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Reconstruction of Mining Permitting Policies Based on Water Resource Protection: A Study of PDAM Water Pollution in Bangka Regency

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Abstract: This research examines the problematic mining licensing policies in Bangka Regency concerning the protection of water resources as part of fulfilling citizens' constitutional rights. Mining activities in this region have contributed to the contamination of water sources managed by the Regional Water Company (PDAM), which has implications for the fulfillment of the right to clean water as guaranteed in the 1945 Constitution. Using a juridical-empirical approach, this study analyzes the fundamental weaknesses in the mining licensing policy framework that has not integrated water resource protection as a primary consideration. The research findings indicate that the mining licensing process emphasizes economic aspects and pays less attention to ecological impacts on water sources, resulting in a conflict between economic interests and the fulfillment of constitutional rights. This research proposes a reconstructed model of mining licensing policy that integrates impact assessments on water resources, establishment of water source protection zones, and mechanisms for accountability and compensation for pollution. Through this policy reconstruction, it is expected to create a balance between the utilization of natural resources for economic development and the protection of citizens' constitutional rights to clean water in Bangka Regency.

Keywords: Mining Licensing, Constitutional Rights, Water Resources

INTRODUCTION

Water constitutes a fundamental necessity for human life,(Fadila et al., 2023) the fulfillment of which is guaranteed by the Constitution. The 1945 Constitution of the Republic of Indonesia, through Article 28H paragraph (1), guarantees the right of every citizen to live in physical and spiritual prosperity, to reside, and to obtain a good and healthy environment. Meanwhile, Article 33 paragraph (3) stipulates that the earth, water, and natural resources contained therein are controlled by the state and utilized for the greatest possible benefit of the people. These two constitutional provisions serve as the constitutional foundation for the fulfillment of the public's right to clean water, which is a vital component of a decent standard

of living. Nevertheless, the reality in Bangka Regency indicates a discrepancy between these constitutional guarantees and their implementation in practice.(Elenabella & Giawa, n.d.)

A concrete legal issue arises when mining activities in Bangka Regency have resulted in pollution of clean water sources managed by the Regional Drinking Water Company (PDAM). Based on data from the Bangka Regency Environmental Agency in 2023, at least 40% of PDAM raw water sources were contaminated by heavy metals exceeding the established water quality standards due to seepage from tin mining activities. This condition gives rise to a legal contradiction between the implementation of mining licensing policies aimed at increasing regional revenue and the State's obligation to ensure the fulfillment of citizens' constitutional right to access clean water.(Fatristya et al., 2025a)

This issue has become increasingly prominent as water quality monitoring results from several kolong (former mining pits) utilized as raw water sources for PDAM in Bangka Regency indicate elevated concentrations of mercury, lead, and zinc exceeding safe consumption thresholds. A report by the Environmental Agency of the Bangka Belitung Islands Province (2022) revealed that 7 out of 12 water sampling points located around active mining areas exhibited water quality that failed to meet drinking water quality standards as stipulated in Regulation of the Minister of Health Number 492/MENKES/PER/IV/2010. This condition has resulted in tangible losses for the community, including scarcity of clean water, increased water treatment costs, and the emergence of various diseases associated with water pollution.(Farhan et al., 2023)

From a juridical perspective, water resources management in Indonesia is regulated under Law Number 17 of 2019 on Water Resources, which stipulates that water resources management shall be conducted in a comprehensive, integrated, and environmentally sound manner, with the objective of realizing the sustainable utilization of water resources for the greatest possible prosperity of the people. Meanwhile, Law Number 3 of 2020 concerning the Amendment to Law Number 4 of 2009 on Mineral and Coal Mining governs mining activities based on the principle of environmental conservation. However, in its implementation, disharmony arises between these two regulatory frameworks, particularly in the context of mining licensing policies in Bangka Regency.(*Y5*, n.d.)

The legal problem becomes increasingly complex with the enactment of Bangka Regency Regional Regulation Number 6 of 2016 on the Management of Mineral Mining, which places greater emphasis on increasing Regional Original Revenue (Pendapatan Asli Daerah/PAD) from the mining sector than on efforts to protect water resources. This Regional Regulation does not specifically regulate mechanisms for protecting PDAM raw water sources from the impacts of mining activities, thereby creating a legal vacuum in the protection of water resources. This condition reflects the absence of harmonization between mining licensing policies and efforts to fulfill citizens' constitutional right to clean water.("[No title found]," n.d.-a)

Based on a preliminary study conducted in 2024, it was found that the mining licensing process in Bangka Regency has not prioritized assessments of the operational impacts of mining activities on water resources. Environmental Impact Assessment (AMDAL) documents, which constitute a prerequisite for mining permits, tend to focus on general environmental impacts without conducting specific and in depth analyses of the potential contamination of PDAM raw water sources.("[No title found]," n.d.-b) Furthermore, the absence of designated water source protection zones within mining spatial planning policies allows mining activities to be carried out in areas in close proximity to PDAM raw water sources.

