

ECOLOGICAL IDEALISM IN THE REGULATION OF TIN MINING IN BANGKA BELITUNG: REASONING ABOUT CRUCIAL ARTICLES

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Abstract: The implementation of ecological ideals is crucial in the regulation of pollution and environmental damage in tin mining. This study undertakes a mapping and analysis to determine the extent to which the existing environmental regulatory framework about mining aligns with ecological ideals. A normative legal approach was utilised, and a comprehensive inventory of positive law was conducted to identify, rectify, and organise norms. The findings indicate that the allocation of mining permits remains a point of contention between regional and central governments, with the latter having resumed control after decentralisation. Additionally, current monitoring procedures are exclusively focused on legal matters, and law enforcement is limited to government officials within the bureaucratic structure. Corporate crime regulations are weak, and the exclusion and re-inclusion of mining in specific regulations pose challenges. Finally, the complex legal hierarchy further complicates these issues. In conclusion, the regulatory framework related to tin mining is not visionary and leaves gaps that allow for environmental damage and a continual increase in crime. This conclusion results from a review of current policies and may change if regulations are modified.

Keywords: Ecology, regulation, mining, tin, Bangka Belitung.

Introduction

Bangka Belitung Islands are the largest tin-producing province in Indonesia and are currently still running their tin production, both legally and illegally managed. When the benefits of tin management run their course, environmental damage is also unavoidable. Mining is synonymous with environmental damage; hence, it is difficult to come across a friendly mining environment, especially those excavating the earth's surface or depth. In the case of tin mining, the excavation mechanism is open to the land and sea, thereby causing changes to their surfaces. During mining, a machine separates tin ore from the soil through an extraction process. The ore, shaped like black sand, is generally found at a depth of one meter and below because the deeper the excavation, the better the potential to obtain tin ore.

Meanwhile, the ocean extraction process is similar to the method used on land. Tin is buried under the seabed, which is generally covered by sand or mud despite the growth and development of various marine biota, thereby making the separation process difficult. Moreover, the impact of tin mining on the sea and coast has implications for the lives of coastal communities (Rosyida *et al.*, 2018). For instance, aside from the damaged marine biota at the extraction site, the waste obtained during this process is thrown away. Hence, it mixes with seawater and produces turbidity (Kurniawan, 2021).

Therefore, adequate regulations must be implemented to prevent indiscriminate disposal of waste and other destructive power associated with mining tin ore. Tin mining and environmental management are related and

influence each other. They are also sensitive to fossil-based commodities and the dwindling environmental carrying capacity. In Indonesia, regulatory instruments needed to regulate the extraction process following the environment are set in stages, from the national to the regional level. So far, studies on the tin in Indonesia have focused more on practice in the field, but it is very rare to specifically discuss upstream issues, namely the formulation of regulations that govern them. Planning for mine extraction governance is determined by how regulations are structured and regulated.

Each mining regulation must embody ecological idealism to ensure that mining activities remain environmentally friendly. In essence, regulations define the ideal environmental conditions that should be achieved. To simplify this concept, the term “ecological idealism” has been coined for this study. However, regulations that embody ecological idealism often conflict with other regulations. Ecological idealism can be considered synonymous with ecocentrism, where environmental ethics encompass the entire ecological community, including inanimate objects and not just humans and biotic entities. Therefore, all tin mining regulations must ensure the ecological reality’s preservation, protection, and sustainability.

This study aimed to map out the regulatory framework for environmental management in tin mining in Indonesia, particularly in the Bangka Belitung Islands Province. Additionally, the study analysed whether the policies established by hierarchical levels from central to regional governments have a basis and whether these policies can ensure the implementation of ecological idealism. There are previous studies that focused on policies, regulations, and environmental impacts, including Environmental regulations (its identification and downstream implementation in Bangka Belitung) by Haryadi (2021) and Strategic Ecological Issues: Environmental problems in the perspective of regional development planning in Bangka Belitung (Haryadi, 2021a). However, previous studies have not focused

specifically on regulatory analysis that maps out the process of ecological idealism carried out by the government as regulators.

This study maps out the regulatory framework for environmental management in tin mining in Indonesia, particularly in the Bangka Belitung Province, one of the world’s largest tin mining regions (Supriyadi *et al.*, 2016; Nurdin *et al.*, 2019). Since its discovery in the 16th century, tin has become a natural resource contested by rulers over time (Purnaweni *et al.*, 2019). Besides its content, environmental issues associated with the extraction process significantly damage this province (Sibarani, 2017; Purnaweni *et al.*, 2019; Bidayani & Kurniawan, 2020). Therefore, a regulatory framework has been implemented to prevent further damage caused by the existence of regulatory loopholes. Thus, this study will focus on mapping the rules that underlie tin mining practices in Bangka Belitung, looking at how idealistic reasoning is structured, mainly related to ecological issues concerning environmental damage, and discussing the fundamental weaknesses of existing regulations.

Materials and Methods

This normative legal study used a statutory approach (Marzuki, 2005), and the positive law inventory was implemented by comprehensively identifying, correcting, and organising norms. Meanwhile, the secondary data source comprised primary, secondary, and tertiary legal materials (Abdurrahman, 2009). Mapping regulations related to tin mining and environmental management is the main focus of this study. Furthermore, this study aims to analyse the fundamental weaknesses of the regulations. An examination of ecological idealism through a normative juridical approach involves analysing each regulation, from the constitution down to technical regulations at the regional level, to determine their hierarchy, substance, and level of harmony with one another. By utilising a hierarchical regulatory identification approach, it is possible to pinpoint key mining and environmental regulatory issues, beginning

at the central level and extending outward to the regions. Every norm and article in these regulations may either support or contradict one another, as each regulation has a legal-political aspect. There are 26 regulations related to ideal ecological management, consisting of 19 national-level regulations and 7 regional-level regulations.

Results and Discussion

Policy Formulation: Start from Regulation

Mining governance is determined by formulating government policies that regulate, monitor, and manage to reduce the natural resource extraction process. Therefore, ensuring that the regulations start from initiation, exploitation, trade, and post-mining supervision is important. Various problems and important issues are related to the state's position in formulating mining policy. This is usually due to the experiences, government style, and political patterns that greatly determine the placement of resources.

In a capitalistic state, the natural resource extraction process is largely determined by capital and investment climate formulation. The state only acts as supervisor and policymaker, while investors, including trade, play a significant role in the extraction process. However, in an authoritarian state, all extraction processes are fully controlled by the state, which investors are now assisting. Capital aggression and a vague state position are developed in developing countries with dynamic government systems. Furthermore, policy formulation is largely determined by the changing political context following its leadership profile.

Policies related to mining and the environment are ultimately largely determined by the government. Although there is still debate on the policies of the central and local governments, the fate of mining and the environment is mostly determined at the central level. Therefore, the state restricts, allows, or regulates policies after the government implements them.

Presently, the theoretical law adopted in Indonesia is regulated by the central government, with a small amount dedicated to

the local governments. However, this division process has experienced a tug-of-war for the last two decades. According to Winzenried *et al.* (2019), mining regulations are complicated by the interests of a certain group. Smith and Rosenblum (2011) stated that many developing countries with rich natural resources face the problem of overcoming welfare inequality. These include poor agreements between corporations and communities, lack of monitoring amid a developing mining climate, and weak regulations amid the government's transition. Therefore, Smith and Rosenblum conducted surveillance by encouraging transparency, monitoring law enforcement, and promoting maximum benefit for the country and its communities.

Crawford (2015) stated that strong governance is needed to address gaps in the community and small-scale mining. According to Crawford, 3 weak sectors in mining regulation need to be analysed to obtain economic benefits, namely optimisation, post-mining transition, and community mining management.

