

## Reconstructing Mining Licensing Policy for Water Resource Protection: Lessons from Bangka Regency

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### Abstract

The high incidence of PDAM water pollution in Bangka Regency is a central issue in this study, indicating a weakness in mining licensing policies and water resource protection. This research aims to analyze the legal framework related to mining licensing and to assess the urgency of reconstructing these policies to prevent ongoing water pollution. The research method used is normative and empirical juridical, examining various laws and regulations such as Law No. 3 of 2020 on Mineral and Coal Mining, Law No. 32 of 2009 on Environmental Protection and Management, and Law No. 17 of 2019 on Water Resources. In addition, field data was collected through a case study in Bangka Regency. The findings indicate that despite the existence of regulations, their implementation and oversight remain ineffective, particularly in terms of synergy between mining management agencies and environmental protection bodies. Therefore, a more comprehensive reconstruction of licensing policies is needed, integrating environmental protection as a priority and strengthening inter-agency coordination to create sustainable and responsible mining governance.

**Keywords:** Licensing Policy, Water Protection, Pollution, Mining Law

### INTRODUCTION

The case of raw water pollution affecting the Regional Drinking Water Company (PDAM) in Bangka Regency, caused by mining activities particularly by small-scale community tin mining and large-scale operations has raised serious legal concerns in the context of natural resource management and environmental protection (Fristikawati & Adipradana, 2022). This pollution not only leads to a decline in the quality of water distributed to the public but also reveals the ineffectiveness of mining licensing policies that should integrate aspects of water resource protection. This concrete issue highlights a disharmony between mining business permits granted by the state and the constitutional obligation to protect the environment and guarantee the public's right to clean water, as stipulated in Article 28H paragraph (1) and Article 33 paragraph (4) of the 1945 Constitution of the Republic of Indonesia.

The phenomenon of water pollution in Bangka is not merely an ecological event, but also the result of legal policies that lack a strong dimension of water resource protection (A. Pratiwi, 2022). Many mining activities are often located near

water catchment areas, rivers, or even PDAM raw water sources, yet the licensing documents issued by local or central governments frequently do not require adequate Environmental Impact Assessments (AMDAL) or strict supervision of post-mining activities (Khairunnisa et al., 2024). As a result, mining operations not only degrade the landscape but also pollute surface water and groundwater used by local communities. These impacts are clearly reflected in reports from the Bangka Regency PDAM, which state that raw water sources have become unfit for consumption and that operational costs for water treatment have increased significantly.

On the other hand, based on Law No. 3 of 2020 concerning the Amendment to Law No. 4 of 2009 on Mineral and Coal Mining (Minerba Law), the management of mineral mining is a state authority exercised by the central and regional governments. However, this regulation primarily focuses on the technical and economic aspects of mining, with minimal emphasis on the explicit protection of water resources. Similarly, Law No. 17 of 2019 on Water Resources stipulates that water is a vital branch of production controlled by the state and must be utilized for the greatest benefit of the people. Nonetheless, there is still no strong normative bridge between water protection and the mining licensing system (Helmi, 2022). This absence of a normative connection has created a legal gap that leads to conflicts in implementation on the ground.

In the local context, Bangka Regency is known for its vast tin mining potential, yet it also suffers from severe ecological degradation due to uncontrolled mining exploitation. Artisanal miners and private companies often operate outside concession zones, and oversight by the Department of Energy and Mineral Resources (ESDM) as well as the Environmental Agency remains ineffective. Administrative sanctions for environmental violations are rarely enforced to their fullest extent. This reality reveals that the current legal framework governing mining licensing does not substantively or equitably ensure the protection of water resources.

The situation underscores the urgency of reconstructing mining licensing policies that go beyond administrative legality and are instead grounded in water resource protection as part of human rights and environmental sustainability. Policy reconstruction entails deconstructing, reassessing, and reestablishing legal and institutional norms within the licensing process—by strengthening oversight mechanisms, integrating environmental data, promoting public participation, and conducting regular evaluations of water and ecosystem impacts. Under such an approach, licensing becomes not merely a tool for legalizing exploitation, but a comprehensive instrument for ecological risk control (Purba et al., 2025).