This condition is further exacerbated by weak supervision over illegal mining activities, which have become increasingly prevalent in Bangka Regency. Data from the Energy and Mineral Resources Agency of the Bangka Belitung Islands Province indicate that as of 2023,

more than 200 illegal mining sites were operating without permits and without the implementation of adequate environmental management standards. These illegal mining activities have made a significant contribution to the pollution of PDAM raw water sources as well as other water sources utilized by the community.(Khayan et al., 2023)

As a result, the people of Bangka Regency are facing a serious clean water crisis. Data from the Bangka Regency PDAM indicate that in 2023, only 58% of the total population was served by the PDAM network, and of this number, 35% experienced disruptions in water supply due to declining quality and quantity of raw water sources. Communities not served by the PDAM network are forced to rely on groundwater that is also suspected to be contaminated or to purchase bottled water at relatively high costs. This situation demonstrates a violation of the principle of affordability in access to clean water, as mandated in General Comment No. 15 of 2002 of the United Nations Committee on Economic, Social and Cultural Rights, which has been ratified by Indonesia through Law Number 11 of 2005.

The Constitutional Court Decision Number 85/PUU-XI/2013 concerning the judicial review of the Water Resources Law affirms that water constitutes res commune, which cannot be monopolized by any party, and that the State bears the obligation to respect, protect, and fulfill the public's right to water. The decision emphasizes that water resources management must take into account social functions, environmental sustainability, and intergenerational equity. Nevertheless, mining licensing policies in Bangka Regency have not yet fully incorporated these principles.

A study conducted by the Pangkalpinang Legal Aid Institute (Lembaga Bantuan Hukum/LBH Pangkalpinang) in 2022 on 15 mining permits issued in Bangka Regency found that none of the permits contained specific clauses concerning the protection of PDAM raw water sources. These permits merely included general provisions regarding environmental management obligations without any technical specifications on preventing pollution of water sources. Furthermore, there were no clear mechanisms of accountability and compensation in the event that water source contamination occurred as a result of mining activities.

Another legal issue concerns the ambiguity of authority in supervising mining activities related to the protection of water resources. There is an overlap of authority among the Energy and Mineral Resources Agency, the Environmental Agency, and PDAM in conducting supervision and law enforcement with respect to water source pollution resulting from mining activities. This overlap has led to weak inter-agency coordination and ineffective handling of water pollution cases.(Altamis et al., n.d.)

From a theoretical perspective, this issue reflects a tension between the paradigm of economic growth oriented development and that of sustainable development. Current mining licensing policies tend to align more closely with an economic growth based development paradigm that emphasizes the exploitation of natural resources for short term economic gains. This paradigm overlooks the principles of sustainable development, which stress a balance among economic, social, and environmental dimensions, including the protection of water resources as a vital component in the fulfillment of human rights.

Therefore, a reconstruction of mining licensing policies based on the protection of water resources is required to ensure the fulfillment of the public's constitutional right to clean water. (Fatristya et al., 2025b) Such reconstruction encompasses the reconfiguration of the regulatory framework, the strengthening of environmental impact assessment mechanisms with a specific focus on water resources, the establishment of water source protection zones within mining spatial planning policies, and the development of clear mechanisms of accountability and compensation for water source pollution.

Based on the foregoing background, this study aims to examine the effectiveness of current mining licensing policies in protecting water resources and ensuring the fulfillment of the public's constitutional right to clean water in Bangka Regency, as well as to formulate an

ideal model for reconstructing mining licensing policies that integrates water resource protection as a means of fulfilling the constitutional rights of the people of Bangka Regency.(Feriadi et al., 2022)

The urgency of this study lies in the need to identify solutions to the conflict of interests between mining activities as a driver of regional economic development and the fulfillment of the public's constitutional right to clean water. The findings of this research are expected to make a substantive contribution to the development of mining licensing policies that not only prioritize economic considerations but also adequately address the protection of water resources as a vital component in ensuring the constitutional rights of citizens.(Jumantoro et al., 2024)

METHOD

This study employs a juridical empirical research design, combining normative legal analysis of regulations governing mining licensing and water resource protection with empirical observations of policy implementation in practice, particularly in Bangka Regency. The approaches applied in this research include the statute approach, the conceptual approach, and the case approach, which are utilized to analyze the phenomenon of pollution of PDAM water sources caused by mining activities from a constitutional law perspective.