Meanwhile, Monteiro *et al.* (2021) stated that despite the regulation, some shortcomings are associated with mining, including slow supervision, application of principles that encourage sustainability, and weak post-mining environmental and social obligations. Although not all problems arise from regulatory issues, weak enforcement is an important policy issue. Therefore, Soderholm *et al.* (2014) stated that implementing environmental regulation often collides with time inaccuracy and predictions. Hence, it is postponed, with pending appeals and differences in interpreting rules.

Mining policy needs to be implemented due to the challenges faced by the extraction industry and the importance of saving local and national economies. Although there is a need to generate foreign exchange and promote economic turnover, some sustainability issues pose a challenge. Putri (2020) stated that regulations that ensure investment are needed to guarantee local communities' rights, control environmental damage, and promote social inclusion. Sendy (2018) reported that

in Indonesia, mining policies related to the environment have experienced problems with weak coordination between the central and local governments, thereby overlapping authority with low standards and limited adherence.

Based on some of the research results above, it is important to evaluate policies in the mining sector that have implications for environmental management, including the latest revision of mining regulations and work copyright. Consistency and harmonisation of mining and environmental regulations will determine the implementation of ecological ideals.

Tin Glory, Environmental Grief

Indonesia is the second-largest tin-producing country in the world after China, with approximately 1,832,839 tons, with most of the reserves now left in the Bangka Belitung Islands (Bangka Belitung Environment Agency, 2019). In Indonesia, tin mining is carried out by at least three groups: Large state corporations, private companies, and communities. The process carried out by communities is classified into 2, following large and small equipment. According to Pratama (2018), the mining was conducted by corporations since the Dutch colonial era till PT Timah produced it. Tbk is the largest and the only state-owned tin mining company. All tin mining equipment used by this corporation is categorised as large equipment, and it is controlled by various regulations, including reclamation procedures and efforts to promote environmental elasticity.

Mining is carried out in private corporations using large equipment in excavators and production suction vessels, individually or in partnership with PT Timah, Tbk. Generally, private corporations have their mining areas based on operating licenses. However, they often fail to stick to these regions and mostly accommodate tin from mining carried out by communities, which is generally conducted freely in terms of location and process. Lands freely mined by communities are generally obtained by buying and controlled with a profit-sharing system.

Based on nature, tin mining is categorised into legal and illegal mining. According to Haryadi (2015; 2019), however, in practice, tin mining results without a permit are purchased by unscrupulous companies which causes the tin they produce to become legal. Although the company acquired tin from sources outside of its mining business license, the endeavour to legitimise the tin’s status has inadvertently perpetuated the practice of illegal tin mining. This is because illegal tin can now be accepted and managed as if it were a product of legal tin mining. The following is a production scheme and description of the tin from illegal to legal in Bangka Belitung in Figure 1.

The figure illustrates that legal tin mining is carried out by state and private companies, while communities conduct the illegal process. Private companies sell their final product to branded state companies, which export the tin vars to the international market. They also collect tin

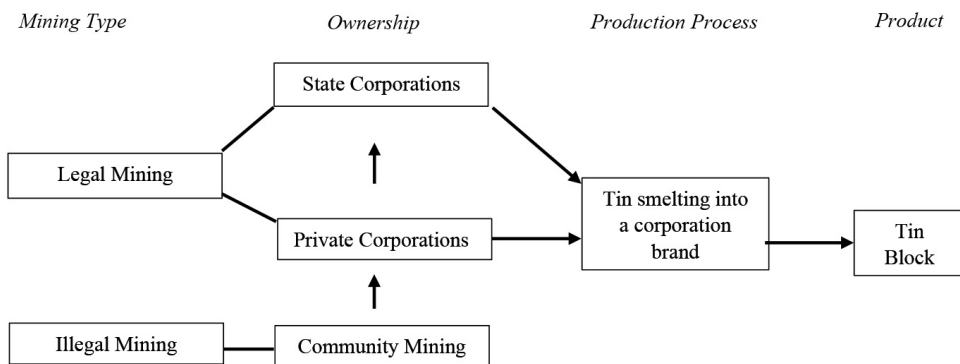


Figure 1: The Scheme of tin production from illegal to legal product

from local mining, which is processed into their brand products or resold to state companies. This means halalisation occurs from illegal to legal mining, thereby triggering massive environmental damage.

Numerous studies have confirmed the environmental damage on land and at sea due to legal and illegal mining activities despite the implementation of sustainable principles (Nurtjahya *et al.*, 2017; Ibrahim *et al.*, 2018; Sulista *et al.*, 2019; Darwance *et al.*, 2019; Rendy *et al.*, 2020). Reclamation and reforestation cannot be immediately restored in a damaged environment (Siringoringo & Hadi, 2015; Yuarsah *et al.*, 2017; Pratiwi *et al.*, 2020). Illegal mining worsens the situation because it is usually carried out in large amounts, compared to the legal process conducted with free and protected qualities (Erman, 2008; 2014).

Weak regulations and law enforcement support the acceleration of damages from tin mining on the environment. Therefore, the government needs to update the existing regulatory arrangements due to the increase in tin mining that subsequently causes environmental damage. Furthermore, it is important to analyse how the state and local governments regulate environmental idealism.

In a previous study on the identification and downstream of environmental regulations in Bangka Belitung (Haryadi, 2021), it was found that the legal framework for environmental management in the Bangka Belitung Islands has a solid foundation in the Indonesian Constitution of 1945, which recognises the right to a healthy environment as a human right and prioritises environmentally-sound national economic development. These constitutional norms have been codified in environmental protection and management laws, with government and ministerial regulations as derivatives. However, there is still room for improvement in the downstream of regulations, as there are not yet regulations that can optimally urge preventive measures and provide mechanisms to enforce the rehabilitation and reclamation of critical land areas, which continue to

increase in number. In a study on ecological strategic issues: Environmental problems in the perspective of regional development planning in Bangka Belitung (Haryadi, 2021b), it was found that every local government in Bangka Belitung Islands Province considers ecological issues to be part of their strategic issues in regional development planning. The study identified that ecological issues are addressed in 17.6% of the 5-year regional development planning documents, with the highest percentage found in the Belitung Regency regional planning documents and the lowest in those of Bangka Regency.

Hierarchy of Regulation

In Indonesia, the order of laws and regulations stems from the Pancasila ideology, which is the five main principles associated with forming the Indonesian state. The main and first order of legislation in line with this principle is the 1945 Constitution (UUD), which until now has been amended 4 times following the development of state politics. It was later revealed in a People's Consultative Assembly Decree, which regulates macro policies. Furthermore, this led to the evolution of Law to regulate specific affairs or a Government Regulation in place of Law, assuming changes in an emergency. Laws are macro policies decided jointly between the executive and the legislature. A technical elaboration of the Act, such as Government Regulation is issued by the executive following a Ministerial Regulation, which can be further elaborated technically in the form of a Ministerial Decree.