While previous studies have widely addressed environmental degradation caused by mining, few have specifically examined the legal aspects of mining licensing in relation to water resource pollution—particularly within a localized context such as Bangka. This research aims to fill that gap by exploring two key questions: (1) How is mining licensing legally regulated in relation to water resource protection? (2) What is the urgency of reconstructing mining licensing policy to prevent water pollution in Bangka Regency? These questions will be systematically addressed through a normative juridical approach to the applicable regulations and an empirical juridical approach based on the PDAM pollution case study.

Academically, this research contributes to the interdisciplinary discourse on natural resource law, touching on environmental law, administrative law, and water resource law. Practically, the findings may serve as concrete input for policymakers at both local and national levels in reforming a mining permit system that is more

environmentally aware and ecologically just. Moreover, in the era of regional autonomy, local governments play a crucial role in issuing technical recommendations and supervising mining activities, making it essential to strengthen legal and institutional capacities at the regional level through responsive policy reforms (Anggraini, 2024).

Additionally, it is crucial to emphasize that water resources are ecological entities that cannot be restored in a short time. Once polluted, the recovery of water and soil quality may take decades and require enormous costs. Therefore, a preventive approach must serve as the fundamental principle of every mining licensing policy. In this regard, policy reconstruction is not optional but a necessity—requiring a comprehensive overhaul ranging from amendments to local regulations, improvements to the Environmental Impact Assessment (AMDAL) system, to the reinforcement of local environmental oversight institutions (Rahman et al., 2023).

The legal framework governing mining licensing in Indonesia, as regulated under Law No. 3 of 2020 on Mineral and Coal Mining (Minerba Law), essentially obliges every license holder to consider environmental aspects. Instruments such as the Environmental Impact Assessment (AMDAL), as mandated under Law No. 32 of 2009 on Environmental Protection and Management (PPLH Law), should serve as a substantive filter to prevent mining activities that threaten water resources. However, as highlighted in previous studies, this mechanism is frequently reduced to an administrative formality rather than a substantive safeguard, thereby allowing mining licenses to be issued despite serious risks to water sustainability (Cristiana et al., 2023).

Water as a vital resource is firmly established under Law No. 17 of 2019 on Water Resources (SDA Law), which affirms that water is controlled by the state for the greatest prosperity of the people, and reinforced by Constitutional Court Decision No. 85/PUU-XI/2013. This principle requires the state to treat water as a constitutional right of the people rather than merely an economic commodity. Studies on water management by BUMN, BUMD, and private entities further demonstrate that private involvement is only permissible insofar as public needs are fulfilled and the social function of water remains guaranteed (Nursantosa et al., 2023).

While previous studies have separately examined either the environmental damage caused by mining activities or the institutional dimensions of water resource management, very few have explicitly explored the normative interface between mining law and water law. This research fills that gap by offering a bridging analysis that connects the Minerba Law, PPLH Law, and SDA Law within the context of mining licensing. By integrating normative legal analysis (including Government Regulation No. 22 of 2021 and Minister of Energy and Mineral Resources Regulation No. 5 of 2021) with empirical findings from the PDAM Bangka water pollution case, this study demonstrates how regulatory fragmentation across these regimes produces a legal vacuum that directly contributes to the water crisis. The contribution of this research lies in reconstructing mining licensing policies by incorporating the protection of water catchment areas as a mandatory clause, thereby providing both a theoretical mapping of intersectoral governance failures and practical recommendations to safeguard water sustainability and citizens' constitutional rights.