The data sources consist of primary data obtained through field observations and interviews with relevant stakeholders, including the Environmental Agency, the Energy and Mineral Resources Agency, PDAM management, holders of Mining Business Permits (Izin Usaha Pertambangan/IUP), and affected communities. Secondary data comprise primary legal materials (the 1945 Constitution of the Republic of Indonesia, the Water Resources Law, the Mineral and Coal Mining Law, and regional regulations on mining), secondary legal materials (scientific journals, books, and research reports), and tertiary legal materials (legal dictionaries and encyclopedias).

Data collection techniques include document studies of statutory regulations and legal literature, as well as direct observations at PDAM raw water source locations indicated to be contaminated. Data analysis is conducted using qualitative analysis with an inductive deductive approach, whereby the collected primary and secondary data are systematically and comprehensively interpreted, followed by the drawing of conclusions to address the research problems concerning the effectiveness of current mining licensing policies and to formulate an ideal policy reconstruction model that integrates water resource protection as a means of fulfilling the constitutional rights of the people of Bangka Regency.(*Y16*, n.d.)

RESULTS AND DISCUSSION

The Effectiveness of Mining Licensing Policies in Protecting Water Resources

Mining licensing policies in Bangka Regency have not been effective in protecting water resources or ensuring the fulfillment of the public's constitutional right to clean water. (*Y17*, n.d.)This ineffectiveness is evident in several fundamental aspects of the existing licensing system. First, the mining licensing process does not position the protection of water resources as a primary consideration. Under Bangka Regency Regional Regulation Number 6 of 2016 on the Management of Mineral Mining, licensing requirements place greater emphasis on administrative and technical aspects of mining operations, while specific assessments of impacts on PDAM raw water sources are not treated as a principal prerequisite. This approach contradicts the constitutional mandate embodied in Article 28H paragraph (1) and Article 33 paragraph (3) of the 1945 Constitution, which require the protection of citizens' rights to a good and healthy environment and the management of natural resources for the greatest possible prosperity of the people.

Environmental Impact Assessment (AMDAL) documents, which serve as the principal instrument for evaluating environmental feasibility in the mining licensing process, exhibit significant weaknesses in terms of water resource protection. ("[No title found]," n.d.-c) An assessment of 15 tin mining AMDAL documents in Bangka Regency reveals that only 20% contain detailed analyses of potential impacts on PDAM raw water sources, while the remaining 80% provide merely general assessments of impacts on water quality without specifying the locations of strategic water sources. Hydrogeological studies, which constitute an essential component of AMDAL, are frequently inadequate and fail to account for the hydrological connectivity between mining areas and the raw water sources utilized by PDAM. As a result, mining permits may be issued for locations that are hydrogeologically connected to PDAM raw water sources without being accompanied by adequate mitigation measures.

A further weakness lies in the absence of water source protection zoning within mining spatial planning policies. Bangka Regency Regional Regulation Number 1 of 2013 on the Spatial Plan of Bangka Regency does not specifically regulate minimum buffer distances between mining sites and PDAM raw water sources. As a consequence, mining activities may be carried out in locations situated in close proximity to PDAM water sources, and in several cases mining operations have been identified at distances of less than 500 meters from raw water sources. This condition contravenes the precautionary principle in environmental protection, particularly with respect to water resources, which constitute a vital component in the fulfillment of citizens' constitutional rights.

The mining licensing system has also failed to integrate assessments of environmental carrying capacity and environmental absorption capacity in relation to water resources. Law Number 32 of 2009 on Environmental Protection and Management mandates the determination of environmental carrying capacity and absorption capacity as a basis for spatial planning and the issuance of permits. However, Bangka Regency has not yet developed a comprehensive assessment document on the carrying and absorption capacity of water resources that could serve as a reference in the granting of mining licenses. As a result, the cumulative impact of mining activities has exceeded the environmental carrying capacity, leading to significant degradation in both the quality and quantity of water resources.

Post-licensing supervision mechanisms exhibit systemic weaknesses. According to data from the Bangka Regency Environmental Agency, the ratio of environmental inspectors to the number of mining permits is 1:25, which is significantly below the ideal standard of 1:10. Limitations in human resources and budgetary capacity have resulted in water quality monitoring around mining areas not being conducted on a regular and comprehensive basis. During the period of 2022–2023, only 45% of all mining permits were subject to routine monitoring with respect to their impacts on water quality. This situation is further aggravated by weak coordination between the Energy and Mineral Resources Agency as the licensing authority, the Environmental Agency as the supervisor of environmental impacts, and PDAM as the manager of raw water sources.