In its implementation, local governments and legislative institutions form Regional Regulations and their technical derivatives, such as Governor's Regulations, and regent/major regulations are also issued. These regulations determine the basic provisions to avoid conflict with the higher regulations. The following is a hierarchical order of legislation in Indonesia which refers to Law Number 12 of 2011 concerning the Establishment of Legislation in Figure 2:

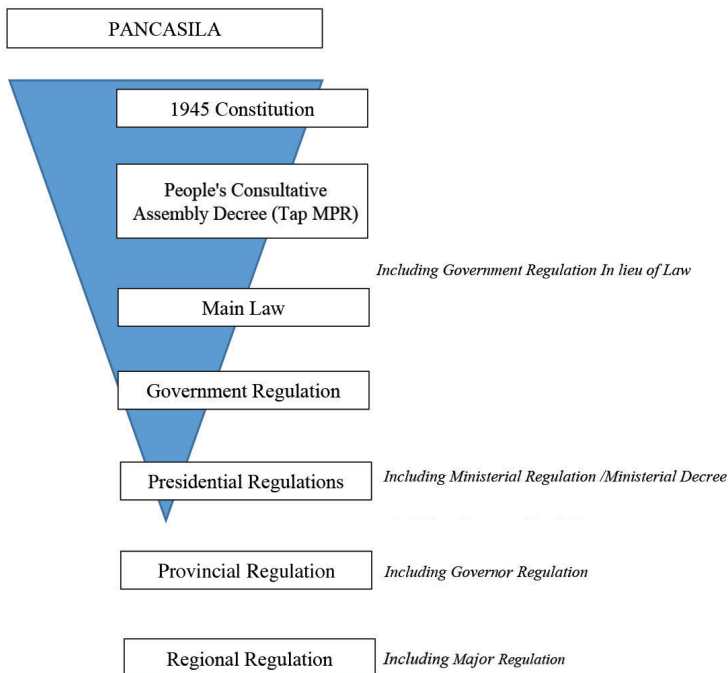


Figure 2: Hierarchical of regulation

In general, the norms of Pancasila are regulated by the 1945 Constitution and the People's Consultative Assembly Decree that regulates general policies. The regulatory framework for tin mining is based on the constitution, which regulates the control of natural resources owned by the state. Furthermore, its derivatives are regulated by Law Number 4 of 2009, updated to Number 3 of 2020, and renewed through Number 11 of 2020 on Job Creation. Meanwhile, in terms of environmental management, Law No. 27 of 2007, which regulates the management of coastal areas and small islands, and Law No. 32 of 2009 concerning the protection and management of the environment, were implemented. Some regulations such as Law No. 18 of 2013 concerning prevention and eradication of forest destruction and Law No. 32 of 2014 on Marine Affairs and mining were also employed. For regional governments that regulate central and regional authorities, Law No. 23 of 2014 has experienced second changes with the last version of Law No. 9 of 2015.

Government Regulation Number 25 of 2021 is a derivative of Number 46 of 2017 on environmental and economic instruments updated from Number 64 of 2010 concerning disaster mitigation in coastal areas and small islands. Recently, Government Regulation Number 22 of 2021 on implementing environmental protection and management and Government Regulation Number 25 of 2021 on implementing the energy and mineral resources sector were issued. At the ministry level, the latest is the issuance of the Minister of Energy and Mineral Resources Regulations (ESDM) Number 7 of 2020 on procedures for granting territories, permits, and reports on minerals and coal. Regulation Number 5 of 2017 concerning the increase in the added value of minerals and coal is also effective. Concerning sales, the latest provisions are from the Minister of Trade Regulation through Number 53 of 2018 concerning Tin Export Provisions updated from Number 33 and 44 of 2015 and 2014. At the Ministerial level, Decree Number 46 of 2021 regarding the ease of tin export during the COVID-19 pandemic was implemented.

At the local level, the latest regulations that are still being used are Regional Regulation Number 7 of 2014 on the management of mineral mining, Number 1 of 2019 on the management of associated minerals and tin by-products, Number 8 of 2018 concerning pollution control and environmental damage, and Number 3 of 2020 on the zoning plan for coastal areas and small islands. There are also regional regulations

in the form of Governor Regulation Number 28 of 2019 on implementing the management of associated minerals and tin by-products, Number 52 of 2020 regarding action plans for sustainable development goals, and Number 53 of 2018 on map printing fees. The latest regulatory hierarchy regarding tin mining and the environment in Bangka Belitung is reflected in the following Table 1.

Table 1: Regulation list on tin mining and environment

Regulation Level	Regulation Type	Scope
P A N C A S I L A	Law No. 27 of 2007 Juncto Law No. 1 of 2014	Coastal Protection and Small Islands
	Law Number 4 of 2009 Juncto Law Number 3 of 2020	Minerals and Coal
	Law Number 32 of 2009	Environmental management of the
	Government Regulation Number 23 of 2010	Implementation of Mineral and Coal Mining Business Activities
	PP Number 64 of 2010	Disaster Mitigation in Coastal Areas and Small Islands
	Law Number 18 of 2013	Prevention and Eradication of Forest Destruction
	Law Number 32 of 2014	Marine
	Law Number 23 of 2014	Local government
	Minister of Energy and Mineral Resources Regulations Number 5 of 2017	Increasing the Added Value of Minerals and Coal
	Ministry of Energy and Mineral Resources Decree No. 11 of 2018 Juncto Ministry of Energy and Mineral Resources Decree No. 7 of 2020	Procedures for Granting Areas, Licensing, and Reporting on Mineral and Coal Mining Business Activities
	Minister of Trade Regulation Number 53 of 2018 Juncto Minister of Trade Regulation Number 33 of 2015 Juncto Minister of Trade Regulation Number 44 of 2014	Tin Export Terms
	Law Number 11 of 2020	Job Creation
	Ministry of Energy and Mineral Resources Decree Number 46 of 2021	Tin Exports During the COVID-19 Pandemic
Government Regulation Number 25 of 2021 Juncto Government Regulation Number 46 of 2017	Environmental Instruments	

	Government Regulation Number 23 of 2021 Juncto Government Regulation Number 26 of 2020	Forestry Management
	Government Regulation No. 22 of 2021	Implementation of Environmental Protection and Management
	Government Regulation Number 25 of 2021	Implementation of the Energy and Mineral Resources Sector
	Minister of Environment and Forestry Regulation Number 1 of 2021	Corporation Performance Rating Program in Environmental Management
	Minister of Environment and Forestry Regulation Number 7 of 2021	Use of Forest Area
Regional Level	Regional Regulation Number 7 of 2014	Mineral Mining Management
	Regional Regulation Number 8 of 2018	Control of Pollution and Environmental Damage
	Governor Regulation Number 53 of 2018	Guidelines for the Implementation of Reimbursement for Compensation of Costs Print Map
	Regional Regulation Number 1 of 2019	By-products and Tin Byproducts Management
	Governor Regulation Number 28 of 2019	Implementation of Mineral and Tin By-Product Management
	Governor Regulation Number 52 of 2020	Mining Map Printing Fee
	Regional Regulation Number 3 of 2020	Zoning Plan for Coastal Zone and Small Islands

Table 1 shows that 19 national-level regulations are still used as a reference in managing tin and the environment in Bangka Belitung. However, of these regulations, seven regulate mining governance, and 12 intersect with environmental management. There is a total of seven regulations at the regional level, with four governing tin mining, while the remaining three regulate environmental management. All of the regulations mentioned above are directly related to tin governance and the environment that is still effectively used to date. However, various statutory provisions intersect indirectly, such as law enforcement in plantations, marine affairs, and other economic sectors that have the potential to become legal considerations in the management of tin mining and the environment. To ensure that tin mining

is environmentally sound, the substance of all these regulations must contain the principles of ecological idealism.

Ecological Reason for Determining Articles

There are at least 6 basic keywords related to environmental management contained in Law Number 3 of 2020 concerning Minerals and Coal. This follows Law Number 4 of 2009 concerning Minerals and Coal, which considers environmental conservation aspects. According to Article 8A, good mining rules are required to manage and monitor the environment, including reclamation and post-mining (Article 96). Mining permit holders must meet the balance of land cleared and reclaimed, manage ex-mining pits, and have an allocation of funds post-mining

reclamation guarantee (Article 100). Meanwhile, the suspension of mining activities in terms of the environmental carrying capacity cannot bear the burden of production activities (Article 113). Therefore, adequate compensation needs to be provided for the community around the mining area that is directly and negatively affected by losses due to mining mistakes (Article 145).

