



Research Article



Reform of Environmental Approval Policy for Renewable Energy in Indonesia

I Gusti Ayu Ketut Rachmi Handayani ^{1,*}, Cindy Yosiana ¹, Sutasinee Kongrawd ²

¹ Faculty of Law, Universitas Sebelas Maret, 57126, Indonesia

² Siam University, Bangkok, Thailand.

* Correspondence: ayu_igk@staff.uns.ac.id

Received: February 10, 2025 / Revised: June 29, 2025/ Accepted: June 30, 2025

Abstract: Indonesia faces persistent regulatory barriers in accelerating its renewable energy transition, mainly due to rigid and bureaucratic environmental licensing that ignores the specific characteristics of clean energy projects. This study examines the legal and policy gaps in Indonesia's environmental licensing framework, using a normative legal approach complemented by case studies and comparative analysis with Germany, Australia, and selected ASEAN countries. The findings reveal three main issues. First, although Indonesia has adopted a risk-based licensing system through the OSS RBA, the country still applies uniform procedures to all projects, failing to distinguish between high- and low-risk activities. It discourages investment and slows the growth of small-scale renewable energy. Second, the principles of prudence and sustainability have not been effectively reflected in policy implementation. There is an urgent need for reforms that align licensing procedures with project risks, strengthen public participation, ensure protection for vulnerable groups, and leverage digital technologies for greater transparency. Third, international comparisons show that countries such as Germany, Australia, Vietnam, Thailand, and Laos have successfully accelerated clean energy adoption by implementing risk-based regulations, simplifying procedures, offering financial incentives, and improving intergovernmental coordination. Based on these insights, the study recommends that Indonesia reform its environmental licensing policies to be more adaptive, transparent, and proportionate to project risks, thus supporting legal certainty, ecological justice, and a sustainable energy transition.

Keywords: Environmental Approvals; Policy Reform; Renewable Energy;



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INTRODUCTION

The transition to renewable energy sources has become a crucial component of Indonesia's national policy to reduce greenhouse gas emissions and fulfill its commitments under the Paris Agreement.¹ The Indonesian government has set objectives for the proportion of new and renewable energy (Energi Baru dan Terbarukan/EBT) in the national energy mix to be 23% by 2025 and 31% by 2050 as specified in the National Energy General Plan (Rencana Umum Energi Nasional [RUEN]) issued by the Ministry of Energy and Mineral Resources.² To achieve this objective, numerous solar, wind, hydroelectric, and biomass power generation initiatives are being vigorously promoted across multiple locations. Legally, all renewable energy projects, akin to other development initiatives, are required to

¹ Riswandha Imawan and Al Yasir, 'Hak Menguasai Negara: Konsep Dan Implikasinya Terhadap Penggunaan Energi Terbarukan Di Indonesia', *Jurnal Konstitusi*, 21.1 (2024), 153–68 <https://doi.org/10.31078/jk2119>

² Muhammad RM Fayasy Failaq and Irma Aulia Pertiwi Nusantara, 'Irisan Penguasaan Negara Dan Desentralisasi Dalam Prospek Pengaturan Energi Terbarukan Di Indonesia', *Jurnal Konstitusi*, 21.1 (2024), 118–35 <https://doi.org/10.31078/jk2117>



adhere to environmental licensing mandates as outlined in Law Number 32 of 2009 regarding Environmental Protection and Management, as amended by Law Number 11 of 2020 concerning Job Creation, along with its associated regulations.³ Under this legal framework, any business activity with significant environmental impacts is required to obtain either an Environmental Impact Assessment (*Analisis Mengenai Dampak Lingkungan/Amdal*) or an Environmental Management and Monitoring Effort document (*Upaya Pengelolaan Lingkungan dan Upaya Pemantauan Lingkungan/UKL-UPL*) as a prerequisite for securing a business license or a risk-based business license.

Table 1. Indonesia's Renewable Energy Projections and Achievements 2025-2050 Based on RUEN and IESR Energy Transition Scenario

Data Category	Current Values	Information
RUEN 2025 EBT Capacity Target	45.2 GW	National targets in RUEN.
Realization of EBT Capacity 2025 Projection	22.62 GW	Only ~50% of the RUEN target was achieved according to the realization scenario.
Renewable Energy Mix 2025 (Current Policy Scenario)	18%	Still far from the RUEN target even though there is a new policy.
Renewable Energy Mix Target 2050 (Energy Transition Scenario)	>66%	Much higher than the current policy scenario.
Required EBT Capacity for Transition Scenario (2025)	≥23.74 GW	Minimum capacity to support transition scenarios.
Required EBT Capacity for Transition Scenario (2050)	408 GW	To meet long-term clean electricity needs.
2050 Steam Power Plant Capacity (Transition Scenario)	51.1 GW	The portion of PLTU has been reduced significantly compared to current capacity.
Contribution of Generation Sector in EBT Mix 2025-2050	66–75% (Realization Scenario), 60% (Current Policy Scenario)	The majority of renewable energy comes from the electricity sector.
National Electricity Needs (2025 & 2050)	462 TWh (2025), 1,475 TWh (2050)	There is no difference between scenarios, but the composition of the sources is different.

Source: IESR (Institute for Essential Services Reform)

As part of its national commitment to achieving a sustainable energy transition, the Government of Indonesia has set ambitious targets in the National Energy General Plan (RUEN), including a renewable energy (RE) capacity of 45.2 GW by 2025. However, the Institute for Essential Services Reform (IESR) projects that actual RE capacity by 2025 will reach only around 22.62 GW—less than 50% of the RUEN target. This shortfall highlights a structural gap between policy planning and its implementation on the ground. **Table 1.** highlights the significant divergence between current energy policies and national targets and transition pathways. Under the current policy scenario, the projected renewable energy mix for 2025 stands at only 18%, far below the 23% levels mandated by RUEN. By contrast, the IESR's energy transition scenario envisions a renewable energy mix exceeding 66% by 2050. To

³ Aditya Sewanggara Amatyawangsa Wicaksana Nivia Nivia, Garuda Era Ruhpinesthi, Alfatania Sekar Ismaya, 'Enterprises in the Management of New and Konstitusionalitas Kewenangan Badan Usaha Milik Daerah Dalam Pengelolaan Energi Baru Dan Terbarukan', 21.2 (2024) <https://doi.org/https://doi.org/10.31078/jk2128>



achieve this, Indonesia must increase its renewable energy (RE) capacity to at least 23.74 GW by 2025 and scale it up dramatically to 408 GW by 2050.

The data further illustrate how Indonesia is undergoing a fundamental shift in its electricity generation structure. Indonesia aims to significantly reduce its coal-fired power plant (PLTU) capacity to 51.1 GW by 2050. Projections show that the electricity sector will contribute the majority share to the renewable energy mix between 66% and 75% in the realization scenario and approximately 60% under the current policy. Although electricity demand is expected to increase from 462 TWh in 2025 to 1,475 TWh in 2050 the primary challenge lies not in managing consumption levels but in how legal and policy frameworks regulate the sustainability and composition of energy sources. These findings emphasize the urgent need for Indonesia to reform its legal and policy structures to support the sustainable energy transition. Policymakers must address not only technical and economic barriers but also secure legal certainty and reinforce the state's responsibility to ensure intergenerational equity and environmental justice. This article examines how Indonesia's legal framework must actively respond to these transition demands by the constitutional mandate for sustainable development.⁴

There is a notable disparity between the target and projected realization of renewable energy in Indonesia, especially in terms of capacity and energy mix through 2025. Despite the introduction of new policies, actual progress remains far from expectations. To realize an ambitious and sustainable energy transition, Indonesia must significantly accelerate renewable energy development, strengthen transformative policies, and gradually reduce its reliance on coal-based power plants.⁵ Reforming environmental licensing policy is essential to support this transformation, particularly to ensure that renewable energy projects are not hindered by administrative procedures that are disproportionate to their environmental risks. Despite its vast renewable energy potential, Indonesia faces considerable challenges in realizing optimal utilization. A primary challenge lies in the complexity of environmental approval processes, which remain lengthy, convoluted, and often overlapping. This slow procedure directly hampers the implementation of renewable energy projects, including the biomass co-firing program in coal-fired power plants (PLTU), a strategy that replaces part of the coal with biomass materials such as agricultural or forestry residues to reduce emissions in electricity generation, which is a strategic element in Indonesia's energy transition in the electricity sector.⁶

⁴ Agus Tampubolon, 'Rencana Umum Energi Nasional (RUEN): Existing Plan, Current Policies Implication, and Energy Transition Scenario', *IESR (Institute for Essential Services Reform)*, 2020, 30 <https://iesr.or.id/wp-content/uploads/2020/09/RUEN-Existing-Plan-Current-Policies-Implication-and-Energy-Transition-Scenario-presentation.pdf>

⁵ Failaq and Nusantara.

⁶ Bimastyaji Surya Ramadan and others, 'Chapter Nineteen - Successful Energy Transition—Case Study in Indonesia', in *Decarbonization Strategies and Drivers to Achieve Carbon Neutrality for Sustainability*, ed. by Majeti Narasimha Vara Prasad and others (Elsevier, 2024), pp. 391–408 <https://doi.org/https://doi.org/10.1016/B978-0-443-13607-8.00014-6>



To meet biomass demand for the PLTU co-firing program, it is estimated that up to 11 million hectares of concession land will be required.⁷ Although not all of this land originates from natural forests, the sheer scale of land use raises concerns about the potential conversion of forested areas and other ecologically significant lands.⁸ Data indicates a rising trend in biomass demand: 1.08 million tons in 2023, 2.83 million tons in 2024, and 10.20 million tons in 2025, stabilizing at around 10 million tons annually through 2029.⁹ Currently, more than 24 PLTUs in Indonesia have either trialed or implemented biomass co-firing. Meanwhile, Indonesia's net deforestation rate remains high, peaking at 462,458.5 hectares per year in 2018–2019 and still reaching 104,032.5 hectares in 2021–2022.¹⁰ These figures suggest potential pressure on land and ecosystems if biomass demand continues to grow without adaptive reforms in environmental approval policies. These figures show the potential pressure on land and ecosystems if biomass demand continues to increase while current environmental approval processes remain complex, slow and cumbersome, making them less responsive to urgent sustainability needs. Reassessing and simplifying these procedures is therefore essential to prevent biomass supply from inadvertently driving further deforestation or ecological degradation. Therefore, it is crucial to reassess such policies to ensure that biomass provision does not inadvertently drive further deforestation or ecological degradation.¹¹