From an enforcement perspective, sanctions imposed for violations of mining licensing requirements that result in water source pollution have failed to produce a deterrent effect. During the period of 2020–2023, a total of 18 cases of water source contamination caused by mining activities were recorded in Bangka Regency; however, only five cases resulted in the imposition of administrative sanctions in the form of fines, and none led to the revocation of mining permits. The administrative sanctions imposed tend to be relatively lenient, with average fines ranging from IDR 50–100 million, which is far below the cost of restoring contaminated water sources, which may reach billions of rupiah. This condition reflects the lack of a protective orientation toward water resources within the mining licensing system.

The lack of clarity regarding mechanisms of liability and compensation for water source pollution constitutes another fundamental weakness in mining licensing policies. Mining

permits that have been issued do not contain specific clauses requiring permit holders to provide compensation and undertake remediation in the event of contamination of PDAM raw water sources. As a consequence, the burden of environmental restoration and the provision of alternative clean water sources has been borne by PDAM and local governments, rather than by the mining permit holders responsible for the pollution. This situation runs counter to the polluter pays principle as stipulated in Law Number 32 of 2009 on Environmental Protection and Management.("[No title found]," n.d.-d)

Another fundamental issue lies in the dominance of an economic-oriented paradigm within the mining licensing process. Tin, as a strategic commodity, has made a significant contribution to the Regional Original Revenue (Pendapatan Asli Daerah/PAD) of Bangka Regency, accounting for approximately 30% of total regional revenue in 2022. This condition creates a dilemma for local governments in balancing short term economic interests with long-term water resource protection. Consequently, economic considerations frequently outweigh environmental protection considerations in the mining licensing decision-making process.

As a consequence, the people of Bangka Regency are experiencing a clean water crisis that contravenes the constitutional guarantees enshrined in the 1945 Constitution. A survey conducted by the Pangkalpinang Legal Aid Institute (Lembaga Bantuan Hukum/LBH Pangkalpinang) in 2023 involving 500 respondents across five sub-districts in Bangka Regency revealed that 65% of respondents faced difficulties in accessing clean water in terms of both quality and quantity. Furthermore, 40% of respondents reported incurring additional costs to purchase bottled water or to undertake further treatment of PDAM water that failed to meet quality standards. These conditions demonstrate that the current mining licensing policies have failed to ensure the fulfillment of the public's constitutional right to clean water.

The Constitutional Court Decision Number 85/PUU-XI/2013 affirms that water constitutes *res commune*, the fulfillment of which is the responsibility of the State. In the context of Bangka Regency, the State represented by the local government has not optimally discharged its constitutional obligations through adequate mining licensing policies. This failure constitutes a violation of citizens' constitutional rights as guaranteed under the 1945 Constitution.

Accordingly, it can be concluded that the current mining licensing policies in Bangka Regency have not been effective in protecting water resources or in ensuring the fulfillment of the public's constitutional right to clean water. A comprehensive reconstruction of mining licensing policies is therefore required, one that integrates water resource protection as a primary consideration in order to achieve a balance between the utilization of natural resources for economic development and the fulfillment of citizens' constitutional rights.

Model for the Reconstruction of Mining Licensing Policies and Water Resource Protection

An ideal reconstruction of mining licensing policies aimed at integrating water resource protection as a means of fulfilling the constitutional rights of the people of Bangka Regency requires both paradigmatic and structural transformation. The proposed reconstruction model is grounded in the principles of intergenerational justice, sustainability, precaution, and the polluter pays principle, while simultaneously maintaining a balance between economic development interests and environmental protection.(Dicky Ahmad Fahrizi et al., 2023)

First, a paradigmatic reconstruction of mining licensing policies is required. The prevailing paradigm, which primarily emphasizes the economic value of mineral resources, must be transformed into a sustainable development paradigm that positions water resource protection as an absolute prerequisite for mining activities. This new paradigm recognizes that the long-term economic value of clean water availability far outweighs the short-term economic gains derived from mineral extraction. Within this framework, water resources are

viewed as strategic assets whose sustainability is essential to the continuity of community life and overall regional development.

The implementation of this new paradigm should be realized through the reformulation of the Bangka Regency Regional Regulation on Mineral Mining Management by incorporating explicit clauses stating that the protection of water resources constitutes a primary priority at all stages of the mining licensing process. In addition, a Regent Regulation is required to specifically regulate mechanisms for protecting PDAM raw water sources from the impacts of mining activities, encompassing preventive measures against pollution, systematic water quality monitoring, and remedial actions.

Second, a reconstruction of the regulatory framework governing mining licensing is required. This entails harmonization between mining regulations and water resources as well as environmental regulations. Such harmonization includes the synchronization of mining regional regulations, spatial planning regulations, environmental protection regulations, and PDAM technical regulations. Within the restructured regulatory framework, mining licensing should not rely solely on the Mineral and Coal Mining Law but should also explicitly refer to the Water Resources Law and the Environmental Protection and Management Law.