Furthermore, supervision of environmental, reclamation, and post-mining management is carried out by mine inspectors (Article 141). There are also sanctions for permit holders that do not carry out reclamation and provide guarantee funds, which are threatened with imprisonment for a maximum of 5 years or a fine of 100 billion (Article 161B). Apart from the individual sanctions, this law also regulates aggravating ones for legal entities that commit violations by weighting fines and revoking business licenses or legal entity status (Article 163). Article 4 of Government Regulation Number 23 of 2010 concerning the implementation of mineral and coal mining business activities stated that one of the requirements to obtain a mining permit is to meet environmental requirements. The Ministerial Regulation on the procedures for granting territories, licenses, and reports on mineral and coal mining business activities was only issued in 2018 through the Minister of Energy and Mineral Resources Regulation Number 11 of 2018 and was renewed to Number 7 of 2020.

Law Number 11 of 2020 concerning Job Creation has no significant change in the tin mining policy. This is because it only regulates sanctions for those interfering or hindering the permitted mining activities without proper specification (Article 39). However, this provision is similar to Article 162 of Law Number 4 of 2009 and its amendment to Law Number 3 of 2020. Interestingly, this law provides fresh space for forest management because it regulates the prohibition of mining in forests without the central government's permission, including imposing more stringent sanctions for corporate crimes (Article 37). This law, often called the Job Creation Law, provides a more visionary

and moderate affirmation for corporate crimes in the forestry sector by stipulating sanctions for corporations for their management, weighing 1/3 of the criminal sanctions imposed on corporations. Unfortunately, it does not change Article 89 in Law No. 18 of 2013 on preventing and eradicating forest destruction, where corporate crime for mining in the forest remains generally targeted, without criminal penalties for management, as amended in the Job Creation Law for its prohibition.

The provisions for not allowing forest mining were skipped when all corporate forestry-related crimes were changed, such as the articles on logging, demolition, carrying heavy equipment, transporting, and gardening in the forest. Moreover, there is no mention of strict sanctions against corporations in Article 39 concerning energy and mineral resources. Ironically, mining in forest areas is allowed in production and protected forests as regulated in Article 92 of Government Regulation Number 23 of 2021 on Forestry Implementation, which complements Government Regulation Number 26 of 2020 on Forest Rehabilitation and Reclamation. The Minister of Environment and Forestry Number 7 of 2021 emphasises the mineral relaxation in forest areas concerning Forestry Planning, Changes in Forest Area designations, functions, and usage. Law Number 32 of 2009 on environmental management existed before Law Number 3 of 2020, which renewed the spirit of saving the environment due to mining. Although this law does not specifically regulate environmental management, several important articles relevant to protecting the environment are noted. However, this law does not regulate violations by corporations.

In Law Number 32 of 2009, using natural resources refers to the Environmental Protection and Management Plan (RPPLH) by considering the processes, functions, productivity, safety, quality of life, and welfare (Article 12). The control of pollution and environmental damage is performed by business license holders and the central and local government (Article 13). This law also emphasises the obligation of each

business unit to study Environmental Problems and Impact Analysis or *AMDAL* (Environmental Impact Analysis) (Article 22) in mining activities due to its predetermined important impact on the environment. Meanwhile, those whose criteria are not required to have an AMDAL need to have UKL-UPL (Environmental Management and Monitoring Efforts) (Article 34) and a permit to carry out business (Article 36). This implementation process is supported by environmental and economic instruments, which are prepared by including planning, economic activities, environmental funding, incentives, and disincentives by the central and local governments (Article 42). In supervision, the obligation to conduct environmental risk analysis (Article 47) and audit (Article 48) is also stipulated for each business unit. This law also stipulates the obligation of the process of mitigation (Article 53) and recovery (Article 54).

Law Number 32 of 2009 on the rights and obligations of tin mining regulates several interesting provisions, such as Article 66, stating that anyone fighting for a good environment cannot be prosecuted criminally or civilly. Article 67 stipulates that everyone is obliged to preserve environmental functions and control pollution. Administrative sanctions are regulated for those in charge of businesses and that violate (Article 76) the Ministry of Local Government. In terms of losses, each party includes the central and local governments (Article 90), the community (Article 91), and environmental organisations (Article 92). Furthermore, Government Regulation Number 46 of 2017 concerning Environmental Economic Instruments has been issued more technically. It regulates the financing for environmental pollution and damage management and guarantees funds for environmental restoration (Article 21). However, it provides a prolonged period of validity since the issuance of the recovery guarantee fund, which is 7 years (Article 52), even though the interim associated with this law took 8 years.

Law Number 11 of 2020 softens an article on provisions for business units that do not

comply with the UKL-UPL standard (Article 22). This law also removes the obligation to have an environmental permit for companies that have already implemented an AMDAL or UKL-UPL. Changes were also made to policies that more technically regulate the duties and authorities of the central, provincial, and regional/city governments. Environmental protection and management implementation is regulated by Government Regulation No. 22 of 2021 regarding detailed provisions of tin mining. It regulates several principal matters, such as environmental approvals, damage control, restoration guarantee funds, and sanctions (Article 2). The term environmental permit is changed to an agreement containing an AMDAL obligation for business activities with a significant environmental impact (Article 3). This regulation also provides a more detailed analysis of various water, air, sea quality, and waste management provisions.

The guarantee fund for restoring environmental functions has been regulated in more detail (Article 471), although it still requires lower and technical derivative regulations (Article 476). It is the climax of various provisions that are quite weak in managing the environment in the natural resource extraction process. However, the consistency of its implementation is still waiting for proof, considering the massive environmental damage process that has been ongoing. Recently, through the Minister of Environment and Forestry, the central government issued regulation Number 1 of 2021 concerning the program for evaluating corporation performance ratings in environmental management, which contains provisions for compliance. In this provision, companies are classified into gold, green, blue, red, and black categories in environmental management.

Meanwhile, before the detailed issuance of provisions governing mining, there was a law on using small islands and coastal areas, known as Law No. 27 of 2007, which was renewed to Law No. 1 of 2014. This law provides a detailed analysis of offshore tin mining and its

relation to environmental impacts. According to Article 4, this law regulates the purpose of managing coastal areas and small islands, namely to protect, conserve, rehabilitate, utilise, and enrich ecological sustainability and increase economic, social, and cultural values. Meanwhile, Article 23 regulates that coastal and small islands are prioritised for many purposes, aside from mining, because there is a regulation on reclamation (Articles 32 & 33) and rehabilitation (Article 34).

Nevertheless, the mineral mining diction in Article 35 prohibits this activity, assuming it causes environmental damage or pollution technically, ecologically, socially, or culturally. In the context of licensing, Article 50 stipulates that the government is authorised to regulate the granting and revocation of business licenses following their regional authority. Furthermore, there is also a prohibition against activities that cause environmental damage in coastal areas and small islands (Article 66). Criminal sanctions and fines have been prepared in Article 73 for mineral mining that damages the environment. Interestingly, although it has been published for a long time, the provisions regarding the Zoning Plan for coastal areas and small islands (Article 9) in Bangka Belitung were only issued by the Provincial Government in 2020, which is approximately 13 years later.

Unfortunately, Law Number 11 of 2020 Article 18 on Job Creation does not contain sanctions for corporations that pollute or damage the environment, as well as in Regional Regulation No. 3 of 2020. The environmental recovery process is regulated in Government Regulation No. 64 of 2010 in the context of disaster mitigation. According to Article 13 of this law, everyone using the coast and small islands must execute disaster mitigation based on the Environmental Impact Analysis (AMDAL) document. This regulation is not stated to be revoked in Law Number 11 of 2020 concerning Job Creation, however, one of the provisions that regulate the planning of coastal areas and small islands is updated. Law Number 32 of 2014 concerning the Sea

does not regulate marine minerals management following statutory provisions (Article 21).

The latest regulation is Law Number 23 of 2014 regarding the distribution of authority between the central and local governments. Article 27 states that the provincial government is given the authority to manage the coast and small islands within 12 nautical miles for natural resources other than oil and gas. This means the provincial government is authorised to manage mineral resources within certain territorial boundaries. This law withdraws the authority of regional/city governments in managing tin mining.