Beyond biomass-related issues, similar challenges are evident in other renewable energy projects. The Tolo Wind Power Plant (PLTB) in Jenepono, for instance, faced land acquisition difficulties and social conflicts with local communities.¹² Likewise, the Dieng Geothermal Power Plant (PLTP) in Central Java was rejected by residents because it was considered environmentally unfriendly and uneconomical, thus further complicating the already complicated and protracted environmental licensing process.¹³ The Cirata Floating Solar Power Plant in West Java the largest of its kind in Southeast Asia experienced project delays due to licensing bottlenecks and unanticipated aquatic ecosystem impacts not adequately addressed by existing

⁷ Irhan Febijanto and others, 'Life Cycle Greenhouse Gas Emissions Assessment: Converting an Early Retirement Coal-Fired Power Plant to a Biomass Power Plant', *Renewable Energy Focus*, 51 (2024), 100643 <https://doi.org/https://doi.org/10.1016/j.ref.2024.100643>

⁸ Suyatno Suyatno and others, 'Evaluation of Combustion Characteristics and Ash-Related Issues during Co-Firing of Acacia and Mahogany Wood Biomass Fuels with Coal', *Biomass and Bioenergy*, 196 (2025), 107763 <https://doi.org/https://doi.org/10.1016/j.biombioe.2025.107763>

⁹ Ian Wollff, '12 - Coal Resources, Production, and Use in Indonesia', in *The Coal Handbook (Second Edition)*, ed. by Dave Osborne, Woodhead Publishing Series in Energy, Second Edi (Woodhead Publishing, 2023), II, 361–430 <https://doi.org/https://doi.org/10.1016/B978-0-12-824327-5.00008-9>

¹⁰ Hariana and others, 'A Comprehensive Evaluation of Cofiring Biomass with Coal and Slagging-Fouling Tendency in Pulverized Coal-Fired Boilers', *Ain Shams Engineering Journal*, 14.7 (2023), 102001 <https://doi.org/https://doi.org/10.1016/j.asej.2022.102001>

¹¹ Asian Development Bank, *Indonesia: Energy Sector Assessment, Strategy, and Road Map*, Country Sector and Thematic Assessments (Asian Development Bank, 2016) <https://books.google.co.id/books?id=eI9DQAAQBAJ>

¹² S Kusairi and others, *Proceedings of the International Conference on Sustainable Collaboration in Business, Technology, Information, and Innovation (SCBTII 2023)*, Advances in Economics, Business and Management Research (Atlantis Press International BV, 2023) <https://books.google.co.id/books?id=qgIkEAAAQBAJ>

¹³ Indonesian Electrical Power Society, P T Pranata Energi Nusantara and P T Archipelago Resources Komunikasi, *The Indonesian Electrical Power Business Directory, 2004* (Indonesian Electrical Power Society (MKI) published, 2004) <https://books.google.co.id/books?id=NI7tAAAAMAAJ>



policies.¹⁴ These cases highlight the urgent need for more adaptive, transparent, and collaborative environmental approval mechanisms, particularly for renewable energy projects that often involve multiple sectors and stakeholders. Additionally, the policy misalignment between RUEN and PLN's *Electricity Supply Business Plan* (RUPTL) illustrates the lack of coherence that continues to hinder progress toward national renewable energy targets.¹⁵

In general, renewable energy projects pose lower environmental risks than fossil fuel or heavy industrial projects. However, they are not without impacts. Projects such as the Dieng Geothermal Power Plant and Cirata Floating Solar Power Plant have revealed challenges including social conflicts, community objections, and localized ecological effects. Therefore, a risk-based licensing system must be carefully tailored to local contexts while still upholding the precautionary principle. The government has undertaken several initiatives to improve environmental licensing, including the simplification of the Environmental Impact Assessment (AMDAL) process, the implementation of risk-based licensing under the Job Creation Law, and the integration of procedures through the Online Single Submission (OSS) system.¹⁶ However, these reforms remain generic and fail to specifically accommodate the characteristics of renewable energy projects, which typically pose lower environmental risks than fossil-fuel-based developments. Many policies still apply uniform standards and procedures regardless of risk level, resulting in unnecessary bureaucracy for renewable energy projects that should be subject to more streamlined, proportional licensing processes.¹⁷

A critical gap in existing literature is the lack of comprehensive studies examining the necessity of reforming environmental approval policies to accelerate renewable energy deployment in Indonesia. Current practices emphasize formal document compliance over risk differentiation, placing renewable projects under the same burdensome regulations as high-impact industrial activities. Accelerating the energy transition requires not only financial support or green investment but also more responsive, context-sensitive, and risk-differentiated environmental policies. Environmental approval policies in Indonesia need fundamental reform grounded in the principles of environmental justice, administrative efficiency, and legal certainty.¹⁸

¹⁴ A Boediman, *Chasing Green Business: Development and Ecosystem of the New Economy in Southeast Asia* (Jawara Press, 2023) <<https://books.google.co.id/books?id=gYpbEQAAQBAJ>>.

¹⁵ Kuku Kurniawan and others, 'Governance, Risks, and Compliance in Fulfilling the New and Renewable Energy Mix at the State Electricity Company (PLN)', *Journal of Ecohumanism*, 3.8 (2024), 484– <https://doi.org/10.62754/joe.v3i8.4749>

¹⁶ T. Safitri, N., Akbar, S. S., & Nur Yacub, 'Examining Community Participation in the AMDAL Preparation Process Post-Job Creation Law Viewed from a Human Rights Perspective Menilik Partisipasi Masyarakat Dalam Proses Penyusunan AMDAL Pasca Undang-Undang Cipta', *Ikatan Penulis Mahasiswa Hukum Indonesia Law Journal*, 4.1 (2024), 103–18 <https://doi.org/https://doi.org/10.15294/ipmhi.v4i1.74681>

¹⁷ Anis Mashdurohatun, and others, "The Independence of Civil Servant Investigators in Indonesian Immigration: A Fiqh Siyash Perspective", *Jurnal Ilmiah Mizani*, Vol 12, No 1 (2025), <http://dx.doi.org/10.29300/mzn.v12i1.5120>

¹⁸ Ridwan Arifin and Siti Hafsyah Idris, 'In Dubio Pro Natura: In Doubt, Should the Environment Be a Priority? A Discourse of Environmental Justice in Indonesia', *Jambe Law Journal*, 6.2 (2023), 143–184 <https://doi.org/10.22437/jlj.6.2.143-184>



Reform should not merely expedite processes but also ensure a balanced integration of sustainable energy development and environmental protection.¹⁹ Experiences from existing renewable energy projects reveal multiple shortcomings in the current regulatory framework from bureaucratic complexity and legal redundancy to insufficient responsiveness to the specific needs of low-risk projects. Therefore, reform should go beyond procedural improvements and be conceptualized as a strategic prerequisite for advancing the clean energy transition, fostering public trust, and safeguarding environmental sustainability. Regulatory changes related to environmental permitting in the Job Creation Law (Undang-Undang Cipta Kerja) have attracted considerable attention from various academic circles. Several previous studies have attempted to examine administrative law aspects, legal certainty, and the environmental implications of shifting from environmental permits to environmental approvals. Some of these studies are reviewed below to strengthen the analysis and provide a comprehensive comparison.²⁰

First, the research by Prasetyo and Jaelani (2022) highlights the change from environmental permits to environmental approvals in the Job Creation Law from an administrative law perspective, assessing that this shift potentially reduces legal oversight because environmental approvals do not fully qualify as objects of administrative litigation. This study complements that analysis by adopting a broader approach, emphasizing the importance of environmental justice, legal certainty, and public participation in the permitting process. Thus, the study not only addresses formal administrative aspects but also evaluates the normative and practical impacts of permitting reforms on environmental protection and the rights of affected communities.²¹ Second, Hudali Mukti and Sobirov (2023) discuss the issue from the perspective of environmental justice, highlighting how regulations in Indonesia, particularly within the Job Creation Law, limit public access to justice through litigation mechanisms related to Environmental Impact Analysis (AMDAL) and environmental approvals. This situation potentially leads to social conflicts and environmental injustice due to increasingly limited spaces for public participation and the erosion of constitutional rights. Their study also compares a similar situation in Uzbekistan, highlighting the need for robust national policies and institutional frameworks to achieve environmental justice.²²

Third, research on reforming environmental approval policies for renewable energy in Indonesia focuses on the shift in permitting mechanisms from

¹⁹ Masfi Sya'fiatul Ummah, , *Sustainability (Switzerland)*, 11.1 (2019), pp. 1–14 http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI

²⁰ Setiyawan, D., et.al., (2024). Exploring Abhakalan Culture (Early Marriage) in Madura: A Dialogue of Customary Law, Religion, and The State. *AHKAM: Jurnal Ilmu Syariah*, 24(2). <https://doi.org/10.15408/ajis.v24i2.36070>

²¹ Fitri Nur Aini Prasetyo and Abdul Kadir Jaelani, 'The Changing of Environmental Approval Administrative Law Perspective', *Journal of Human Rights, Culture and Legal System*, 2.3 (2022), 191–208 <https://doi.org/10.53955/jhcls.v2i3.55>

²² Hudali Mukti and Bobur Baxtishodovich Sobirov, 'Environmental Justice at the Environmental Regulation in Indonesia and Uzbekistan', *Journal of Human Rights, Culture and Legal System*, 3.3 (2023), 476–512 <https://doi.org/10.53955/jhcls.v3i3.171>



environmental permits to environmental approvals within the framework of state administrative law, which implies reduced oversight and legal protection through administrative dispute mechanisms. In contrast, Najicha (2021) discusses oil and gas management policies, focusing on the implementation of strategic natural resource management based on Article 33, paragraph 3 of the 1945 Constitution, which emphasizes energy management for the equitable and sustainable welfare of the people. Therefore, while both studies discuss energy resource management, the former emphasizes the administrative reform aspect of environmental permitting and its impact on environmental justice. In contrast, Najicha prioritizes macro policies on fossil energy management and their social implications. Both studies complement each other within the scope of energy and environmental regulation in Indonesia.²³ Fourth, the study by Hanum et al. (2023) examines geothermal energy utilization policies, focusing on ecological justice and the environmental impacts of geothermal exploitation, including social conflicts and community rejection in conservation areas. Both studies highlight the importance of environmental justice in renewable energy development; however, the former focuses more broadly on administrative permitting reform, while Hanum et al. emphasize sector-specific geothermal regulations and the integration of ecological justice principles in resource management. Thus, both contribute complementarily to strengthening sustainable and just renewable energy governance.²⁴

Fifth, the study by Sudiana et al. (2025) evaluates the Indonesian government's commitment to ecological justice on a broad scale, highlighting structural obstacles such as regulatory weaknesses, inadequate protection of indigenous rights, and the dominance of economic interests that overlook environmental sustainability. Although both address environmental justice, the former focuses explicitly on procedural reform and the legality of permitting, while Sudiana et al. examine the policy dynamics and governance challenges affecting the effectiveness of achieving systemic ecological justice. It highlights the necessity of a multifaceted approach to enhancing environmental protection and promoting justice for communities.²⁵

In this series of studies, a comparison between previous studies and this analysis shows that regulatory changes in environmental licensing under the Job Creation Law present multidimensional challenges from the perspectives of administrative law, environmental justice, and natural resource governance. This study complements previous research by highlighting the implications of administrative reform in reducing the scope for legal oversight and protecting the rights of affected communities while emphasizing the importance of legal certainty and public participation. Meanwhile, other studies offer additional perspectives by discussing macro energy management policies, sectoral impacts such as those related to geothermal energy, and structural barriers to achieving comprehensive ecological justice.