As a concrete measure, the Bangka Regency Spatial Plan Regional Regulation should be revised to designate protection zones for PDAM raw water sources with a minimum radius of 2 kilometers from water intake points. Within these protection zones, mining activities should be strictly prohibited. In addition, buffer zones with a radius of 2–5 kilometers should be established, within which mining activities may be permitted only under stringent technical requirements and intensive supervision. This zoning framework should be based on comprehensive hydrogeological studies that take into account groundwater flow directions and the potential seepage effects of mining activities.(Bimantara et al., n.d.)

Third, a reconstruction of environmental impact assessment instruments within the mining licensing process is required. The Environmental Impact Assessment (AMDAL), as the primary instrument for environmental impact evaluation, must be strengthened by mandating detailed hydrogeological studies that include mapping the connectivity between mining sites and PDAM raw water sources. In addition, a specific Water Impact Assessment instrument should be developed as a complementary mechanism to AMDAL.(Teras & Zebua, 2023) This instrument should encompass both qualitative and quantitative assessments of impacts on water resources covering surface water and groundwater while taking into account both short-term and long-term variables.

To enhance the objectivity of environmental assessments, the preparation of the Environmental Impact Assessment (AMDAL) and the Water Impact Assessment should not be conducted by consultants appointed by the license applicants. Instead, these assessments should be prepared by an independent team designated by the local government and financed through regulatory fees paid by the applicants. This mechanism is intended to prevent conflicts of interest and minimize bias in the assessment of environmental impacts. Furthermore, the assessment process must incorporate substantive public participation, particularly involving communities that rely on water sources potentially affected by mining activities.

Fourth, the reconstruction of post licensing monitoring mechanisms. Strengthening institutional capacity and human resources for monitoring the impacts of mining activities on water resources is essential. This includes increasing both the number and technical competence of environmental inspectors, ensuring the availability of adequate water quality monitoring equipment, and allocating proportionate budgetary resources. The ratio of monitoring officers to the number of mining licenses must be improved to at least 1:10 in order to ensure effective, continuous, and accountable supervision of mining activities and their impacts on water resources.

Furthermore, it is necessary to develop a collaborative monitoring mechanism involving the Energy and Mineral Resources Office, the Environmental Agency, the regional water utility (PDAM), and local communities. This mechanism should include the establishment of joint monitoring teams responsible for conducting regular inspections of mining activities, as well as the development of a community based early warning system to detect initial indications of water resource contamination. In addition, the utilization of remote monitoring technologies, such as real time water quality sensors and satellite imagery, is essential to enhance the effectiveness, accuracy, and responsiveness of environmental oversight.(Prasetyo, n.d.)

Fifth, the reconstruction of accountability and remediation mechanisms**.** It is necessary to establish a clear and stringent accountability framework in cases of water resource contamination resulting from mining activities. Each mining permit should explicitly incorporate specific clauses stipulating the permit holder's obligation to undertake environmental remediation and to provide compensation in the event of pollution. The application of the strict liability principle is essential, ensuring that permit holders remain legally responsible for environmental damage regardless of their compliance with prescribed operational standards.

As a safeguard to ensure the enforcement of accountability, every mining permit holder must be required to provide an environmental guarantee fund, which includes a specific allocation for the restoration of water resources. The amount of this guarantee fund shall be determined based on a water pollution risk assessment quantified in monetary terms. The fund shall be administered by an independent institution established by the local government and may only be disbursed for purposes of environmental remediation and the provision of alternative clean water supplies for affected communities.

Sixth, the reconstruction of community participation in the mining permitting process. Communities, particularly those that rely on water sources potentially affected by mining activities, must be substantively involved at all stages of the mining permitting process. This includes access to information, involvement in the preparation of environmental impact assessments, participation in decision-making processes, and engagement in post-permit monitoring and oversight. To ensure meaningful participation, it is necessary to develop inclusive and effective public consultation mechanisms that go beyond mere administrative formalities.

Seventh, the reconstruction of incentive and disincentive mechanisms within mining permitting policies. It is necessary to develop an incentive scheme for mining permit holders who implement best practices in the protection of water resources, such as reductions in regulatory fees, extensions of permit validity periods, or priority treatment in subsequent permitting processes. Conversely, disincentive mechanisms must be strictly enforced against permit holders who violate water resource protection requirements, including progressive fines, permit suspension, and ultimately permit revocation.