Some provisions do need to be lowered at the local level to avoid conflict with higher regulations. For instance, the local government issued Provincial Regulation Number 7 of 2014 concerning mineral mining management. In 2000, tin mining was managed openly because of the decentralisation faucet that allowed independent regulation. The absence of regulations on tin mining after its issuance as a strategic state commodity in 1998 led to continuous mining without regulation at the local level until 2014. Regional Regulation Number 7 of 2014 refers to Law Number 4 of 2009 concerning Minerals and Coal.

According to Article 3 of Regional Regulation Number 7 of 2014, the objectives of mineral mining management are to ensure effectiveness and a sustainable and friendly environment. According to its authority, the Mining Business Permit (IUP) is granted by the provincial government (Article 5). Furthermore, provisions regarding reclamation obligations have also been regulated in Article 75, including reclamation at sea, according to Article 76, and reclamation guarantee funds in Articles 77 and 78. Generally, this regional regulation only re-translates Law Number 4 of 2009 without special provisions.

The regional regulations related to tin by-products and minerals were launched in 2019 through Regional Regulation Number 1. Instead of restricting and adjusting to the

latest regulations, tin mining also extracts other potentially associated minerals, including zircon, ilmenite, rutile, monazite, and xenotime. This regulation is important because none at the national level regulates the matter associated with minerals, even though their economic value was predicted to be very high.

The provincial government stipulates that tin's associated minerals and by-products must be managed with the principles of benefit, national interest, participation, transparency, and being sustainable and environmentally sound (Article 2). The principles adopted included good mining practices based on environmental management (Articles 3 & 4). Unfortunately, this regulation only opens the valve for legalising the management of associated minerals and tin by-products for companies that already hold IUPs. However, it does not further regulate its environmental responsibility in detail, even though the business field has become wider.

In 2020, the Provincial Government of the Bangka Belitung Islands issued a Regional Regulation, a derivative of Law Number 27 of 2007 on coastal and small island management to regulate mining in terms of zoning. This process was carried out using natural resource wealth with sustainability (Article 2) and the first 11 principles of ecological protection (Article 3). However, this regional regulation promotes business expansion in an economic sense, as stated in Articles 8, 9, and 10. This regulation further expanded the term "business," meaning the process of opening the door to tin mining at sea through the establishment of zones for the general public (Article 15) as well as determining the minable areas (Article 24). Furthermore, this regulation also stipulates a conservation zone (Article 33) with fewer points. The protection framework contains the obligation for governors as regional heads to consider preserving coastal ecosystems and small islands (Article 58) when granting permits. In addition, there is an opportunity for the Governor to file claims for compensation for environmental damage and pollution (Article 64) and a community representative lawsuit

(Article 73). Unfortunately, this regulation does not contain details of violations with the potential to appear explicitly. Therefore, it only regulates things during the violation of Regional Regulations (Articles 65 & 66). Article 79 regulated environmental rehabilitation, although it only emphasises the obligations of local governments or people to use the coast and small islands without including opportunities to coerce corporations.

The Provincial Government issued a more specific Regional Regulation on environmental governance in 2018, which is approximately 9 years after Law Number 32 of 2009. Furthermore, Regional Regulation Number 8 of 2018 regulates pollution and environmental damage control. The Governor is also given the authority to issue an environmental permit for any business that impacts the environment (Article 10), including those associated with waste management (Article 12). According to Article 40, environmental pollution management is borne by every business actor that destroys the environment (Article 40) with the threat of being sanctioned assuming it is not properly conducted (Article 45). This is in addition to the obligation to conduct environmental restoration (Articles 49 & 50). Interestingly, this regulation is quite progressive in raising the law enforcement issue by involving the police and the prosecutor's office (Articles 65 & 66) in damages caused to the environment by business actors.

However, the article on this regulation only refers to compliance with the legislation, whereas it can potentially promote wider law enforcement in environmental protection. Various crimes against the environment are difficult to approach from the perspective of damage laws unless they are directly integrated with the roles of the police and prosecutors. This regulation also contains a reclamation guarantee fund that needs to be provided by business actors (Article 74). However, only the process of using it has not become a crucial issue and is reported openly. In the elaboration of the various regulations above, starting from the central and regional levels, several notes of regulatory

weaknesses still hinder the implementation of environmental ideals in mining activities.

Crucial Points: Tug-of-War

Indonesia is a legal state that postulates all legal norms and provisions described in various statutory instruments, starting from the centre to other regions. As a developing country, some of the crucial issues include the concept, regulation, and crucial issue of legal maturity. However, regulating the nation's life and the state refers to legal cases mutually agreed upon politically. The matter of implementation and consistency of its enforcement is a separate study amid the debate on the state's and its citizens' maturity in managing social order. The legal framework in tin mining and ecological regulation is an important issue in broader management.

Therefore, this study examines the problems of tin mining and ecological management. The previous section discussed the rules related to each other, while in the subsequent section, an ecological vision is presented to determine the governing regulations for direct and indirect mining. The following section addresses ecological issues and the future of governance. A total of 6 crucial issues were found regarding the integrated manner needed to place an ecological vision in mining.

1. Tug-of-war of authority

Indonesia does have an agreement to regulate the rights and authorities between the central and regional governments because it is a country that adheres to the presidential system, with most of the portion still by the central government. However, since the 1988 reformation, the need to share more authority with regions has experienced ups and downs. This led to the issuance of Law Number 22 by the central government in 1999, which adheres to the principle of decentralisation. This was followed by Law Number 32 in 2004, which regulates a broader concept called Regional Autonomy and opens more proportional authority to local governments.

Meanwhile, in 2014, Law Number 23 was re-issued, which drew more on several authorities, such as the issue of authority to provide mining permits. This law has withdrawn the authority to grant mining permits for the 4-mile deep-sea boundary from the coast as previously regulated in Law Number 4 of 2009 on Minerals and Coal. The authority was transferred to the Provincial Government, and the majority was given to the central government. This raises rights and obligations regarding rights to land sovereignty and the associated wealth. Although regions have the right to sovereignty with environmental impacts, the central government does not provide authority in terms of permit management. Therefore, problems are usually experienced regarding the environmental restoration movement where the regions get affected by their concessions. Mining, irrespective of its form, damages the environment where it is operated, therefore, there is a need for the region to regulate its licensing wisely.

This tug-of-war on environmental matters is also seen in the conflicting provisions that arise between laws. For instance, the controller of environmental damage in Law Number 32 of 2009 is the regional government, while Law Number 11 of 2020 is by the central government. The central and local governments prepare environmental control instruments, although the regions do not have the authority to issue permits. Meanwhile, the supervisory and sanction arrangements for violations of the environment are divided among the central, provincial, and regency/city governments.

2. Watching the legal, allowing the illegal?

The interesting thing about various regulatory provisions is that they only supervise legal mining management by barely regulating potentially illegal management. This means that the government only pays attention to mining that has a permit without supervising illegal mining, which seems only to be given separate supervision in various other regulations. The government has also prepared supervisors for mining, however, due to the bureaucratic

apparatus, it only works to supervise those with permits. Therefore, questions associated with the continuous conduct of illegal mining are always asked because it is not regulated by law. Some minor prohibitions in several provisions seemed to be included in the general criminal supervision of the police. However, because of their weak implementation, they became general crimes. Illegal tin mining has significantly increased since residents can obtain multiplied profits using simple tools regardless of location.

Furthermore, in Law Number 32 of 2009, there is a fundamental weakness regarding environmental management, which is regulated based on general matters. However, it has not regulated specific environmental management to regulate tin mining. Several Government Regulations, which are derivatives of the Environmental Law, also regulate environmental management.