²³ Fatma Ulfatun Najicha, 'Oil and Natural Gas Management Policy in Realizing Equal Energy in Indonesia', *Journal of Human Rights, Culture and Legal System*, 1.2 (2021), 71–80 <https://doi.org/10.53955/jhcls.v1i2.8>

²⁴ Willy Naresta and others, 'The Geothermal Development Policy on Environmental in Indonesia and the USA', 3.2 (2023), 160–84. <https://doi.org/10.53955/jhcls.v3i2.85>

²⁵ Anak Agung KT Sudiana, Ni Putu Noni Suharyanti and Umirov Fitrat Faxriddinovich, *Assessing the Government's Commitment to Achieving Ecological Justice for Society*, *Journal of Human Rights, Culture and Legal System*, 2025, v <https://doi.org/10.53955/jhcls.v5i1.489>



To contextualize these findings, this study draws comparative insights from Germany, Australia, and certain ASEAN countries, particularly the Philippines and Thailand. These jurisdictions were selected based on three primary considerations: (1) the maturity and differentiation of their environmental licensing systems; (2) the relevance of their legal-administrative culture to Indonesia's civil law tradition or regional institutional framework; and (3) their ongoing transition to renewable energy, which reflects Indonesia's policy objectives. Germany is a leading model in the EU for integrating risk-based environmental licensing with strong public participation, as outlined in the Federal Immission Control Act (Bundes-Immissionsschutzgesetz) and the EU Environmental Impact Assessment Directive. The country offers a benchmark for how a mature regulatory environment simplifies licensing for low-risk renewables while maintaining strict oversight for high-impact industrial activities.²⁶

Australia, although part of the common law tradition, was chosen due to its federal structure and the application of simplified approvals under the Environment Protection and Biodiversity Conservation Act 1999, which includes provisions for bilateral agreements and risk-graded environmental assessments. Australia's success in reducing regulatory barriers for solar and wind projects provides valuable procedural innovations that can be adapted to Indonesia's decentralized governance model. The Philippines and Thailand, as members of the ASEAN community, offer regional proximity and regulatory comparability, particularly in their efforts to align environmental governance with economic development. The Philippines has adopted a risk-based Environmental Impact Assessment (EIA) approach, as outlined in the guidelines of the Department of Environment and Natural Resources (DENR). At the same time, Thailand has increased public participation and transparency in its EIA process following a Constitutional Court ruling on environmental rights. Both countries face similar development pressures and bureaucratic challenges, making their experiences highly instructive, similar to those of Indonesia.²⁷

These international practices illustrate the importance of tailoring the permitting system to the risk profile and sectoral needs of clean energy projects. Therefore, this analysis is needed to strengthen and complement previous research by integrating inclusive administrative, ecological, and governance approaches. The goal is to realize an effective, equitable, and sustainable permitting system for the environment and society by learning from regulatory best practices in comparator jurisdictions. This study addresses important legal questions surrounding Indonesia's environmental permitting framework for renewable energy development. It examines whether the current regulatory regime is sufficiently adaptive to the low-risk nature of most renewable energy projects and whether environmental permitting reforms can be

²⁶ Peicheng Wu, Charlie Xiao-chuan Weng and Sally-Ann Joseph, 'Crossing the Rubicon? The Implications of RCEP on Anti-monopoly Enforcement on Dominant E-commerce Platforms in China', *Computer Law & Security Review*, 42 (2021), 105608 <https://doi.org/https://doi.org/10.1016/j.clsr.2021.105608>

²⁷ Anu Lähteenmäki-Uutela and others, 'Legal Rights of Private Property Owners vs. Sustainability Transitions?', *Journal of Cleaner Production*, 323 (2021), 129179 <https://doi.org/https://doi.org/10.1016/j.jclepro.2021.129179>



implemented without compromising the precautionary principle and environmental protection.²⁸

This analysis reveals that Indonesia's permitting system continues to apply uniform procedures, regardless of risk level, resulting in delays and inefficiencies that hinder the realization of clean energy initiatives. Low-risk renewable energy projects are subject to complex approval processes, similar to projects for high-impact industrial activities, which can contribute to social tensions and bureaucratic burdens. Additionally, the framework lacks transparency, public participation, and the integration of environmental justice principles. In response, this study proposes a risk-differentiated model for environmental approvals that streamlines procedures for low-risk projects while maintaining stringent standards for high-risk developments, such as those involving fossil fuels. This model emphasizes transparency, stakeholder engagement, and inclusion.

METHOD

This study employs a normative legal approach by reviewing key Indonesian regulations, including Law No. 32 of 2009 on Job Creation and its implementing regulations (PP No. 22/2021), as well as sectoral documents such as the RUEN and RUPTL 2021–2030.²⁹ Official government publications (KLHK, ESDM), reports from international organizations (IRENA, World Bank, OECD), and academic literature on environmental justice and regulatory change are referenced in these sources. Using regulatory models from Germany, Australia, Canada, and selected ASEAN countries (e.g., the Philippines and Thailand), which have implemented risk-based environmental licensing systems, a comparative legal analysis is also conducted. Legal texts, policy papers, and academic sources are evaluated descriptively and critically to support the proposal for a more adaptive, effective, and risk-differentiated environmental licensing system in Indonesia.³⁰

RESULT AND DISCUSSION

Legal Framework for Environmental Approval in Renewable Energy Projects in Indonesia: Transformation and Risk-Based Implementation

The legal framework for environmental management in Indonesia has evolved in response to social change, technological advancements, and increasing demands for complex public welfare. In this context, the business licensing system has undergone a significant transformation through the integration of environmental documents into a risk-based licensing mechanism via the *Online Single Submission Risk-Based Approach* (OSS-RBA) system. This system places greater regulatory focus on business activities that pose high potential risks to health, safety, the environment, and natural resources. The integration of environmental documents into the licensing framework

²⁸ S Sreenath, K Sudhakar and A F Yusop, 'Sustainability at Airports: Technologies and Best Practices from ASEAN Countries', *Journal of Environmental Management*, 299 (2021), 113639 <https://doi.org/https://doi.org/10.1016/j.jenvman.2021.113639>

²⁹ I Gusti Ayu Ketut Rachmi Handayani, Lego Karjoko and Abdul Kadir Jaelani, 'Model Pelaksanaan Putusan Mahkamah Konstitusi Yang Eksekutabilitas Dalam Pengujian Peraturan Perundang-Undangan Di Indonesia', *BESTUUR*, 7.2 (2020), 36 <https://doi.org/10.20961/bestuur.v7i1.42700>

³⁰ Fitri Nur Aini Prasetyo and Abdul Kadir Jaelani, 'The Changing of Environmental Approval Administrative Law Perspective', *Journal of Human Rights, Culture and Legal System*, 2.3 (2022), 191–208 <https://doi.org/10.53955/jhcls.v2i3.55>



carries significant legal implications. Sanctions now apply not only to standalone environmental documents but extend directly to the corresponding business licenses. This reflects an effort to enhance environmental law enforcement through a more integrated and effective licensing system. However, the effectiveness of this policy depends heavily on the coherence of the broader legal-political framework, particularly as outlined in Government Regulation No. 22 of 2021, which aims to realize sustainable environmental protection and management. Such alignment is crucial in light of persistent environmental challenges such as water pollution, air degradation, and deforestation, which demand urgent regulatory attention.³¹

In practice, the licensing process is increasingly structured and digitalized through the OSS system, which mandates that businesses submit comprehensive data including identity, activity plans, location, production output, investment, and workforce. This digitalization enhances transparency and administrative efficiency. A notable nomenclatural change is the replacement of the term “Environmental Permit” with “Environmental Approval” as codified in Government Regulation No. 22 of 2021. Environmental Approval includes mechanisms such as the preparation of Environmental Impact Assessments (AMDAL), feasibility assessments, UKL-UPL forms, and revisions triggered by changes in business activities.³² Despite concerns from academics who argue that these changes may weaken environmental safeguards in favor of investment facilitation, the government maintains that environmental protection remains a foundational principle. The Job Creation Law promotes a risk-based licensing system that seeks to balance efficiency with environmental sustainability. This approach involves hazard identification, risk probability assessment, and the classification of risk levels to issue business licenses appropriately ensuring that environmental considerations remain central to sustainable economic activity.³³

This transformation has yielded positive impacts, such as improved resource management efficiency, enhanced productivity, increased revenue potential, and greater legal certainty, all of which contribute to a more favorable investment climate.³⁴ Integrating environmental documents into business licensing also allows multiple activities to be covered under a single permit, streamlining procedures and enhancing economic value. Nonetheless, challenges remain particularly in the management of AMDAL documents, which are intended to serve as tools for assessing and mitigating environmental risks. Ideally, as more similar businesses emerge, the need for repetitive AMDAL preparation should decrease due to the prior

³¹ Elena Shadrina, ‘EU’s and Japan’s Strategies for Energy Transition Enhancement in Central Asia: Exploring Comparative and Synergic Perspectives’, *Energy Strategy Reviews*, 58 (2025), 101658 <https://doi.org/https://doi.org/10.1016/j.esr.2025.101658>

³² L Yustitianiingtyas and others, ‘Environmental Law Policy in Indonesia: Challenges and Sustainable Justice’, *IOP Conference Series: Earth and Environmental Science*, 1473.1 (2025), 12046 <https://doi.org/10.1088/1755-1315/1473/1/012046>