Eighth, the reconstruction of the post-mining recovery paradigm. Post-mining reclamation and rehabilitation should not be limited to the restoration of landforms and vegetation, but must also be specifically directed toward the recovery of the land's hydrogeological functions. This includes the restoration of aquifers, the rehabilitation of groundwater flow patterns, and the reestablishment of natural water recharge functions. Post-mining reclamation policies should also consider the potential utilization of former mining pits (*kolong*) as alternative raw water sources, subject to comprehensive water quality restoration and treatment processes.

This reconstructed model of mining permitting policy represents a fundamental transformation from an exploitative paradigm toward a sustainability oriented paradigm that positions the protection of water resources as a prerequisite for mining activities. The model

recognizes that the fulfillment of the constitutional right of the community to clean water must constitute a primary consideration in all natural resource governance policies, including mining permitting frameworks. Through the implementation of this reconstructed model, it is expected that an optimal balance can be achieved between the utilization of mineral resources for economic development and the protection of water resources to ensure the long-term sustainability of livelihoods in Bangka Regency.

An ideal reconstruction of mining licensing policies aimed at integrating water resource protection as a means of fulfilling the constitutional rights of the people of Bangka Regency requires both paradigmatic and structural transformation. The proposed reconstruction model is grounded in the principles of intergenerational justice, sustainability, precaution, and the polluter pays principle, while simultaneously maintaining a balance between economic development interests and environmental protection.

First, a paradigmatic reconstruction of mining licensing policies is required. The prevailing paradigm, which primarily emphasizes the economic value of mineral resources, must be transformed into a sustainable development paradigm that positions water resource protection as an absolute prerequisite for mining activities. This new paradigm recognizes that the long-term economic value of clean water availability far outweighs the short-term economic gains derived from mineral extraction. Within this framework, water resources are viewed as strategic assets whose sustainability is essential to the continuity of community life and overall regional development.

The implementation of this new paradigm should be realized through the reformulation of the Bangka Regency Regional Regulation on Mineral Mining Management by incorporating explicit clauses stating that the protection of water resources constitutes a primary priority at all stages of the mining licensing process. In addition, a Regent Regulation is required to specifically regulate mechanisms for protecting PDAM raw water sources from the impacts of mining activities, encompassing preventive measures against pollution, systematic water quality monitoring, and remedial actions.

Second, a reconstruction of the regulatory framework governing mining licensing is required. This entails harmonization between mining regulations and water resources as well as environmental regulations. Such harmonization includes the synchronization of mining regional regulations, spatial planning regulations, environmental protection regulations, and PDAM technical regulations. Within the restructured regulatory framework, mining licensing should not rely solely on the Mineral and Coal Mining Law but should also explicitly refer to the Water Resources Law and the Environmental Protection and Management Law.

As a concrete measure, the Bangka Regency Spatial Plan Regional Regulation should be revised to designate protection zones for PDAM raw water sources with a minimum radius of 2 kilometers from water intake points. Within these protection zones, mining activities should be strictly prohibited. In addition, buffer zones with a radius of 2–5 kilometers should be established, within which mining activities may be permitted only under stringent technical requirements and intensive supervision. This zoning framework should be based on comprehensive hydrogeological studies that take into account groundwater flow directions and the potential seepage effects of mining activities.

Third, a reconstruction of environmental impact assessment instruments within the mining licensing process is required. The Environmental Impact Assessment (AMDAL), as the primary instrument for environmental impact evaluation, must be strengthened by mandating detailed hydrogeological studies that include mapping the connectivity between mining sites and PDAM raw water sources. In addition, a specific Water Impact Assessment instrument should be developed as a complementary mechanism to AMDAL. This instrument should encompass both qualitative and quantitative assessments of impacts on water resources

covering surface water and groundwater while taking into account both short term and long-term variables.

To enhance the objectivity of environmental assessments, the preparation of the Environmental Impact Assessment (AMDAL) and the Water Impact Assessment should not be conducted by consultants appointed by the license applicants. Instead, these assessments should be prepared by an independent team designated by the local government and financed through regulatory fees paid by the applicants. This mechanism is intended to prevent conflicts of interest and minimize bias in the assessment of environmental impacts. Furthermore, the assessment process must incorporate substantive public participation, particularly involving communities that rely on water sources potentially affected by mining activities.

Fourth, the reconstruction of post-licensing monitoring mechanisms. Strengthening institutional capacity and human resources for monitoring the impacts of mining activities on water resources is essential. This includes increasing both the number and technical competence of environmental inspectors, ensuring the availability of adequate water quality monitoring equipment, and allocating proportionate budgetary resources. The ratio of monitoring officers to the number of mining licenses must be improved to at least 1:10 in order to ensure effective, continuous, and accountable supervision of mining activities and their impacts on water resources.