## METHODS

This study uses empirical legal research methods. (Efendi, 2022) Normatively, the study is based on the Indonesian positive legal framework governing mining

permits and water resource protection, particularly Law No. 3 of 2020 concerning Mineral and Coal Mining, Law Number 32 of 2009 concerning Environmental Protection and Management, and Law Number 17 of 2019 concerning Water Resources. The analysis also covers derivative regulations, such as Government Regulation No. 22 of 2021 and Minister of Energy and Mineral Resources Regulation No. 5 of 2021, which highlight risk-based licensing mechanisms but are still weak in terms of environmental protection guarantees, particularly those related to water resources (Marzuki, 2017).

Empirically, the research was conducted in Bangka Regency, focusing on cases of water pollution that impacted PDAM services. This empirical component aimed to assess the effectiveness of the implementation of regulations and law enforcement by the relevant authorities, as well as to explore the experiences of the affected communities. Data was obtained through interviews with PDAM, DLH, and ESDM officials, as well as local residents, accompanied by field observations and document studies.

The analysis was conducted using a qualitative-descriptive approach, combining regulatory, conceptual, and case studies. This approach was used to assess the synchronization between legal norms and their implementation in the field, as well as to formulate the urgency of reconstructing mining licensing policies to be more inclined towards ecological protection and water resource sustainability as part of the community's constitutional right to a healthy environment.

## DISCUSSION AND RESULT

The first legal issue in this research aims to examine and analyze the extent to which the mining permit system, as regulated under Indonesian legislation, considers and integrates the principles of water resource protection. This issue is crucial given that mining is one of the activities with a high risk of causing pollution and degradation to water resources, both in terms of quantity and quality—particularly when carried out in watershed areas or water catchment zones (Dwigianto et al., 2023).

From a juridical perspective, the current mining legal system in Indonesia refers to Law Number 3 of 2020 concerning Amendments to Law Number 4 of 2009 on Mineral and Coal Mining (the Minerba Law) (Al Idrus, 2022). This law states that mining business activities must be conducted based on official permits issued by the government, namely the Mining Business Permit (Izin Usaha Pertambangan or IUP), Special Mining Business Permit (Izin Usaha Pertambangan Khusus or IUPK), and People's Mining Permit (Izin Pertambangan Rakyat or IPR), all of which require administrative, technical, and environmental conditions.

However, a review of these regulations shows that the dimension of protecting water resources has not been explicitly and firmly established as a primary requirement in the mining permit process. It is true that certain articles in the Minerba Law require the preparation of environmental documents such as the Environmental Impact Analysis (Analisis Mengenai Dampak Lingkungan or AMDAL) as part of the licensing process. However, in practice, AMDAL is often regarded merely as an administrative document, rather than a substantive instrument to prevent damage to water resources. For example, in several tin mining operations in Bangka, AMDAL documents were approved despite the absence of adequate hydrological studies on the potential impact of mining pits (kolong tambang) on groundwater depletion and river sedimentation. Interviews with PDAM Bangka officials and local NGOs also revealed that AMDAL reports frequently recycled generic templates, without site-specific data

on water catchment areas. This illustrates how AMDAL, instead of serving as a preventive legal safeguard, has functioned as a procedural formality that fails to protect water resources (Mutia et al., 2023).

On the other hand, Law Number 32 of 2009 concerning Environmental Protection and Management (UU PPLH) actually provides a fairly strong normative foundation to protect water resources through the principles of prudence, prevention, and the polluter pays principle. Article 22 of the UU PPLH states that every business and/or activity that has significant environmental impacts must be accompanied by an Environmental Impact Analysis (AMDAL). In this context, mining activities fall into the category of activities with significant impacts, thus requiring an in-depth assessment of the potential impact on water pollution. However, again in terms of implementation, the integration between the results of the AMDAL assessment and the authority of the licensing bodies is often weak or even neglected.

Furthermore, Law Number 17 of 2019 concerning Water Resources emphasizes that water is the right of the people and is controlled by the state for the greatest prosperity of the people. Article 4 paragraph (2) stresses that the management of water resources must consider a balance between conservation and utilization aspects. Unfortunately, this law does not specifically regulate coordination or a direct legal relationship between mining activities and water protection (I. M. Pratiwi & Anafiati, 2022). There is no explicit norm prohibiting mining activities in water catchment areas or zones protecting raw water sources. As a result, the interpretation of protection boundaries heavily depends on differing sectoral policies across regions and agencies.