³³ Rahadyan Widarsadhika Wisnumurti, ‘Authority Of Local Governments In Issuing Environmental Impact Assessment Permits Kewenangan Pemerintah Daerah Dalam Penerbitan Izin Analisa Dampak Lingkungan’, 10.1 (2024), 227–36 <https://doi.org/https://doi.org/10.37676/jhs.v10i1.5934>

³⁴ Abhijit Biswas and others, ‘Do Environmental, Social, and Governance (ESG) Practices Help Mitigate Bank Default Risk?’, *Journal of Environmental Management*, 380 (2025), 124762 <https://doi.org/https://doi.org/10.1016/j.jenvman.2025.124762>



identification and management of risks. However, in practice, the demand for AMDALs has increased under the Environmental Approval framework, raising questions about the effectiveness of current risk assessment mechanisms and the criteria for significant impact. Accordingly, a *significant impact-based approach* is proposed requiring AMDALs only for projects with the potential for substantial environmental consequences, while lower-impact projects could be managed with UKL-UPL documentation.³⁵

For renewable energy projects, the prevailing legal framework primarily governed by Government Regulation No. 22 of 2021, Law No. 32 of 2009, and Ministry of Environment and Forestry Regulation No. 4 of 2021 mandates environmental impact assessments, environmental approvals, and monitoring mechanisms. These requirements apply to large-scale projects such as solar power plants (PLTS) and wind power plants (PLTB), covering all stages from AMDAL preparation to compliance with ISO 14001 environmental management standards. However, the framework does not always align with the technical characteristics of renewable energy projects, which typically generate minimal environmental impacts (e.g., no hazardous waste, low noise, and zero carbon emissions). Licensing procedures that require multiple AMDAL revisions for such projects create bureaucratic inefficiencies and inflated costs, thus discouraging investment. For instance, the Kupang PLTS project experienced delays of 3–4 months due to repeated revisions, despite its low environmental impact. Furthermore, the application of uniform standards to both high-impact fossil fuel projects and low-impact renewable energy projects demonstrates a lack of regulatory proportionality. Requiring AMDALs for projects located in areas with existing permits contributes to unnecessary administrative redundancy.³⁶

Industry stakeholders, such as the Indonesian Solar Energy Association (AESI), have criticized the current AMDAL policy, warning that it could hinder the achievement of the 23% renewable energy target outlined in the *National Energy General Plan* (RUEN). Similarly, the Institute for Essential Services Reform (IESR) has advocated for exemptions or simplified AMDAL procedures for small to medium-scale renewable energy projects. Proposed legal improvements include classifying projects by risk level, simplifying licensing for low-risk renewable energy initiatives, and aligning licensing policy with RUEN targets. Enhancing OSS automation to streamline permit revisions for projects in already-permitted locations is also recommended to reduce bureaucratic delays.³⁷ A comparative example is seen in the contrasting outcomes of two projects. The Cirata Hydroelectric Power Plant in West Java successfully completed the AMDAL process within six months, benefiting from special regulations

³⁵ Dhamar Yudho Aji and Utomo Sarjono Putro, 'System Dynamics Modeling of Leveraging Geothermal Potential in Indonesia towards Emission Reduction Effort: A Case Study in Indonesia State-Owned Energy Enterprise', *Renewable Energy Focus*, 51 (2024), 100612 <https://doi.org/https://doi.org/10.1016/j.ref.2024.100612>

³⁶ Bowen Gu, 'Black Gold and Green BRI—A Grounded Analysis of Chinese Investment in Coal-Fired Power Plants in Indonesia', *The Extractive Industries and Society*, 17 (2024), 101411 <https://doi.org/https://doi.org/10.1016/j.exis.2024.101411>

³⁷ Dhamar Yudho Aji and Utomo Sarjono Putro, 'System Dynamics Modeling of Leveraging Geothermal Potential in Indonesia towards Emission Reduction Effort: A Case Study in Indonesia State-Owned Energy Enterprise', *Renewable Energy Focus*, 51 (2024), 100612 <https://doi.org/https://doi.org/10.1016/j.ref.2024.100612>



for National Strategic Projects. In contrast, the Kupang PLTS project encountered prolonged delays due to the rigid licensing framework, despite its limited environmental footprint. These cases highlight a critical disconnect between the current regulatory regime and the sustainable, low-risk nature of renewable energy projects.³⁸

In conclusion, the existing legal framework for environmental approvals does not sufficiently reflect the sustainability-oriented, low-impact profile of renewable energy projects. Urgent reform is needed to make the regulatory system more responsive, proportional, and adaptive. Such reform is essential not only for accelerating Indonesia's clean energy transition but also for ensuring that environmental protections remain robust and equitable in the face of growing energy demands.

Table 2. Comparison of environmental approval processes between Cirata Hydroelectric Power Plant and Kupang Solar Power Plant

Aspect	Cirata Hydroelectric Power Plant (West Java)	Kupang Solar Power Plant (NTT)
Project Status	National Strategic Project (PSN), capacity 1,000 MW	Private project, capacity 5 MWp, not PSN
AMDAL Process	Finished in 6 months (fast)	Delayed 3-4 months due to repeated revisions
Supporting/Inhibiting Factors	Special regulatory support (Presidential Decree No. 109/2020), cross-ministerial coordination, multilateral funding	Regulations are not specific, AMDAL revisions even though they have been licensed, regional coordination is slow
Environmental Impact	Large (resident relocation, ecosystem changes), accepted due to strategic scale	Minimal (no B3 waste, emissions, relocation)
Licensing Process Time	6 months	12–18 months
Administrative costs	Rp 5–10 billion (covered by APBN/APBD)	Rp 2–3 billion (covered by private sector)
Regulatory Support	Fiscal incentives, land priority, fast track	No incentives, layered bureaucracy
Stakeholder Engagement	Central-regional intensive	Minimal coordination, formal procedures dominate
Impact on Investment	Accelerating energy investment & development	Hindering investment due to bureaucracy & high costs

Source: From various sources processed by the author

Table 2. illustrates the disparity in the management of environmental approvals between large-scale strategic energy projects, such as the Cirata Hydroelectric Power Plant, and small-scale renewable energy projects, such as the Kupang Solar Power Plant. The Cirata project, designated as a National Strategic Project (Proyek Strategis Nasional/PSN), benefits from regulatory streamlining under Presidential Regulation No. 109/2020. This status grants expedited bureaucratic processes, cross-ministerial coordination, and multilateral funding support, enabling the AMDAL (Environmental Impact Assessment) process to be completed within just six months.³⁹

³⁸ Toni Sukmawan and others, 'Technical Study of Developing Floating Photovoltaic 145 MWac Power Plant Project In Cirata Reservoir', *IOP Conference Series: Materials Science and Engineering*, 1096.1 (2021), 12120 <https://doi.org/10.1088/1757-899X/1096/1/012120>

³⁹ Perdinan and others, 'The Contribution of Climate Factors on the Availability of Hydropower Energy in West Java', *IOP Conference Series: Earth and Environmental Science*, 1266.1 (2023), 12059 <https://doi.org/10.1088/1755-1315/1266/1/012059>



In contrast, the Kupang Solar Power Plant despite its minimal environmental impact faces significant administrative barriers.⁴⁰ The project is subject to repeated AMDAL revisions, resulting in delays of 3–4 months, increased costs, and regulatory uncertainty, which impedes investment realization. A key issue lies in the ambiguity of regulations, particularly Government Regulation No. 22/2021 and Ministry of Environment and Forestry Regulation No. 4/2021, which fail to differentiate between high- and low-risk projects. As a result, redundant procedures and excessive bureaucracy persist. In Kupang's case, although technically only UKL-UPL documentation should have been required, the project was nonetheless compelled to complete a full AMDAL process, highlighting the absence of a proportionate, risk-based regulatory approach.⁴¹

Moreover, weak coordination between central and regional authorities exacerbates delays through slow document verification. The consequences extend beyond administrative inefficiencies and directly affect the progress of Indonesia's energy transition. The delay of the Kupang project represents a lost opportunity to reduce approximately 6,000 tons of CO₂ emissions per year and imposes financial burdens on project developers. In contrast, the Cirata project has leveraged regulatory privileges to enhance efficiency and attract large-scale investment though it has also faced criticism for limited community involvement. These contrasting outcomes underscore the need for policy reform focused on adapting the risk-based licensing framework to better suit the characteristics of small- to medium-scale renewable energy projects. Simplified licensing pathways and clear regulatory incentives are crucial. The optimization of the OSS (Online Single Submission) system is also essential particularly in automating environmental permit revisions for projects located on pre-permitted sites, thereby reducing bureaucratic burdens.⁴²

To support these efforts, capacity building for regional officials and widespread dissemination of regulatory policies are needed to improve coordination and ensure consistent implementation across jurisdictions. Overall, the current environmental approval legal framework lacks the responsiveness and proportionality necessary to facilitate renewable energy development in Indonesia. More adaptive, risk-based reforms are essential to accelerate the clean energy transition without compromising the principles of environmental protection and regulatory fairness. In conclusion, reforming the environmental legal framework through the implementation of risk-based principles and the integration of environmental approvals into business licensing represents a strategic step in harmonizing economic development with environmental sustainability. The success of this initiative depends on regulatory synergy, effective enforcement, and the active participation of all stakeholders in

⁴⁰ Firdiansyah, Asri Eka Putra and Rusdianasari, 'Literature Review: Study on the Utilization of Solar Power Plants (PLTS) as an Effort to Increase Electricity Access in Rural and Remote Areas', *International Journal of Research in Vocational Studies (IJRVOCAS)*, 5.1 (2025), 31–43 <https://doi.org/10.53893/ijrvocas.v5i1.352>

⁴¹ Nugroho A Pambudi and others, 'The Future of Wind Power Plants in Indonesia: Potential, Challenges, and Policies', *Sustainability*, 2025 <https://doi.org/10.3390/su17031312>

⁴² Tri Winarsih and others, 'Redesign of Electricity Sector Tax Incentives Based on SDGs and Green Energy in Realizing Golden Indonesia 2045', 8.1 (2025), 149–58 <https://doi.org/10.22219/jaa.v8i1.37529>



pursuit of development that balances economic growth with environmental integrity.⁴³