In Bangka Belitung, mining is further processed to determine the earth metals with greater wealth potential. Until now, the mining of rare-earth metals has not been explicitly regulated by law, allowing the exploitation process to continue without supervision because the government supervises those with regulated permits. Furthermore, there is no regulation on how to manage the environment for rare earth metal mining.

Finally, the Law on Job Creation with its Government Regulation has been issued with numerous conveniences to the investment world, cutting topics related to the environment. The Job Creation Law is considered more problematic for the environment because of the various investment facilities created. Hence, it has the opportunity to cause weaknesses in efforts to save the environment.

3. Weak openness, enforcement, and cohesiveness

Several regulations governing environmental management related to tin mining have weak points. This is because the law and its derivative regulations find it difficult to regulate a natural commodity. Furthermore,

some gaps observed have become the entrance to allow environmental degradation problems to arise. However, the various regulations provisions relating to AMDAL, UPL-UKL, Environmental Permits/Approvals, and Audits are regulated in patchwork manners. However, the mechanism for compiling, socialising documents, and getting to its supervision tends to be closed to certain circles. AMDAL, UPL-UKL, and Environmental Permits/Approvals, for example, from the preparation process to their enforcement, are not open and accessible to the public, making it difficult to be monitored openly by various groups.

These environmental documents are not classified as state secrets; therefore, they must be disclosed. The preparation process is usually carried out in a limited circle, and the documents are difficult for the general public to access. In some settings, the surrounding community, the process, and access to the complete document are difficult to analyse despite containing the responsibility for reclamation, including the issue of community empowerment. The risk analysis and environmental audit have not disclosed the process and the results; therefore, the general public cannot obtain comprehensive environmental recovery data.

Consequently, measuring the consistency of AMDAL implementation and process successes is difficult because this data tends to be considered closed and not open to many people. In most cases, the preparation of AMDAL is participatory, and its enforcement is not properly socialised after it has been implemented, thereby making transparency in the enforcement process difficult to track. In many statutory provisions, as mentioned above, the right to be sued by aggrieved people who care about the environment. Resistance to the movement to save the environment often ends in criminalisation, while the amount of community losses is rarely considered. Recently, the Employment Creation Law emphasised sanctions for the public that prevent business permits for legal companies. The question is, "What if the obstruction is due to losses caused to the community or the surrounding environment?"

Another odd thing is the lack of integration of the law enforcement system in environmental management. Almost all statutory provisions only regulate supervision and legal processes for violators by involving a government team comprising inspectors, Civil Service, and Forest Police. However, there needs to be an opportunity to optimise all security resources, including the Indonesian Army, the Police, and the Attorney General's Office in law enforcement. The only rule that tries to integrate the role of the police is Regional Regulation Number 8 of 2018 concerning Control of Pollution and Environmental Damage, although it is not regulated in detail. In terms of environmental crimes, the supervisory and security institutions work independently with norms that are also not directly linked, therefore they have the potential to be weak in enforcing environmental laws.

Provisions regarding reclamation funds were also highlighted. Many stated that every corporation with an operating license must include a reclamation guarantee fund and the government. Besides, more detailed regulations that must be published include ways to design difficult post-operation environmental financing for the public. In many facts, poverty and backwardness with the accompanying environmental damage are left as a legacy after operating.

4. The community alone, how about corporations?

One of the interesting questions generally asked is about those responsible for environmental damage. The answer is simply those that carry out the environmental damage with the involvement of individuals and corporations. However, answers have not been provided to the question, "What happens when it is carried out by cooperation and not an individual?" Almost all laws and regulations tend to target people and not corporations. Examples are Laws Number 27, 32, 32, 4, and 4 of 2007, 2009, 2014, 2009, and 2020, respectively, on individuals. In the last law, there was a stipulation of weighting sanctions for legal

entities, such as 'can,' hence they are not strictly binding. In this case, environmental crimes tend not to demand corporate responsibility, even though the damage caused on a massive scale is mostly by corporations. It is conceivable that environmental damage gives them more space to remain untouched while individuals are sanctioned.

The law on fresh air emerged in Law Number 11 of 2020, which regulates individual sanctions, management, and weighting for corporations considered damaging to the environment, especially those in forest areas. Unfortunately, this law skips the mining issue by not stipulating aggravating sanctions in the form of fines for special corporations for violators. Therefore, efforts to trap corporate crimes in mining have been avoided by legislators.

5. Unilateral exclusion and re-inclusion

Mining is an interesting business arena to be contested amid a few grey regulations. According to Law No. 27 of 2007, priority activities in coastal areas and small islands are conservation, education and training, research and development, marine aquaculture, tourism, fishery and marine businesses, organic and natural farming, and the fishery industry in a sustainable manner. From this priority, mining is excluded in coastal areas and small islands, while from Regional Regulation Number 3 of 2020, it is a derivative mandated by Law Number 27 of 2007 on Mining in Public Utilization Areas.

The exclusion of mining that regulates corporations' violations also occurs in Law Number 11 of 2020 concerning Job Creation. Meanwhile, Law No. 18 of 2013 regulates corporate sanctions for all types of violations that cause forest damage because the Job Creation Law does not include mining activities as one of the violations that increase corporate fines. There is an attempt to negate the position of mining in a wider and firmer scale of sanctions.

Furthermore, mining is associated with the regulation's exclusion, and re-inclusion is associated with inserting rules that were not

previously regulated. In this case, re-inclusion occurs when the regulations on forestry allow mining in production and protected forests, which was previously excluded from different regulations.

6. Long regulatory chain

There are consequences associated with the hierarchy of laws and regulations on the length of the chain of legislation products. According to studies, the law is the highest product that generally contains basic policies, followed by Government Regulation that occurs on technical derivatives without expanding policies and definitions. A regional regulation is made as a derivative of the Law and Government Regulations at the local government level, in line with the district/city level cases.

Apart from the hierarchical chain, which consists of problems, the slow response of the lower agencies in issuing derivative regulations is another factor. For example, although Law Number 27 of 2007 has been issued, the Government Regulation on environmental instruments as its derivatives was only implemented in 2017, namely Government Regulation Number 46 of 2017. This means it took approximately 10 years to issue a derivative Government Regulation. Similarly, the regulation of the zoning plan for coastal areas and small islands in Bangka Belitung, in line with Law Number 27 of 2007, issued a regional regulation in 2020 through Regional Regulation Number 3 of 2020, which is approximately 13 years later.

Law Number 4 of 2009 is relatively comprehensive to mineral and coal mining. Several Government Regulations have been issued with the Perda Number 7 implemented in 2014, which is approximately 5 years later. After Law Number 4 of 2009 was renewed through Law Number 3 of 2020 and the issuance of Law Number 23 of 2014, regional regulations Number 7 of 2014 was updated, although there have been some significant changes to the provisions, including those on the authority of the provincial, district and city government.

Meanwhile, after the issuance of Law Number 32 of 2009, the new regional regulation on environmental control and pollution was issued in 2018 through Regional Regulation Number 8 of 2018 after 9 years. Government Regulation Number 22 of 2021, a derivative of Law Number 11 of 2020 on Job Creation as an amendment to Law Number 32 of 2009, stated that the provision of a pause for applying guarantee funds and restoration of environmental functions is a maximum of 5 years.

The hierarchy of regulations, a cursory argument on the political and bureaucratic characteristics with variations, slows down the issuance of derivative regulations. Furthermore, this leads to significant potential damage due to various unregulated loopholes. Similarly, various mining activities or business licenses that are not following the environment continue to benefit as long as regulations do not force them to comply. As a developing country, the hierarchy and dynamics of politics and government are why Indonesia deals with the damage that occurs massively with ongoing environmental crimes. Crucial points that describe weak regulations in tin mining and environmental management as an inseparable part of mining are described in Figure 3.