The absence of a bridging norm between the Mining Law (UU Minerba) and the Water Resources Law (UU SDA) causes policy conflicts and weak protection of water resources in mining permit practices. For example, in the case of PDAM water pollution in Kabupaten Bangka, it was found that some mining activities took place near PDAM's raw water sources, yet these activities still obtained permits from the government. This indicates that, in practice, there is no mechanism for involving water management agencies or PDAM in the environmental impact assessment and permit issuance process. This weak institutional coordination is a structural problem that results in poor protection of water resources (Latuconsina et al., 2022).

In addition to the regulations mentioned above, it is also important to review implementing regulations such as Government Regulation Number 22 of 2021 on the Implementation of Environmental Protection and Management, which is a derivative of the Job Creation Law (UU Cipta Kerja). This regulation redefines the mechanism for AMDAL and environmental risk assessment, including UKL-UPL documents. Although the structure of AMDAL documents under this regulation is more comprehensive, there is no specific provision that mandates protection of raw water sources as a mandatory indicator in AMDAL. The absence of this indicator results in impacts on water resources receiving insufficient attention, which potentially leads to them being overlooked in the assessment and decision-making process for permits.

The same applies to the Ministry of Energy and Mineral Resources Regulation Number 5 of 2021 concerning Standards for Business Activities and Products in the Implementation of Risk-Based Business Licensing in the Energy and Mineral Resources Sector. This regulation places greater emphasis on licensing efficiency within the framework of ease of doing business, and tends to neglect substantive environmental aspects. In this context, it can be said that the mining licensing system remains oriented towards business certainty (legal certainty of business), rather than genuine

environmental protection (substantive environmental protection) (Rostiyanti et al., 2023).

This legal analysis shows that although there are formal regulations concerning environmental protection within the mining licensing system, the protection of water resources remains fragmented and weak in implementation. The absence of explicit prohibitions on mining activities in water catchment zones, the lack of involvement of the local water utility company (PDAM) in the AMDAL assessment, and the absence of specific water impact indicators in AMDAL documents indicate that the current legal system is not yet robust enough to integrate water protection into mining permits. In comparison, several jurisdictions provide stronger safeguards. For instance, the European Union's Environmental Impact Assessment (EIA) Directive explicitly requires an evaluation of impacts on water quality and hydrological systems, while Australia mandates baseline hydrological studies as part of its mining approval process. These practices demonstrate that integrating water-specific indicators into environmental assessments is both feasible and necessary. Indonesia's AMDAL system, therefore, needs to adopt similar standards to ensure that water resources are not treated as a secondary concern but as a central element in mining licensing.

From the perspective of environmental law, the legal system should function in a preventive and anticipatory manner, not merely in a repressive way. Therefore, weaknesses in licensing regulations that fail to explicitly protect water resources represent a failure of the state to fulfill its constitutional mandate under Article 28H paragraph (1) of the 1945 Constitution concerning the right to a good and healthy environment, as well as Article 33 paragraph (4) regarding the sustainable and equitable management of natural resources.

In this context, the reconstruction of mining licensing policy becomes critically important. Such reconstruction must be carried out by reformulating legal norms to include water quality indicators as mandatory requirements in the Environmental Impact Assessment (AMDAL), establishing explicit prohibitions against mining activities in raw water catchment areas, and strengthening institutional coordination between the Department of Energy and Mineral Resources (ESDM), the Environmental Agency, and the Regional Water Utility (PDAM). Only through this approach can mining licensing regulations truly ensure the effective, fair, and sustainable protection of water resources.