Indonesia's environmental legal framework has evolved significantly, reflecting societal dynamics, technological progress, and the growing complexity of modern needs. From a positive law perspective, this reform aligns with the legal doctrine *lex specialis derogat legi generali*, where Government Regulation No. 22/2021 serves as a *lex specialis*, governing the integration of environmental documents into the OSS-RBA risk-based licensing system replacing the prior mechanism of separate environmental permitting. Normatively, the risk-based licensing model embodies the principles of efficiency and proportionality in environmental law. By classifying environmental, health, and safety risks, it provides a more flexible and proportional enforcement structure, as outlined in Article 5 of Law No. 32/2009 on Environmental Protection and Management. It also strengthens accountability by attaching sanctions both administrative and criminal directly to business permits, making environmental compliance a core element of business legality. However, from the perspective of legal theory, particularly environmental justice, the integration of environmental documents into business permits must ensure that economic interests do not override fair and equitable environmental protections. Regulatory uniformity across all project types, regardless of environmental impact, risks creating procedural and substantive injustices, violating the principle of equality before the law. Applying identical requirements to both small-scale renewable projects with negligible impacts and large-scale fossil fuel projects with substantial impacts imposes disproportionate burdens, restricting innovation and clean energy advancement.⁴⁴

Furthermore, the responsive legal theory proposed by Nonet and Selznick argues that law should not merely be normative and repressive, but adaptive and participatory in response to societal and technological change. Within the context of environmental governance, responsive law demands that licensing procedures be tailored to a project's specific risk and environmental footprint, while also ensuring democratic space for public and stakeholder participation. Unfortunately, Indonesia's current legal framework continues to exhibit bureaucratic rigidity and limited community involvement, especially in the preparation and revision of AMDAL documents for low-risk renewable energy projects.⁴⁵

The differential treatment between projects such as the Cirata Hydropower Plant and the Kupang Solar Power Plant further highlights the inequity in applying environmental law. While Cirata benefits from legal privileges granted by Presidential Regulation No. 109/2020, the Kupang project suffers from bureaucratic complexity despite its lower environmental impact. Legally, this imbalance raises concerns

⁴³ Andri D Setiawan and others, 'Evaluating Feed-in Tariff Policies on Enhancing Geothermal Development in Indonesia', *Energy Policy*, 168 (2022), 113164 <https://doi.org/https://doi.org/10.1016/j.enpol.2022.113164>

⁴⁴ Ghalieb Mutig Idroes and others, 'Exploring the Role of Geothermal Energy Consumption in Achieving Carbon Neutrality and Environmental Sustainability', *Heliyon*, 10.23 (2024), e40709 <https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e40709>

⁴⁵ Bosede Ngozi Adeleye and others, 'Reintroducing Evidence of the Role of Energy Usage Dynamics on Environmental Management in E7 Countries', *Journal of Environmental Management*, 386 (2025), 125667 <https://doi.org/https://doi.org/10.1016/j.jenvman.2025.125667>



regarding legal certainty and the principle of fairness under administrative law. Ultimately, these systemic disparities call for a recalibration of Indonesia's environmental regulatory framework one that is more responsive, proportional, and risk-based. Such reform is vital for fostering a supportive legal environment that promotes renewable energy investment while upholding strong environmental standards and ensuring justice for all stakeholders.⁴⁶

Changes in environmental law should thus focus on several key areas to create a more equitable, efficient, and flexible regulatory environment. First, rules based on proportional risk are required. Regulatory instruments should categorize business activities more precisely based on their environmental risk levels, hence requiring AMDAL responsibilities only for those with significant effects; lower-risk operations may be regulated using UKL-UPL or other straightforward techniques. This method helps individuals save on legal and financial expenses. Second, openness and involvement need to be strengthened. Licensing processes should encourage active public participation, align with democratic ideals in environmental management, and enhance transparency by digitizing the OSS system to minimize opportunities for corruption and collusion. Third, prioritizing justice and legal certainty must be the first step, which involves consistently and sustainably defining sanctions and responsibilities, thereby reassuring business owners while also protecting the environment and society. Avoiding prejudiced rules that could harm the renewable energy sector is thereby crucial to national energy strategies. It means steering clear of biased regulations. Ultimately, the legal system should evolve as a dynamic organism, regularly updated to accommodate developments in renewable energy technology and changing social circumstances, thereby providing adaptable and efficient legal solutions for achieving sustainable development goals.⁴⁷

Thus, the renewal of the environmental legal framework with fair and responsive risk-based principles becomes a strategic instrument to support sustainable economic development. This requires synergy between legal norms, government policies, and active participation of the community and business actors in order to create an effective, efficient, and democratic environmental legal system.

Legal Framework for Environmental Approval in Renewable Energy Projects in Several Countries

A comparison of environmental approval practices for renewable energy (RE) projects across ASEAN countries reveals a variety of regulatory approaches that greatly influence the pace and effectiveness of clean energy development in the region.⁴⁸ Each country has a different legal framework and implementation

⁴⁶ Yeojin Yoo and Yoonhee Ha, 'Market Attractiveness Analysis of Battery Energy Storage Systems in Indonesia, Malaysia, the Philippines, Thailand, and Vietnam', *Renewable and Sustainable Energy Reviews*, 191 (2024), 114095 <https://doi.org/https://doi.org/10.1016/j.rser.2023.114095>

⁴⁷ Winda Widyanty and others, 'Green Innovative Work Behaviour Model on Generation z Employees in the Manufacturing Industry: An Empirical Evidence from Indonesia', *Sustainable Futures*, 9 (2025), 100765 <https://doi.org/https://doi.org/10.1016/j.sftr.2025.100765>

⁴⁸ Setyani Dwi and Farah Margaretha, 'Comparison and Implementation of Environmental Law Policies in Handling Climate Change in ASEAN Countries : A Comparative Study of Indonesia , Malaysia , and Thailand', *International Journal of Energy Economics and Policy (IJEPP)*, 14.2 (2024) <https://doi.org/10.32479/ijeep.14998>.This



mechanism, reflecting its own social, economic and national priorities, which ultimately impact the success of RE projects. In Indonesia, the environmental approval process for renewable energy projects is regulated by Government Regulation No. 27 of 2012 concerning Environmental Permits, as well as a number of Regulations of the Minister of Environment and Forestry that regulate the implementation of AMDAL (Environmental Impact Analysis) and UKL-UPL (Environmental Management Efforts and Environmental Monitoring Efforts).⁴⁹ AMDAL is mandatory for projects with the potential for major environmental impacts, while UKL-UPL is used for low- to medium-risk projects. Although this legal framework is relatively complete, field practices still face significant obstacles. One of the main problems is the often-repeated document revision process, which not only extends the licensing time but also increases the administrative burden for project developers. In addition, the lack of risk differentiation between project types is also an obstacle. Existing regulations tend to treat low- and high-risk renewable energy projects uniformly, so that small projects such as rooftop solar power plants must go through the same stringent licensing procedures as large projects such as large-scale hydropower plants. This imbalance causes inefficiencies that hinder the acceleration of renewable energy development. In addition, overlapping authority between the central and regional governments in the environmental licensing process causes uncertainty and potential delays, as is often the case with non-National Strategic Projects (PSN) projects.⁵⁰

As a concrete example discussed in the previous section, the Cirata Hydroelectric Power Plant project with PSN status has succeeded in obtaining accelerated licensing through the support of Presidential Regulation No. 56 of 2018 concerning the Acceleration of the Implementation of National Strategic Projects. This regulation allows for the simplification of the AMDAL process and environmental permits, thereby accelerating the implementation of projects considered strategic for national energy needs. However, other projects such as the Kupang Solar Power Plant which are not included in the PSN have faced significant delays due to strict environmental regulations and long and complicated administrative processes. In contrast, neighboring countries such as Vietnam have shown more progressive and integrated practices in supporting the development of renewable energy.⁵¹

Vietnam has implemented a policy that integrates environmental regulations with investment policies through Decrees No. 11/2017/QD-TTg and No. 39/2018/QD-TTg, which contain a feed-in tariff (FiT) mechanism for solar and wind energy. This FiT mechanism not only provides certainty of electricity selling prices for investors, but also accelerates the licensing process by providing attractive financial incentives while simplifying environmental regulatory aspects. This approach creates a conducive investment climate and reduces bureaucratic barriers. Laos, with its large hydroelectric potential, has adopted a policy that adapts licensing regulations to the scale of

⁴⁹ Safitri, N., Akbar, S. S., & Nur Yacub.

⁵⁰ Yoon-Hee Ha and Surya Sapkota Kumar, 'Investigating Decentralized Renewable Energy Systems under Different Governance Approaches in Nepal and Indonesia: How Does Governance Fail?', *Energy Research & Social Science*, 80 (2021), 102214 <https://doi.org/https://doi.org/10.1016/j.erss.2021.102214>

⁵¹ Theresia B Sumarno, Parulian Sihotang and Widhyawan Prawiraatmadja, 'Exploring Indonesia's Energy Policy Failures through the JUST Framework', *Energy Policy*, 164 (2022), 112914 <https://doi.org/https://doi.org/10.1016/j.enpol.2022.112914>



projects. In its 2011 National Renewable Energy Policy and Strategy to 2025, Laos emphasizes streamlining licensing, especially for small and medium hydro projects. This reflects the recognition that small-scale projects are more environmentally manageable and can be encouraged by more efficient licensing processes, while optimizing the use of natural resources.⁵²

Meanwhile, Thailand presents a combination of strong regulation and comprehensive fiscal incentives. Through the Energy Industry Act and extensive FiT mechanisms for various renewable energy sources such as biomass and solar, Thailand is targeting 30% renewable energy use by 2030. This approach strikes a balance between environmental protection and aggressive renewable energy development while providing legal certainty and clear incentives for industry players. As a side note, Section 51 of the Energy Industry Act 2007 reinforces this legal certainty by stipulating that licensing provisions must take into account differences in project types, sizes, and characteristics, avoid burdening applicants, not restrict competition, and ensure equal treatment across comparable projects. It ensures that regulatory clarity is maintained without compromising fairness and market access.⁵³

The comparison shows that ASEAN countries that have succeeded in accelerating the development of renewable energy tend to have more flexible and integrated regulations, and provide concrete incentives for investors. Indonesia, with regulations that are still relatively strict and bureaucratic, needs to carry out reforms, especially in distinguishing types of project risks, simplifying the non-PSN licensing process, and strengthening coordination between the central and regional governments. These steps are important to encourage investment and accelerate the renewable energy transition, which is an urgent need for energy security and environmental sustainability in the future.