Furthermore, it is necessary to develop a collaborative monitoring mechanism involving the Energy and Mineral Resources Office, the Environmental Agency, the regional water utility (PDAM), and local communities. This mechanism should include the establishment of joint monitoring teams responsible for conducting regular inspections of mining activities, as well as the development of a community-based early warning system to detect initial indications of water resource contamination. In addition, the utilization of remote monitoring technologies, such as real time water quality sensors and satellite imagery, is essential to enhance the effectiveness, accuracy, and responsiveness of environmental oversight.

Fifth, the reconstruction of accountability and remediation mechanisms**.** It is necessary to establish a clear and stringent accountability framework in cases of water resource contamination resulting from mining activities. Each mining permit should explicitly incorporate specific clauses stipulating the permit holder's obligation to undertake environmental remediation and to provide compensation in the event of pollution. The application of the strict liability principle is essential, ensuring that permit holders remain legally responsible for environmental damage regardless of their compliance with prescribed operational standards.

As a safeguard to ensure the enforcement of accountability, every mining permit holder must be required to provide an environmental guarantee fund, which includes a specific allocation for the restoration of water resources. The amount of this guarantee fund shall be determined based on a water pollution risk assessment quantified in monetary terms. The fund shall be administered by an independent institution established by the local government and may only be disbursed for purposes of environmental remediation and the provision of alternative clean water supplies for affected communities.

Sixth, the reconstruction of community participation in the mining permitting process. Communities, particularly those that rely on water sources potentially affected by mining activities, must be substantively involved at all stages of the mining permitting process. This includes access to information, involvement in the preparation of environmental impact assessments, participation in decision-making processes, and engagement in post-permit monitoring and oversight. To ensure meaningful participation, it is necessary to develop inclusive and effective public consultation mechanisms that go beyond mere administrative formalities.

Seventh, the reconstruction of incentive and disincentive mechanisms within mining permitting policies. It is necessary to develop an incentive scheme for mining permit holders who implement best practices in the protection of water resources, such as reductions in regulatory fees, extensions of permit validity periods, or priority treatment in subsequent permitting processes. Conversely, disincentive mechanisms must be strictly enforced against permit holders who violate water resource protection requirements, including progressive fines, permit suspension, and ultimately permit revocation.

Eighth, the reconstruction of the post-mining recovery paradigm. Post-mining reclamation and rehabilitation should not be limited to the restoration of landforms and vegetation, but must also be specifically directed toward the recovery of the land's hydrogeological functions. This includes the restoration of aquifers, the rehabilitation of groundwater flow patterns, and the reestablishment of natural water recharge functions. Post-mining reclamation policies should also consider the potential utilization of former mining pits (*kolong*) as alternative raw water sources, subject to comprehensive water quality restoration and treatment processes.

This reconstructed model of mining permitting policy represents a fundamental transformation from an exploitative paradigm toward a sustainability-oriented paradigm that positions the protection of water resources as a prerequisite for mining activities. The model recognizes that the fulfillment of the constitutional right of the community to clean water must constitute a primary consideration in all natural resource governance policies, including mining permitting frameworks. Through the implementation of this reconstructed model, it is expected that an optimal balance can be achieved between the utilization of mineral resources for economic development and the protection of water resources to ensure the long-term sustainability of livelihoods in Bangka Regency.

CONCLUSION

Based on the analysis presented above, this study arrives at two principal conclusions.

First, the current mining permitting policy in Bangka Regency has not been effective in protecting water resources nor in ensuring the fulfillment of the community's constitutional right to clean water. This ineffectiveness is reflected in several fundamental aspects, namely: (1) a permitting process that does not prioritize water resource protection as a primary consideration; (2) weaknesses in Environmental Impact Assessment (AMDAL) documents in assessing impacts on PDAM raw water sources; (3) the absence of water source protection zoning within mining spatial planning policies; (4) the lack of integration with environmental carrying capacity and assimilative capacity calculations; (5) weak post-permit supervision mechanisms; (6) sanctions that fail to generate a deterrent effect; (7) unclear mechanisms of liability and compensation for water resource pollution; and (8) the dominance of an economic-centered paradigm in the permitting process. These conditions have resulted in tangible impacts in the form of a clean water crisis experienced by the people of Bangka Regency, thereby creating a significant gap between the constitutional guarantees enshrined in the 1945 Constitution and their practical implementation on the ground.