The issue of water resource pollution occurring in Bangka Regency, both directly and indirectly caused by mining activities, is concrete evidence that the current licensing policy system lacks sufficient strength to prevent environmental damage, particularly to water as a vital source of life (Amar & Arkum, 2023). This systemic failure indicates structural weaknesses in the legal substance and policies underlying the issuance of mining permits. In this context, the need to reconstruct mining licensing policies is extremely urgent and pressing.

The reconstruction of licensing policy does not merely mean administrative or technical changes in the permit processing procedures, but rather an effort to review the normative framework, institutional structures, and legal paradigms underlying the licensing process itself. The current mining licensing policy, based on Law No. 3 of 2020 concerning Mineral and Coal Mining, essentially emphasizes the planning of natural resource exploitation and ensuring investment certainty. Although the regulations require the preparation of environmental documents such as AMDAL, there is no substantive mechanism that explicitly makes the quality and sustainability

of water resources an absolute requirement in the licensing process. This allows mining activities to be legalized despite their potential to damage water catchment areas or even pollute the raw water sources of the regional water utility (PDAM) (Aras, 2024).

The case of water pollution in Bangka Regency is a clear illustration of the weak reach of licensing policies in protecting water resources. Several mining activities take place in areas adjacent to or even directly overlapping with river basins and springs. As a result, water quality has drastically declined, causing disruptions in the clean water supply for communities that depend on the regional water utility (PDAM). The right to clean water is a fundamental human right guaranteed by the constitution, as stipulated in Article 28H paragraph (1) of the 1945 Constitution of Indonesia. Therefore, if the licensing system instead becomes a tool to legalize environmental damage, the state has failed to fulfill its constitutional obligation to protect the fundamental rights of its citizens (Mujiwati et al., 2023).

The urgency of reconstructing mining licensing policies becomes even clearer when considering the fact that environmental damage caused by mining especially to water resources is long-term, difficult to restore, and results in high social and ecological costs. Once a water source is contaminated by mining waste whether heavy metals, sludge, or chemicals the recovery process can take decades and often may never return to its original condition. In the context of Bangka Regency, this water pollution not only harms the community in terms of health and economy but also threatens the sustainability of the clean water system and disrupts the balance of the local ecosystem (Prianto et al., 2024).

Furthermore, mining licensing policy in Indonesia also faces complex institutional challenges. Although the Mineral and Coal Mining Law (UU Minerba) stipulates that supervision and control lie with the central government, in practice, the implementation of licensing and mining oversight is still heavily influenced by regional government authorities. The lack of clear distribution of authority between central and local governments often leads to regulatory gaps or overlaps in enforcement, including in the verification of impacts on water resources. In Bangka Regency, for instance, there is a coordination gap between the Environmental Agency (Dinas Lingkungan Hidup), the Energy and Mineral Resources Agency (Dinas ESDM), and the local water utility (PDAM) in addressing or even detecting potential pollution arising from mining activities. This highlights that policy reconstruction must also address inter-agency coordination and strengthen institutional capacity at the local level to assess and monitor environmental impacts, particularly on water resources.

One of the most critical weaknesses in the current licensing policy is the absence of an explicit prohibition against mining activities near raw water sources or watershed catchment zones. In many cases, including in Bangka, mining operations are still granted licenses despite being located close to community water sources. This occurs because there is no specific regulation that bans mining activities in water protection areas. The result is a legal gap between the Minerba Law, which regulates mining permits, and the Water Resources Law (UU SDA), which emphasizes water protection. This gap is dangerous because it allows mining permits to be formally valid under the Minerba regime, while being substantively defective when assessed against the constitutional mandate to protect water resources. In practice, this situation creates licenses that are “lawful on paper” but undermine environmental sustainability and public interest. The implications are profound: when mining licenses encroach upon water catchment zones, the state fails to safeguard citizens’ constitutional right to clean

water as guaranteed by Article 28H paragraph (1) and Article 33 paragraph (3) of the 1945 Constitution. Accordingly, policy reconstruction must address this legal gap by formulating clear prohibitions on mining in areas vulnerable to water pollution, accompanied by strong administrative and criminal sanctions for violators.