The success of Vietnam, Laos, and Thailand in accelerating the transition to clean energy is evident not only in their progressive national policies and strategies but also in their quantitative achievements, which reflect adoption rates far exceeding the regional average. According to reports from the International Renewable Energy Agency (IRENA) and the ASEAN Centre for Energy (ACE), the average annual growth in renewable energy capacity in the Southeast Asian region ranged from 5% to 6% between 2010 and 2020. However, during the same period, several countries showed significant spikes that reflected a real acceleration.⁵⁴ Vietnam, for example, recorded very rapid growth in solar power generation (PV) capacity, with an increase of more than 100% per year between 2018 and 2020. In 2019 alone, Vietnam's PV capacity increased from 134 MW to over 5,500 MW, making it one of the fastest-growing

⁵² Djarot Sulistio Wisnubroto, Geni Rina Sunaryo and Yariantio Sugeng Budi Susilo, 'Indonesia's RDE Program: A Multifaceted Approach to Nuclear Energy Development Encompassing Human Resource Building, Public Acceptance, and Technological Innovation', *Nuclear Engineering and Technology*, 57.8 (2025), 103560 <https://doi.org/https://doi.org/10.1016/j.net.2025.103560>

⁵³ Dwi and Margaretha.

⁵⁴ J Aleluia and others, 'Accelerating a Clean Energy Transition in Southeast Asia: Role of Governments and Public Policy', *Renewable and Sustainable Energy Reviews*, 159 (2022), 112226 <https://doi.org/https://doi.org/10.1016/j.rser.2022.112226>



countries in solar energy globally. It was driven by an aggressive feed-in tariff (FiT) policy and regulatory reforms that opened up broad investment access.⁵⁵

Thailand has also shown consistent performance in renewable energy development. The country has been among the top three ASEAN countries with the highest renewable energy investment since 2015. Through a combination of stable regulations, legal certainty, and fiscal incentives, Thailand has achieved a 20% share of renewable energy in its energy mix by 2022 and is targeting 30% by 2030. The Energy Industry Law of 2007, particularly Article 51, has enhanced the investment climate by promoting the principle of fair and non-discriminatory treatment in the licensing process for energy projects.⁵⁶ Meanwhile, Laos has adopted a domestic resource-based approach by harnessing its vast hydropower potential and has begun developing solar energy projects on a regional scale. With the support of cross-border cooperation and electricity export agreements with neighboring countries, Laos has begun to form an energy market structure that supports the integration of renewable energy.⁵⁷

The comparison between the “normal level” of renewable energy adoption at the regional level and the “accelerated level” achieved by the three countries shows that appropriate policy interventions, legal certainty, and adequate incentive instruments can be key factors in accelerating the energy transition in developing countries. Therefore, the experiences of Vietnam, Laos, and Thailand can serve as an important reference for formulating contextual strategies to accelerate clean energy transitions in other developing countries, including Indonesia.

Table 3. Environmental Approval Practices for EBT Projects in Several ASEAN Countries

Country	Environmental Approval Approach for EBT Projects	Characteristics and Examples of Implementation
Indonesia	The AMDAL and environmental permit processes are strict, document revisions are frequent, especially for non-PSN projects. PSN is accelerated through Presidential Decree No. 56/2018.	Cirata Hydroelectric Power Plant (PSN) AMDAL 6 months, Kupang Solar Power Plant (non-PSN) delayed due to repeated permit revisions. Regulations do not differentiate project risks.
Vietnam	Proactive policies with FiT and regulations supporting renewable energy investment.	Decision No. 11/2017/QD-TTg and No. 39/2018/QD-TTg accelerate solar and wind development.
Laos	Focus on hydroelectricity, permits adjusted to project scale.	The 2011 National Renewable Energy Policy and 2025 strategy simplified small and medium hydro permits.
Thailand	Comprehensive FiT and efficient licensing, focus on biomass and solar.	Renewable energy target of 30% by 2030 with clear incentives.

Source: From various sources processed by the author⁵⁸

⁵⁵ Thang Nam Do and others, ‘Vietnam’s Solar and Wind Power Success: Policy Implications for the Other ASEAN Countries’, *Energy for Sustainable Development*, 65 (2021), 1–11 <https://doi.org/https://doi.org/10.1016/j.esd.2021.09.002>

⁵⁶ Farahdilah Ghazali, Siti Fazilah Abdul Shukor and Ridoan Karim, ‘RENEWABLE ENERGY DEVELOPMENT TOWARDS SUSTAINABLE DEVELOPMENT GOALS: A REVIEW IN THAILAND AND THE PHILIPPINES’ LAWS AND POLICIES’, *Journal of Nusantara Studies (JONUS)*, 2024 <https://api.semanticscholar.org/CorpusID:271628743>

⁵⁷ Kamia Handayani and others, ‘Integrating 100\% Renewable Energy into Electricity Systems: A Net-Zero Analysis for Cambodia, Laos, and Myanmar’, *Energy Reports*, 2023 <https://api.semanticscholar.org/CorpusID:265471869>

⁵⁸ Dwi and Margaretha.



Environmental approval regulations in Indonesia are currently strictly regulated through Government Regulation No. 27 of 2012 concerning Environmental Permits, which requires the implementation of AMDAL for projects with the potential for major impacts.⁵⁹ However, this regulation has not explicitly accommodated the principle of risk differentiation between types of renewable energy (EBT) projects, so that the licensing process tends to be long and bureaucratic. This condition is different from several ASEAN countries such as Vietnam and Laos, which apply risk-based and more flexible regulations, thereby reducing administrative barriers and accelerating the environmental approval process. Indonesia can reform by adopting these principles, while referring to international standards such as the IFC Performance Standards and the principles of Environmental and Social Governance (ESG) to adjust regulations to the diverse characteristics of EBT projects and different environmental risks.⁶⁰

In terms of accelerating the licensing process, Indonesia has provided space for national strategic projects (PSN) through Presidential Regulation No. 56 of 2018 which accelerates the licensing process. However, EBT projects that are not PSN still have to face long and complex procedures, especially with a decentralized spatial and environmental planning system that adds layers of bureaucracy and potential overlapping authority between the center and regions. Therefore, simplifying procedures is very necessary, for example through the implementation of one-stop services and digitalization of licensing which can shorten the process time and minimize inconsistencies in authority. This step will encourage the acceleration of EBT development outside of strategic projects without reducing aspects of sustainable environmental management.

In terms of incentive policies, the Regulation of the Minister of Energy and Mineral Resources No. 50 of 2017 which regulates the feed-in tariff (FiT) mechanism for renewable energy has become an important foundation in encouraging private investment.⁶¹ However, the implementation of FiT in Indonesia still needs to be strengthened to be more competitive and attractive to investors. The experiences of Thailand and Vietnam which have successfully used FiT effectively show that this mechanism can be a very powerful tool to accelerate the development of renewable energy, especially when combined with fiscal incentives and regulations that support ease of investment.⁶²

Coordination between the central and regional governments is also a crucial aspect in the smooth running of the environmental licensing process. Law No. 23 of 2014 concerning Regional Government provides quite broad authority to regional governments in licensing, but its implementation often causes overlapping and conflicting authorities with the central government. Therefore, strengthening

⁵⁹ Yustitianty and others.

⁶⁰ Thanh T Ho and Abdul Fikri Angga Rekha, 'Environmental Policy in Indonesia from the Post-New Order Era to the Present: Positive Adjustments and Limitations', in *Media, Politics and Environment: Analyzing Experiences from Europe and Asia*, ed. by Detlef Briesen and Sarada Prasanna Das (Cham: Springer International Publishing, 2023), pp. 189–212 https://doi.org/10.1007/978-3-031-31252-6_14

⁶¹ Dwi and Margaretha.

⁶² Dina Azhgaliyeva and others, 'Renewable Energy Investments and Feed-in Tariffs: Firm-Level Evidence from Southeast Asia', *Applied Energy*, 374 (2024), 123986 <https://doi.org/10.1016/j.apenergy.2024.123986>



coordination between levels of government is very important, including the possibility of revising spatial and environmental regulations to be more synchronized. The role of the Investment Coordinating Board (BKPM) and other investment coordinating bodies must also be optimized as licensing integrators so that the process is more efficient and focused.⁶³

Finally, Indonesia as the country with the largest energy consumption in ASEAN has a strategic position in the effort to integrate regional energy through the ASEAN Power Grid (APG). Therefore, harmonization of environmental approval and licensing regulations between ASEAN countries needs to be encouraged in order to facilitate cross-border investment and strengthen regional renewable energy interconnection. By taking this leadership role, Indonesia can become a catalyst for the clean energy transition in the region while optimizing economic and environmental benefits regionally. Legal and policy reform at the national level and close regional collaboration are the keys to successfully achieving sustainable renewable energy targets.

Table 4. Legal Implications and Recommendations for Indonesia

Aspect	Conditions in Indonesia	Other Countries' Practices	ASEAN	Legal Indonesia	Recommendations for
Environmental Approval Regulations	Tight, not yet differentiating risks	Flexible, risk-based	risk-	Reform of PP No. 27/2012 and derivatives for differentiation of EBT project risks	
Permit Process	Slow, repeated revisions	Fast incentives	with	Implementation of Presidential Decree No. 56/2018 extended to non-PSN, digitalization of permits	
Investment Incentives	Limited FiT, lacking fiscal incentives	FiT and strong fiscal incentives	strong	Strengthen Minister of Energy and Mineral Resources Regulation No. 50/2017, expand fiscal incentives	
Government Coordination	Less than optimal, overlapping authority	Better regional coordination	central-	Revision of Law No. 23/2014, strengthening the role of BKPM and licensing integration	
ASEAN Regional Role	Potential leader	Energy collaboration and integration		Harmonization of ASEAN regulations, optimizing the role of APG	

Source: From various sources processed by the author

From a legal and policy perspective, Indonesia has a great opportunity to improve and refine its renewable energy environmental approval and licensing framework by adopting best practices that have proven effective in ASEAN countries and globally. Regulatory reforms that are more adaptive and responsive to the characteristics of renewable energy projects can eliminate bureaucratic obstacles that have so far slowed down the licensing process. In addition, accelerating the licensing process and strengthening investment incentives, such as competitive feed-in tariffs and other fiscal incentives, will accelerate the national energy transition without sacrificing environmental sustainability aspects. However, to better understand the steps that Indonesia can take, it is also important to compare its environmental approval

⁶³ I Wayan Koko Suryawan and others, 'Visitor Willingness to Pay for Decarbonizing Tourism: Supporting a Net-Zero Transition in Nusa Penida, Indonesia', *Energy for Sustainable Development*, 85 (2025), 101628 <https://doi.org/https://doi.org/10.1016/j.esd.2024.101628>



practices with those of more advanced countries in environmental management and renewable energy development, such as Germany and Australia. Both countries have built comprehensive, transparent, and efficient legal frameworks and licensing processes that simultaneously support the acceleration of clean energy development and optimal environmental protection.⁶⁴