The figure above explains that at least 6 crucial issues influence each other, both mining, which has implications for the environment and the environment that proactively regulates its boundaries. These various regulatory loopholes are described as dynamics that differ from each other with different motives of interest. Each weakness is related to two direct regulatory interests: Tin mining and environmental management.

The tug-of-war between the central and local governments occurs in tin mining and environmental management regulation. Meanwhile, tin mining regulations focus only on the legal ones, while those that are not regulated are ignored, despite their environmental damage. In terms of transparency, enforcement, and regulatory integration, it is considered weak for tin mining and the environment. Meanwhile,

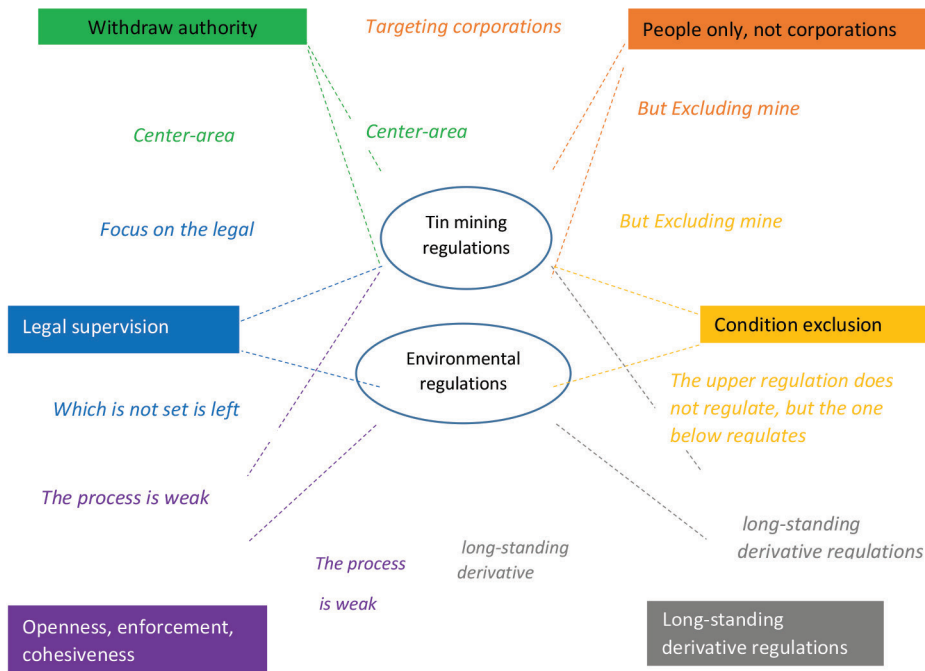


Figure 3: Description of crucial and weak regulation

in terms of applying sanctions, environmental management regulations have been proactive in regulating crimes by targeting corporations alone to ensure they pay heavy fines. The gap is the time derivative regulations have been issued on tin mining and the environment, despite the prolonged continuous occurrence of opportunities for damage and misguided governance from top to bottom. Meanwhile, this regulatory loophole is still open, it is difficult to continue the debate on the social and environmental impacts of mining activities, as emphasised by Yanuardi *et al.* (2021).

This study is in line with the findings of Monteiro *et al.* (2021), Winzenreid *et al.* (2019), Crawford (2015), and Smith & Rosenblum (2011) that the biggest mining problem is in the number of those who not adhere to the regulations. However, in this study’s context, the regulation levels are still long-standing problems that do not work with a comprehensive design, thereby slowing down the reasoning of ecological idealism. Sendy (2018) stated that mining governance in Indonesia is complicated regarding coordination, authorisation, and

limitations. In addition, this study included aspects of integration, time coherence between regulations, and the occurrence of exclusion and re-inclusion.

In the end, this study notes that from a regulatory standpoint, efforts to protect the environment actually already exist, but crucial loopholes are still found that have the potential not to protect the environment from the threat of mining impacts. This study confirms that we still have problems with ecological idealism at the regulatory level, there are still serious problems related to ecological vision. The crucial points mentioned in this paper show that the regulations still need to be improved and improvements must be made on the weak side. As long as the crucial points are not covered at the upstream level, we can be sure that the problematic impact of environmental mining will continue to occur.

Conclusion

Ecological idealism already exists in the various regulatory frameworks in environmental management based on tin mining extraction

in Indonesia, especially in the Province of the Bangka Belitung Islands. This is because the central government has issued regulations on the environmental management of mineral and coal mining processes to protect coastal areas and small islands. Several derivative regulations have also followed some of these regulations.

However, these laws and regulations have at least 6 crucial issues. First, there is a tug-of-war between the central and regional governments, as stated in several research sections. One of them is the change in the issuance of mining permits which the central government withdrew after decentralisation. Another is the authority regarding the environment, whose regulations are held by the central government, while local governments face environmental damage. Second, the regulations issued tend to focus on supervising licensed mining with little attention to businesses that damage the environment, even those not licensed. Therefore, due to the lack of regulatory link at the central level, mining activities cannot be monitored patterned in the extraction process, for example, in the context of managing rare earth metals. Third, several regulated provisions, such as AMDAL, UPL-UKL, Environmental Permits/Approvals, Risk Analysis, and Audits, are not carried out openly hence, they cannot be monitored by the wider community. This is similar to the consistency of its enforcement, which tends not to be widely informed. Furthermore, the problem of the integration of law enforcement barely integrates the role of government officials outside the government's bureaucratic structure.

Fourth, it does not explicitly regulate corporate crimes because the mining sector has been excluded. Therefore, it can be predicted that environmental crimes in the context of tin mining are ultimately only associated with individuals. Fifth, mining areas tend to get preferential treatment because they are included and excluded when necessary. Although the coastal areas and islands do not prioritise mining, it is regulated by the local government. Meanwhile, corporate crime in the law on

preventing and eradicating forest damage, such as mining crimes committed in the forest, needs to be sanctioned with heavy fines for the perpetrators after being updated. Sixth, the legal hierarchy chain is very long because it took 13 years for the new regional regulation to be issued. Several regional regulations and their derivatives in the form of government regulations experienced delays, therefore, it is imperative to determine the environmental damage and crime in the hierarchy of laws and regulations more quickly and anticipatively.

Ecological idealism in tin extraction in Bangka Belitung is less visionary and mapped normatively because some gaps are still wide open. Furthermore, environmental degradation will continue to go sequentially with regulations that are not observable to those close to the loopholes for crimes against the environment. The six important notes from the research results, starting from the review of authority, substance reformulation and harmonisation of regulations, strengthening supervision, and consistent law enforcement as well as accelerating regulations at the technical level, will have an impact on tin mining extraction in the future that is environmentally sound and sustainable. The crucial point presented in this study shows that regulation as an upstream area is still problematic; consequently, there are weaknesses in ecological practices in the field. Regulatory improvement steps are needed to ensure that environmental damage does not continue to occur in the midst of the mining process which is also still happening.

