed by business entities, the management of artisanal mining is expected to provide benefits. The intended welfare of the people involves increasing miners' income, providing employment opportunities, and prioritizing good environmental management principles and miners' safety. The existence of laws regulating artisanal mining aims to ensure its recognition and benefit for the people. The focus is on aligning artisanal mining with the people's welfare as mandated by the Constitution and Mining Law. The recognition of artisanal mining is regulated, and it is essential to consider the potential and long-term impacts of such mining activities. The government's policy in Indonesia regarding artisanal mining aims to expedite formalization and legalization processes, simplify legal frameworks, ensure effective management, and provide direct or indirect benefits to stakeholders in regional and national development. This policy entails active participation from indigenous communities and locals, adherence to sound mining practices, and meeting the basic needs of local communities [20]. The formalization policy seeks to regulate artisanal mining, protect the environment, ensure worker safety, and enhance the stakeholders' economy.

3.2 The Impact of ASGM on Economic, Environmental and Social Sustainability

The formalization of ASGM managed by the local community aims to provide both direct and indirect contributions to stakeholders. One expected contribution is the economic potential. Achieving economic sustainability through responsible artisanal mining practices while addressing environmental concerns is crucial. In the case of unauthorized mining activities, the absence of clear guidelines and standards for managing artisanal mining operations is a direct result of its illegality. The current work system is based on individual agreements between mine owners and workers. In Pohuwato Regency, information gathered from small-scale miners indicates that the profit-sharing system is determined through agreements and customs applied at the site area. The profits are distributed between mine owners and workers after deducting processing costs. The total revenue depends on the minerals extracted, meaning that higher mineral extraction leads to increased income for both mine owners and workers. However, this income-focused approach often overlooks the adverse environmental impacts and the safety of mine workers. According to the gathered information, mine workers typically earn between three to five million per mining activity. This agreement is binding between the mine owners and the workers.

In comparison to other countries, ASM serves as a source of income for millions of individuals and creates millions of occupations for the people in sub-Saharan Africa [21]. The ASGM holds significant prospects in Malawi and other developing countries as it contributes to poverty alleviation and benefits local communities with low educational levels economically [22]. Based on 31 structured questionnaires out of 40 distributed, the research on ASGM in Nigeria revealed negative impacts on the environment, including deforestation (67.7%), flooding (100%), poor road conditions (71%), improper soil processing practices (84.9%), and land degradation (100%). The study also emphasized the benefits of ASGM, such as increased wealth status (100%), job creation (100%), and improved household income (100%) [23]. The aforementioned conditions indicate that ASGM is more oriented toward economic value potential rather than environmental issues.

The ASGM provides income for around 300,000 to 500,000 people in Indonesia who work in the unauthorized mining sector [24]. This demonstrates the important economic role of gold mines for the local population. Despite its illegal status, this sector provides employment opportunities. The gold potential in Gorontalo Province is found in several districts, including Gorontalo Regency, Bone Bolango Regency, and Pohuwato Regency [4]. In these regions, small-scale mining sites have been operated by residents for an

extended period, employing basic technology. In 2012, small-scale mining operations encompassing approximately 69 hectares were discovered in Pani, Botu Dulanga, and Makarti Jaya in Pohuwato Regency. These sites supported around 1,200 miners, serving as their primary source of livelihood [6]. The workforce in this area includes both local residents and miners from outside the region. According to interviews with the miners, basic methods are still employed in their mining operations, similar to other small-scale mining operations.

Effective management of artisanal mines is crucial to ensure their long-term sustainability and provide a reliable source of income for the future. Additionally, workers may experience employment instability and a lack of social protection, such as sickness benefits, salary, and workplace health and safety regulations. In Gorontalo, artisanal gold mining operations using conventional techniques and basic tools commenced in 1970 [25]. The fact that Gorontalo's artisanal miners continue to operate without proper permits underscores the area's significant economic potential for further development.

The formalization policy for artisanal mining activities involves more than just granting legality to unauthorized mines; it encompasses a comprehensive system that includes planning, implementation, and proper control. This policy seeks to reform and transform artisanal mining practices, providing an alternative solution to address the sector's complex challenges. The legality of artisanal mining acts as a control measure to ensure compliance with regulations. For instance, the regional government of Madre de Dios, Peru, has established mandatory steps for formalization, including (1) a commitment statement to adhere to the stages of the mining process, (2) legality of concession ownership or contracts with concessions, (3) conflict-free land use authorization, (4) water use permits, (5) mitigation instruments and, (6) The mining operation permit, in addition to the mandatory additional requirements such as training certification, certification of the absence of archaeological remains, permits for explosive material use, and accreditation as an ASM company [24].

The stages, as mentioned earlier and details, are indispensable, given the significant impacts of mining operations. It necessitates a commitment to carrying out mining stages, clarity regarding the legality of concession ownership to prevent potential conflicts, and authorization for land use to avoid conflicts with various parties, including the personal, private sector, and government spatial planning determinations. Licensing is crucial as it ensures compliance in artisanal mining activities and serves as evidence of the non-existent archaeological remnants. Furthermore, involving miners in education and training programs to enhance their skills is crucial. Will formalization policies significantly impact artisanal mining, particularly in terms of economic growth and environmental sustainability? A study is required to determine the contribution of these activities. This article emphasizes the need for concrete action plans to support the formalization of artisanal mining, aiming to achieve significant changes in the sector. The expected outcomes include economic improvements for local communities and the preservation of the environment. Hence, it requires the involvement of various stakeholders and a shared commitment to achieving these objectives.

4 Conclusion

Artisanal mining existed before the enactment of Law No. 4 of 2009, but some still operate without permit, and impact on the inability to monitor various activities that can pollute the environment. The closure of ASGM operations could result in the loss of livelihoods for many local people. Law No. 4 of 2009 recognizes the presence of mining, and it is expected that with its enactment, artisanal mining can be formalized. This is intended to facilitate the process of environmental monitoring and worker protection to

achieve economic benefits and environmental conservation. While artisanal mining makes a positive contribution to the local economy, it also carries the risk of adverse environmental effects. Therefore, the formalization of artisanal mining is crucial to address these effects.

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