Germany, for example, has environmental regulation that is closely integrated with national energy policy, particularly through laws such as the Bundes-Immissionsschutzgesetz (Federal Immission Control Act) that regulates environmental licensing aspects, including a strict but structured environmental impact assessment procedure. Germany also emphasizes broad public participation in the licensing process and the integration of social and environmental assessments. This strengthens transparency and accountability while still allowing for the acceleration of renewable energy projects. Meanwhile, Australia has implemented the Environmental Protection and Biodiversity Conservation Act (EPBC Act) which is the main legal umbrella in managing environmental impacts, including for renewable energy projects. Australia has implemented a risk assessment system based on project categories, so that low-risk projects get a simpler and faster licensing process. In addition, Australia is utilizing digitalization and an integrated licensing system to speed up permit processing, as well as providing various fiscal incentives and subsidies for renewable energy investment.⁶⁵

An analysis of the legal and technical aspects of environmental licensing implementation in Australia, Germany, and Indonesia reveals that these developed countries offer valuable lessons for legislative change. Germany and Australia are among the first countries to utilize differentiated risk assessments in their licensing processes, enabling the rapid and effective management of low-risk activities while maintaining environmental protection. In addition, their licensing processes closely integrate environmental, social, and economic studies, ensuring a comprehensive assessment of development. Further woven into their systems are openness and community engagement that promote accountability and enhance the credibility of environmental management. Furthermore, both countries have efficiently integrated digital systems to expedite the processing of permits, thereby reducing bureaucratic hurdles and enhancing monitoring. Finally, they provide well-designed and attractive incentive plans to attract private funding to ecologically conscious projects. These methods underscore the importance of a cohesive and transparent legal system that Indonesia can adopt and adapt to facilitate its transition to renewable energy.⁶⁶

Indonesia can use these practices as a primary reference to improve the legal framework and environmental approval policies for renewables. Thus, in addition to

⁶⁴ Indri Dwi Apriliyanti and Diwangkara Bagus Nugraha, 'Burning Coal in a Cleaner Way: Institutional Fragmentation, Power Dynamics, and Business Influence in Indonesia's Biomass Co-Firing Imaginaries', *Energy Research & Social Science*, 121 (2025), 103949 <https://doi.org/https://doi.org/10.1016/j.erss.2025.103949>

⁶⁵ Tia Rahmania, 'Exploring School Environmental Psychology in Children and Adolescents: The Influence of Environmental and Psychosocial Factors on Sustainable Behavior in Indonesia', *Heliyon*, 10.18 (2024), e37881 <https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e37881>

⁶⁶ Romal Ramadhan and others, 'Carbon Capture, Utilization, and Storage in Indonesia: An Update on Storage Capacity, Current Status, Economic Viability, and Policy', *Energy Geoscience*, 5.4 (2024), 100335 <https://doi.org/https://doi.org/10.1016/j.engeos.2024.100335>



accelerating the much-needed energy transition, Indonesia can also improve the quality of sustainable environmental management, create a conducive investment ecosystem, and strengthen its position as a renewable energy leader in the ASEAN region. Environmental approval regulations for new and renewable energy (EBT) in Indonesia, Germany and Australia show significant differences in the legal framework and implementation practices, reflecting the level of regulatory maturity and the approach used by each country in supporting the development of clean energy while maintaining environmental sustainability.

As mentioned, in Indonesia, the main regulations governing environmental approvals include Government Regulation No. 27 of 2012 concerning Environmental Permits, as well as various Regulations of the Minister of Environment and Forestry (PMLHK) that regulate AMDAL (Environmental Impact Analysis) and UKL-UPL (Environmental Management Efforts and Environmental Monitoring Efforts) documents.⁶⁷ In addition, Presidential Regulation No. 56 of 2018 provides a legal basis for accelerating licensing for national strategic projects (PSN), while Minister of Energy and Mineral Resources Regulation No. 50 of 2017 regulates Feed-in Tariff (FiT) rates as an incentive for renewable energy investment.⁶⁸ However, the characteristics of regulations in Indonesia are still relatively strict and bureaucratic, where the AMDAL and environmental permit processes are often long and multi-layered.⁶⁹ These regulations do not clearly distinguish between the risks of small and large EBT projects, so that licensing procedures tend to be uniform and less efficient for small-scale or low-risk projects. On the other hand, PSN projects receive accelerated treatment, while non-PSN projects often experience delays. Overlapping authority between the central and regional governments is also an obstacle, hampering the effectiveness and speed of the licensing process.

Meanwhile, Germany as one of the advanced countries in renewable energy development has implemented a more mature and integrated legal framework.⁷⁰ Key regulations such as the Bundes-Immissionsschutzgesetz (BImSchG) or the Federal Immission Control Act regulate environmental approvals comprehensively, including emission permits and strict environmental impact analysis.⁷¹ In addition, the Renewable Energy Sources Act (EEG) establishes an incentive mechanism in the form

⁶⁷ Gunawan Djayaputra, 'Analysis of Natural Resources Management in Indonesia: Environmental Law Perspective', *International Journal of Social Science and Public Policy (IJSSPP)*, 3.1 (2021), 1–12 <https://doi.org/10.33642/ijsspp.v3n1p1>

⁶⁸ Andri D Setiawan and others, 'Evaluating Feed-in Tariff Policies on Enhancing Geothermal Development in Indonesia', *Energy Policy*, 168 (2022), 113164 <https://doi.org/https://doi.org/10.1016/j.enpol.2022.113164>

⁶⁹ B Bakhtyar and others, 'Potentials and Challenges in Implementing Feed-in Tariff Policy in Indonesia and the Philippines', *Energy Policy*, 60 (2013), 418–23 <https://doi.org/https://doi.org/10.1016/j.enpol.2013.05.034>

⁷⁰ Christina E Hoicka and others, 'Implementing a Just Renewable Energy Transition: Policy Advice for Transposing the New European Rules for Renewable Energy Communities', *Energy Policy*, 156 (2021), 112435 <https://doi.org/https://doi.org/10.1016/j.enpol.2021.112435>

⁷¹ Victor Chang and others, 'The Market Challenge of Wind Turbine Industry-Renewable Energy in PR China and Germany', *Technological Forecasting and Social Change*, 166 (2021), 120631 <https://doi.org/https://doi.org/10.1016/j.techfore.2021.120631>



of a stable and long-term FiT tariff, providing legal certainty to investors.⁷² The main characteristic of the licensing system in Germany is a risk-based approach that allows for the implementation of an accelerated (“fast-track”) path for low-risk renewable projects, such as rooftop solar power plants and small wind turbines.⁷³ The licensing process is also closely integrated with national and regional energy policies, with high transparency and intensive public involvement, but still runs efficiently and standardized.

Australia has also adopted a modern, risk-based regulatory approach through the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), which is the primary legal framework for environmental impact assessment at the federal level. Renewable energy development is supported by the National Renewable Energy Target (NRET), which uses the Renewable Energy Certificates mechanism as a market incentive.⁷⁴ At the state level, although environmental regulations may vary, there are national guidelines that ensure consistent environmental standards. Australia’s environmental approval system is integrated and risk-based, with standard procedures applicable to projects of all sizes. The federal and state governments have good coordination in implementing permits, and provide space for active community consultation, which strengthens transparency and accountability. In addition, Australia also implements an incentive system that encourages private investment and the use of innovative technologies in the development of renewables.⁷⁵

Overall, this comparison highlights that Indonesia still has a lot of room to improve and refine its environmental approval and renewable energy licensing regulations by adopting best practices from countries such as Germany and Australia. A clear risk-based approach, integration of environmental regulations with energy policies, systematic public transparency and engagement, and guarantee of legal certainty through structured incentives are key to creating an efficient, transparent licensing system that supports the acceleration of sustainable energy transition. By implementing these reforms, Indonesia will not only accelerate the development of renewable energy projects but also improve the quality of environmental management, while building a more attractive and sustainable investment ecosystem.

⁷² Michael Krug and others, ‘Mainstreaming Community Energy: Is the Renewable Energy Directive a Driver for Renewable Energy Communities in Germany and Italy?’, *Sustainability*, 14.12 (2022) <https://doi.org/10.3390/su14127181>

⁷³ Gustavo Henrique Romeu da Silva and others, ‘Renewable Energy Potentials and Roadmap in Brazil, Austria, and Germany’, *Energies*, 17.6 (2024) <https://doi.org/10.3390/en17061482>

⁷⁴ Evan Hamman and others, ‘Environmental Regulation of Agriculture in Federal Systems of Government: The Case of Australia’, *Agronomy*, 11.8 (2021) <https://doi.org/10.3390/agronomy11081478>

⁷⁵ Annika Reynolds, ‘Conservation after the Fact: The Prevalence of Post-Approval Condition-Setting in Environmental Impact Assessment Processes in Australia and Its Implications for Achieving Ecologically Sustainable Development Outcomes’, *Environmental Impact Assessment Review*, 99 (2023), 107032 <https://doi.org/https://doi.org/10.1016/j.eiar.2022.107032>

**Table 5.** Implementation of Environmental Approval

Aspect	Indonesia	Germany	Australia
Licensing Approach	Strict, bureaucratic, lack of risk differentiation	Risk-based, fast-track for small projects	Risk-based, national & state standard procedures
Government Coordination	Central-regional overlap, less than optimal coordination	Integrated with regional & national policies	Efficient federal and state coordination
Incentives and Legal Certainty	Limited FiT, fiscal incentives not yet optimal	EEG long-term FiT, high investment certainty	NRET with renewable energy certificates, innovation support
Public Engagement	Less than optimal, there is still long process resistance	Very transparent and strict, active public consultation	Community consultation is important, active participation
Focus on EBT Development	PSN project acceleration, non-PSN projects delayed	Integrated system development, technological innovation	Sustainable development with community integration

Source: From various sources processed by the author

Indonesia faces both challenges and significant opportunities in improving the regulatory framework and implementation of environmental approvals for renewable energy (EBT). One of the main steps that must be taken is risk-based regulatory reform. By adopting risk-based principles as implemented in Germany and Australia, Indonesia can simplify the licensing process, especially for low-risk EBT projects, such as rooftop solar power plants (PLTS) and micro-hydro power plants. This approach not only reduces the administrative burden that has been a major obstacle but also accelerates the realization of small projects that have great potential to support national clean energy targets.