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References

- Bidayani, E., Kuniawan. (2020). Conflict resolution in coastal resources utilization among fishermen and unconventional tin miners, *Society*, 8(1), 13-22. <https://doi.org/10.33019/society.v8i1.139>
- Crawford, A. (2015). *The mining policy framework, assessing the implementation readiness of member states of the intergovernmental forum on mining, minerals, metals, and sustainable development* [Report]. The International Institute for Sustainable Development, Canada. <https://www.iisd.org/publications/mining-policy-framework-assessing-implementation-readiness-member-states>
- Darwance, Haryadi, D., & Yokotani, Y. (2019). The election smart house management as a society political education facility reconstructing the development of eco-friendly environment as the green constitution (Study of Tin Mining and Environmental Degradation in Bangka Belitung Islands). *Proceedings of the 3rd International Conference on Globalization of Law and Local Wisdom (ICGLOW 2019)*. <https://doi.org/10.2991/icgflow-19.2019.30>
- Dinas Lingkungan Hidup Bangka Belitung. (2019). *Dokumen informasi kinerja pengelolaan lingkungan hidup daerah Provinsi Kepulauan Bangka Belitung*. Provinsi Kepulauan Bangka Belitung.
- Erman, E. (2008). Rethinking legal and illegal economy: a case study of tin mining in Bangka Island. *Southeast Asia: History and Culture*, 2008(37), 91–111. https://doi.org/10.5512/sea.2008.37_91
- Erman, E. (2014). Deregulation of the tin trade and creation of a local Shadow State a Bangka case study. In L. V. Verhandelingen van het Koninklijk Instituut voor Taal- (Ed.), *Renegotiating Boundaries* (pp. 177–201). Brill. https://doi.org/https://doi.org/10.1163/9789004260436_009
- Haryadi, D. (2015). Faktor kriminogen illegal mining timah di Bangka Belitung. *Masalah-Masalah Hukum*, 44(1), 52. <https://doi.org/10.14710/mmh.44.1.2015.52-58>
- Haryadi, D. (2019). Formulating a criminal policy of unlicensed tin minings which the community welfare in Bangka Belitung Islands Improves. *Proceedings of the International Conference on Maritime and Archipelago (ICoMA 2018)*. <https://doi.org/10.2991/icoma-18.2019.18>
- Ibrahim, Haryadi, D., Wahyudin, N. (2018a). Already dependent: A dependency analysis of market activity on tin mining in Bangka Belitung. *E3S Web of Conference*, 91, 1-6. <https://doi.org/10.1051/e3sconf/20199103004>
- Ibrahim, Haryadi, D., Wahyudin, N. (2018b). The social dilemma of tin mining non-miners' people: A comparative study between Bangka and Belitung People's perception. *E3S Web of Conference*, 73, 1-6. <https://doi.org/10.1051/e3sconf/20187302014>
- Kurniawan, W. (2021). Mining tin from the sea in Indonesia, *Aljazeera/Reuters*. Accessed August 14, 2021 from <https://www.aljazeera.com/gallery/2021/6/8/in-pictures-mining-tin-from-the-sea-in-indonesia>
- Monteiro, N. B. R., Bezzer, A. K. L., Neto, J. M. M., da Silva, E. A. (2021). Mining law: In search of sustainable mining. *Sustainability*, 13, 867. 1-16. <https://doi.org/10.3390/su13020867>
- Nurdin, M. F., Rachim, R. A., Sutrisno, B., Lesmana, A. C. (2019). The irony of mineral rich island: The root cause of poverty-stricken local fisher in Bangka Island and the proposed empowerment model. *International Journal on Advanced Science, Engineering, and Information Technology*, 9(4), 1282-1288. <http://dx.doi.org/10.18517/ijaseit.9.4.9279>
- Nurtjahya, E., Franklin, J., & Agustina, F. (2017). The impact of tin mining in Bangka Belitung and its reclamation studies. *MATEC*

- Web of Conference*, 101, 1-6. <https://doi.org/10.1051/mateconf/201710104010>
- Pratama, S. (2018). The political economy dimension towards conflict of mining governance (Case Study: Bangka Belitung Governor's Regulation About the Moratorium of PT Timah, Tbk Offshore Tin Mining 2016), *Jurnal Wacana Politik*, 3(1), 40-53. <https://doi.org/10.24198/jwp.v3i1.16084>
- Pratiwi, Narendra, B. H., & Mulyanto, B. (2020). Soil properties improvement and use of adaptive plants for land rehabilitation of post-tin mining closure in Bangka Island, Indonesia. *Biodiversitas Journal of Biological Diversity*, 21(2). <https://doi.org/10.13057/biodiv/d210211>
- Purnaweni, H., Kismartini, Prabawani, B., & Roziqin, A. (2019a). Politics and business: The policy on tin mining in Bangka. *International Journal of Business and Economic Affairs*, 4(3), 133-139. <https://doi.org/10.24088/IJBEA-2019-43004>
- Purnaweni, H., Kismartini, Prabawani, B., & Roziqin, A. (2019b). Bangka Belitung Islands: Great potencies of massive environmental impacts. *E3S Web Conference*, 125(2019), 09008. <https://doi.org/10.1051/e3sconf/201912509008>
- Putri, S. R. (2020). *Reviewing law No. 3, the Year 2020 regarding mineral and coal mining* (Policy Brief) Novirianti & Partners. <https://www.nandp.or.id/files/Reviewing%20Law%20No.%203%20Year%202020%20Regarding%20Mineral%20and%20Coal%20Mining.pdf>
- Rendy, R., Ibrahim, I., & Pratama, S. (2020). Ecological political commitments: Measuring the ecological leadership visions of district head in Bangka Belitung Region, *Advance in Social Science, Education and Humanities Research*, 389, 1-2. <https://doi.org/10.2991/icstcsd-19.2020.42>
- Rosyida, I., Khan, W., & Sasaoka, M. (2018). Marginalization of a coastal resource-dependent community: A study on tin mining in Indonesia. *The Extractive Industries and Society*, 5(1), 165-176. <https://doi.org/10.1016/j.exis.2017.11.002>
- Sendy, D. (2018). Development of environmental policy in Indonesia regarding mining industry in comparison with the United States and Australia: The lesson that can be learned. *EVERGREEN Joint Journal of Novel Carbon Resource Sciences & Green Asia Strategy*, 5(2), 50-57. http://www.tj.kyushu-u.ac.jp/evergreen/contents/EG2018-5_2_content/pdf/Pages%2050-57.pdf
- Sibarani, S. (2017). Tin folk mining in the west Bangka district of the Province of Bangka Belitung Island And the impact on the living environment. *American Journal of Engineering Research (AJER)*, 12, 344-348. [http://www.ajer.org/papers/v6\(12\)/ZY0612344348.pdf](http://www.ajer.org/papers/v6(12)/ZY0612344348.pdf)
- Siringoringo, R. M., & Hadi, T. A. (2015). The condition of coral reefs in West Bangka Water. *Marine Research in Indonesia*, 39(2), 63-71. <https://doi.org/10.14203/mri.v39i2.86>
- Smith, E., Rosenblum, P. (2011). Government and citizen oversight of mining, enforcing the rules. *Revenue Watch Institute*, New York. https://www.resourcegovernance.org/sites/default/files/documents/rwi_enforcing_rules_full1.pdf
- Sulista, S., Ibrahim, I., Pratama, S. (2019). Accommodation, resistance, and divided community: study of the dynamics of offshore tin mining conflict between the fishermen of the coastal area and companies in Bangka Island, *PEOPLE: International Journal of Social Sciences*, 275-296. <https://dx.doi.org/10.20319/pijss.2019.53.275296>
- The Ministry of Energy and Mineral Resources (MEMR). (2016). Handbook of Energy & Economic Statistics of Indonesia Final Edition. <https://www.esdm.go.id/assets/media/content/content-handbook-of->

- energy-economic-statistics-of-indonesia-2016-lvekpnc.pdf
- Yanuardi, Y., Vijge, M. J., & Biermann, F. (2021). Improving governance quality through global standard-setting? Experiences from the extractive industries transparency initiative in Indonesia, *The Extractive Industries and Society*, 8(3), 109. <https://doi.org/10.1016/j.exis.2021.100905>
- Yuarsah, I., Handayani, E. P., Rakhmiati, & Yatmin. (2017). Restoration of soil physical and chemical properties of abandoned tin-mining in Bangka Belitung Islands. *Journal of Tropical Soils*, 22(1), 21–28. <https://doi.org/10.5400/jts.2017.v22i1.21-28>
- Winzenried, S., *et al.* (2019). Mining in Indonesia, investment, and taxation guide. *PwC Indonesia*. <https://www.pwc.com/id/en/pwc-publications/industries-publications/energy--utilities---mining-publications/mining-guide-2019.html>