Policy reconstruction must also include participatory dimensions and public transparency (Putri et al., 2022). Until now, the mining licensing process has tended to be closed and limited only to the permit applicants and relevant technical agencies, without involving communities who are directly affected. This contradicts the principle of participation in environmental law and deprives the public of the opportunity to exercise control over potential pollution that threatens their water sources. Policy reconstruction must accommodate community involvement—especially from the local water utility (PDAM), water user groups, and local communities—in the impact assessment and decision-making processes of mining permits. In this way, mining permits become not merely an administrative procedure, but also a mechanism for protecting people's right to life.

From the perspective of legal substance, policy reconstruction must also involve a reformulation of the Environmental Impact Assessment (AMDAL) documents, so that they explicitly and quantitatively assess the impact of mining activities on water resources. Currently, many AMDALs do not provide a detailed analysis of water-related impacts, particularly in relation to watershed areas and local hydrological interactions. This reformulation can be implemented through a revision of Government Regulation No. 22 of 2021 and the development of technical guidelines for water risk-based AMDAL assessments. In addition, there must also be integration of geospatial data to map mining areas and water sources, so that the licensing process can be based on valid and transparent data.

The urgency of reconstructing mining permit policies is not only relevant to Bangka but also nationally significant, given that many mining areas in Indonesia are located near community water sources. Therefore, this policy reform could serve as a model for more ecologically just and sustainable mining management. Both central and local governments need to develop licensing policies that treat water protection as a primary indicator of sustainability—not merely as an administrative requirement that can be easily overlooked.

This research asserts that mining permit policies which disregard water sustainability are ecologically and legally flawed. Therefore, the urgency of reconstructing mining permit policies is inevitable. This reconstruction is not merely about revising regulations, but about shifting the paradigm: mining operations must not proceed at the expense of the people's right to clean water and a healthy environment. The state is obliged to ensure that every mining license adheres to the precautionary principle, the principle of environmental protection, and the principle of ecological justice (Jauhari & Surono, 2023).

## CONCLUSION

Indonesia's legal framework has established a number of instruments intended to integrate environmental protection into the licensing regime. The Minerba Law (Law No. 3 of 2020) provides the main basis for mining business licenses, while the Environmental Protection and Management Law (Law No. 32 of 2009) mandates environmental instruments such as the Environmental Impact Assessment (AMDAL) as a prerequisite for the issuance of such licenses. In addition, the Water Resources



Law (Law No. 17 of 2019), reinforced by Constitutional Court Decision No. 85/PUU-XI/2013, recognizes water as a vital resource under state control for the greatest prosperity of the people. Despite this normative framework, the laws remain fragmented. The Minerba Law emphasizes exploitation, whereas the PPLH Law and the SDA Law focus on ecological preservation and citizens' constitutional rights to water. The absence of substantive integration has resulted in water protection being treated as a secondary consideration within the licensing process. Environmental documents are often viewed merely as administrative compliance, rather than substantive safeguards capable of preventing water pollution.

The Bangka case, where mining activities degraded PDAM water sources, illustrates a governance failure arising from weak inter-agency coordination, insufficient oversight, and the lack of explicit prohibition of mining in water catchment areas. This situation not only disrupts access to clean water but also violates the constitutional right to a healthy environment under Article 28H of the 1945 Constitution, as well as the principle of state control over natural resources in Article 33. Therefore, policy reconstruction is urgent and must incorporate several key reforms: (i) explicit protection of water catchment areas within the licensing framework, (ii) substantive integration of water indicators into AMDAL assessments, (iii) stronger coordination between the Ministry of Energy and Mineral Resources, Environmental Agencies, and PDAMs, and (iv) greater community involvement in monitoring. Through such reforms, mining licenses will no longer function merely as instruments legitimizing exploitation, but rather as legal safeguards that ensure ecological sustainability and the protection of citizens' fundamental rights.

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