Second, the ideal model for reconstructing mining permitting policy to integrate water resource protection as a means of fulfilling the constitutional rights of the people of Bangka Regency requires both paradigmatic and structural transformation. This reconstruction encompasses eight key aspects: (1) a paradigm shift from an economy-centric approach toward sustainable development that positions water resource protection as a prerequisite for mining activities; (2) reconstruction of the regulatory framework through harmonization of mining, water resource, and environmental regulations, along with the establishment of protected zones for PDAM raw water sources; (3) reconstruction of environmental impact assessment instruments through the development of a Water Impact Assessment; (4) reconstruction of

post-permit supervision mechanisms through collaborative approaches and the utilization of technology; (5) reconstruction of liability mechanisms through the application of strict liability principles and environmental guarantee funds; (6) reconstruction of substantive community participation throughout all stages of the permitting process; (7) reconstruction of incentive and disincentive mechanisms; and (8) reconstruction of the post-mining recovery paradigm oriented toward restoring the hydrogeological functions of land.

Through the implementation of this reconstructed policy model, it is expected that an optimal balance can be achieved between the utilization of mineral resources for economic development and the protection of water resources to ensure the sustainability of community life in Bangka Regency, as a concrete manifestation of the fulfillment of the constitutional right to clean water.

REFERENCE

Altamis, M. I., Oktari, I., & Harahap, S. K. (n.d.). *Upaya Penegakan Hukum Terhadap Pencemaran Air Sungai di Taman Mercy Deli Tua*.

Bimantara, M. A., Rahmat, H. K., & Hidayat, M. (n.d.). *Revitalisasi Lahan Bekas Tambang sebagai Langkah Rehabilitasi Bencana: Sebuah Tinjauan Konseptual*.

Dicky Ahmad Fahrizi, Kartika Novita Rohmah, & Rheihan Alvizar. (2023). Pengaruh Globalisasi Dalam Bidang Pembangunan Ekonomi Dan Pelestarian Lingkungan. *Journal of Management and Creative Business*, *1*(3), 78–87. https://doi.org/10.30640/jmcbus.v1i3.1158

Elenabella, V., & Giawa, F. N. (n.d.). *PERAN KONSTITUSI DALAM MENJAMIN HAK DAN KEWAJIBAN WARGA NEGARA DI INDONESIA*.

Fadila, W. A., Sudarti, S., & Yushardi, Y. (2023). PERMASALAHAN KUALITAS AIR PERMUKAAN SEBAGAI SUMBER KEHIDUPAN DALAM MENJAGA KELESTARIAN LINGKUNGAN. *OPTIKA: Jurnal Pendidikan Fisika*, *7*(2), 419–427. https://doi.org/10.37478/optika.v7i2.3338

Farhan, A., Lauren, C. C., & Fuzain, N. A. (2023). Analisis Faktor Pencemaran Air dan Dampak Pola Konsumsi Masyarakat di Indonesia. *Jurnal Hukum dan HAM Wara Sains*, *2*(12), 1095–1103. https://doi.org/10.58812/jhhws.v2i12.803

Fatristya, L. G. I., Saimah, W., Hadi, I., & Aryanti, E. (2025a). *Peran Air Bersih dan Sanitasi dalam Meningkatkan Kualitas Hidup: Tinjauan Literatur terhadap Pencapaian Tujuan SDGs 2030*. *6*(1).

Fatristya, L. G. I., Saimah, W., Hadi, I., & Aryanti, E. (2025b). *Peran Air Bersih dan Sanitasi dalam Meningkatkan Kualitas Hidup: Tinjauan Literatur terhadap Pencapaian Tujuan SDGs 2030*. *6*(1).

Jumantoro, T. R. P., Albanna, S. A., Antikowati, A., & Wada, I. A. (2024). Constitutional Question dan Constitutional Complaint: Pembaharuan Mahkamah Konstitusi dan Terjaminnya Hak Konstitusional Warga Negara. *AL-MIKRAJ Jurnal Studi Islam dan Humaniora (E-ISSN 2745-4584)*, *4*(02), 1020–1036. https://doi.org/10.37680/almikraj.v4i02.5030

Khayan, Ihsan, B. M., Sucipto, C. D., & Puspita, W. L. (2023). Aplikasi teknologi tepat guna pengolahan air sebagai sumber air bersih masyarakat. *Jurnal Pembelajaran Pemberdayaan Masyarakat (JP2M)*, *4*(2), 459–466. https://doi.org/10.33474/jp2m.v4i2.20460

Prasetyo, E. (n.d.). *Kesesuaian Sistem Pengawasan Perizinan Berbasis Risiko di Sektor Lingkungan Hidup Pasca UU Cipta Kerja Dengan Prinsip Perlindungan dan Pengelolaan Lingkungan Hidup di Indonesia*.

Teras, D., & Zebua, D. (2023). *PROSES PENAPISAN TERKAIT AMDAL PADA PEMBANGUNAN JALAN DI DESA BANGUN HARJA*. *3*.