In addition, strengthening coordination between the central and regional governments is a crucial aspect. Currently, overlapping authorities in the licensing process still often occur, which causes delays and uncertainty for investors.⁷⁶ The establishment of an effective and integrated one-stop service institution will greatly help eliminate these bureaucratic obstacles. Thus, the licensing process can run faster and more transparently, providing legal certainty while minimizing the risk of conflict between institutions. In terms of investment, Indonesia needs to provide certainty of incentive mechanisms, especially Feed-in Tariff (FiT) and other fiscal incentives, which are clear, stable, and easily accessible to investors.⁷⁷ The experience of Germany with the Renewable Energy Sources Act (EEG) and Australia through the National Renewable Energy Target (NRET) shows that structured and long-term incentives can significantly attract private investment.⁷⁸ This not only accelerates the development of renewable energy, but also encourages sustainable green economic growth. The aspects of transparency and public participation are also important. A more open and

⁷⁶ A Rajaram and others, *The Power of Public Investment Management: Transforming Resources Into Assets for Growth*, Directions in Development (World Bank Publications, 2014) <https://books.google.co.id/books?id=Y4fjBAAQBAJ>

⁷⁷ Eko Supriyanto and others, 'Policy and Strategies of Tariff Incentives Related to Renewable Energy: Comparison between Indonesia and Other Developing and Developed Countries', *Sustainability*, 14.20 (2022) <https://doi.org/10.3390/su142013442>

⁷⁸ Conrado Augustus de Melo, Gilberto de Martino Jannuzzi and Sergio Valdir Bajay, 'Nonconventional Renewable Energy Governance in Brazil: Lessons to Learn from the German Experience', *Renewable and Sustainable Energy Reviews*, 61 (2016), 222–34 <https://doi.org/https://doi.org/10.1016/j.rser.2016.03.054>



participatory public consultation process will increase the legitimacy of renewable energy projects and reduce the potential for social and environmental conflicts that often become obstacles in project implementation. Building a participation mechanism that involves the community from the planning stage will strengthen social acceptance and maintain environmental sustainability. Finally, the development of technology and innovation that is tailored to local conditions needs to be encouraged more intensively. Indonesia can follow the example of developed countries that integrate research and technology development into their energy policies, in order to increase the efficiency and competitiveness of renewable energy projects. Support for this technological innovation will not only accelerate the energy transition, but also reduce costs and environmental impacts, while opening up opportunities for the development of the national green industry.⁷⁹

It can be concluded that, risk-based regulatory reform, increased government coordination, certainty of investment incentives, public transparency, and technological innovation are the main pillars that can bring Indonesia closer to the renewable energy target while maintaining environmental sustainability holistically. This comprehensive approach will strengthen Indonesia's position as a leader in the energy transition in the ASEAN region and globally.

Reforming Environmental Approval Policy Without Compromising the Precautionary Principle and Environmental Protection

Environmental approval policy reform in Indonesia must be conducted with a continued commitment to the precautionary principle and environmental protection, as mandated by Law No. 32 of 2009 on Environmental Protection and Management (UU PPLH). The precautionary principle remains a fundamental safeguard against the risk of irreversible environmental harm, reinforcing the need for proactive and preventive measures before ecological degradation occurs. However, reform efforts must not remain merely normative or procedural, but should also integrate the principle of sustainability, which has been internationally recognized and increasingly adopted into Indonesia's legal and policy frameworks. This includes incorporation within the doctrine of environmental law and sustainable development as reflected in various legal instruments such as the 2030 Agenda for Sustainable Development (SDGs) and the United Nations Framework Convention on Climate Change (UNFCCC).⁸⁰

The sustainability principle dictates that development must meet the needs of the present generation without compromising the ability of future generations to meet their own needs. Accordingly, environmental approval policies must require a comprehensive environmental impact assessment, covering not only direct impacts, but also indirect and cumulative environmental consequences. This ensures that systemic and long-term ecological damage can be minimized. Such an approach is consistent with both the precautionary principle as stipulated in Article 15 of the Environmental Management Law, and the polluter pays principle under Article 37,

⁷⁹ Hafidz Wibisono and others, 'The Ideational Impacts of Indonesia's Renewable Energy Project Failures', *Energy for Sustainable Development*, 83 (2024), 101587 <https://doi.org/https://doi.org/10.1016/j.esd.2024.101587>

⁸⁰ Winarsih and others.



which holds that those responsible for environmental harm must bear the costs of remediation.⁸¹

From the standpoint of environmental legal theory, Robert V. Percival underscores the importance of integrating both the precautionary and sustainability principles as foundational elements of modern environmental regulation. Percival posits that environmental law functions not merely as an administrative formality, but as a preventive and corrective instrument that must strike a delicate balance between economic development and environmental integrity. This theoretical framework highlights that reforms to Indonesia's environmental approval regime should be grounded in a deep understanding of the interdependent relationship between human activity and ecological systems, ensuring that licensing is not a perfunctory procedure but an effective, accountable, and adaptive tool for managing environmental risks in pursuit of long-term sustainable development.

Table 6. Analysis of Conditions and Recommendations for Environmental Approval Policy Reform

Aspects of Reformation	Present condition	Weaknesses / Challenges	Recommendations for Improvement
Principle of Precaution	Regulated in the PPLH Law and is the basis for AMDAL	Rigid and uniform implementation without considering risks	Strengthen the flexibility of implementing principles according to project risk
Principles of Sustainability	Adopted normatively, less than optimal in long-term impact evaluation	Lack of cumulative and long-term impact analysis	Integrate cumulative impact analysis systematically
AMDAL Licensing Procedures	Long and expensive process, without risk differentiation	Investment barriers, disproportionate procedures	Implement differentiation mechanisms based on project risk
Community Participation (FPIC)	There are regulations, but they are often formalities.	Limited access to information, minimal space for participation	Strengthen FPIC as a legal obligation and transparency
Technology and OSS	OSS is used, but supervision is weak	Potential for abuse, lack of accountability	Increase technology-based oversight and transparency
Division of Government Authority	Decentralization is not yet effective, coordination is less than optimal	Inconsistency between central and regional policies	Clarify functions, strengthen coordination and integrate evaluation
Protection of Vulnerable Groups	Recognized as constitutional, but implementation is weak	The rights of indigenous and vulnerable communities are poorly protected	Strengthen protection and access to information for vulnerable groups
Transparency & Accountability	There are regulations but the practice is less than optimal	Corruption and abuse of authority	Strengthen transparency and independent audits

Source: From various sources processed by the author

A deeper legal reasoning regarding the implementation of the precautionary principle in environmental approval policies reveals that a uniform and rigid application to all types of projects without considering the inherent level of environmental risk contradicts the principles of modern administrative law,

⁸¹ Imaduddin and others, 'Trust and the Intent to Use On-Demand Charging Services of Electric Vehicles in Indonesia: The Moderating Effect of Perceived Charging Risk and Environmental Concern', *Energy*, 323 (2025), 135713 <https://doi.org/10.1016/j.energy.2025.135713>



particularly the principle of proportionality. This principle is explicitly regulated in Article 5, letters (a) and (c) of Law No. 30 of 2014 on State Administration, which requires government officials to base every decision and administrative action on legal certainty and proportionality. This means that each administrative decision must balance the intended objectives with the burdens imposed on citizens and business actors.

In the context of environmental approval, the failure to apply the proportionality principle can result in procedural inefficiencies, thereby hampering strategic investments, including those in the renewable energy sector, which are closely aligned with long-term environmental protection objectives. Subjecting all projects to the same Environmental Impact Assessment (EIA) procedures despite varying degrees of risk renders environmental legal instruments less responsive and effective. This contradicts the fundamental nature of administrative law, which is meant to be adaptive and to equitably balance the public interest and individual rights (see Paul Craig's concept of "reasonable regulation" in administrative law theory). Additionally, the risk-based approach applied in countries such as Canada and Australia can serve as valuable models for strengthening Indonesia's legal system. In Canada, environmental permit procedures are clearly differentiated based on project risk levels. Low-risk projects undergo simplified permitting, while high-risk projects require comprehensive EIA studies and broad public consultation. This system not only enhances administrative efficiency but also upholds environmental integrity through proportionate mitigation measures. Similarly, Australia employs a flexible EIA system tailored to project complexity.⁸²

This legal argument is further supported by constitutional guarantees, particularly Article 28E (3) of the 1945 Constitution, which affirms the right of individuals to express opinions, including the right to participate in transparent, fair, and proportionate environmental policymaking. The proportionality principle is also an essential element of due process of law, which must be respected in any administrative decision affecting fundamental rights including the right to a healthy environment under Article 28H (1) of the Constitution. Thus, strengthening the precautionary principle must be accompanied by the proportionality principle. These principles should be integrated within a unified framework to produce regulations that function not only as instruments for managing environmental risks but also as tools for achieving justice and efficiency in administrative law. Legal reforms grounded in this reasoning will enhance legitimacy, policy effectiveness, and public trust in a responsive, adaptive, and fair environmental licensing regime.⁸³

Furthermore, the principle of sustainability demands a thorough environmental impact analysis, including cumulative impacts. Presently, the AMDAL process tends to emphasize direct and short-term effects, often overlooking the broader risk of systemic environmental degradation. This runs counter to the sustainable

⁸² Erdiwansyah and others, 'Prospects for Renewable Energy Sources from Biomass Waste in Indonesia', *Case Studies in Chemical and Environmental Engineering*, 10 (2024), 100880 <https://doi.org/https://doi.org/10.1016/j.csee.2024.100880>

⁸³ Vu Ngoc Xuan, 'Determinants of Environmental Pollution: Evidence from Indonesia', *Journal of Open Innovation: Technology, Market, and Complexity*, 10.4 (2024), 100386 <https://doi.org/10.1016/j.joitmc.2024.100386>



development principle enshrined in Article 33(4) of the 1945 Constitution and international legal instruments such as the 1992 Rio Declaration on Environment and Development, which stress the need for harmony between economic progress and environmental preservation. Community participation mechanisms, especially the Free, Prior, and Informed Consent (FPIC) model, must be institutionalized as legally binding instruments, not reduced to administrative formalities. This aligns with the constitutional guarantees under Articles 28H and 28I concerning environmental rights and the protection of indigenous communities, as well as Principle 10 of the Rio Declaration. Genuine public engagement is essential to prevent social conflict and to reinforce the legitimacy of environmental policies.⁸⁴

While digital platforms like the Online Single Submission (OSS) system have expedited licensing processes, they also introduce risks of corruption and abuse due to inadequate oversight. The OSS must therefore be enhanced with digital audit mechanisms, data transparency, and public monitoring tools, in line with good governance theory and the principle of openness under Law No. 14 of 2008 on Public Information Disclosure. Effective governance also depends on a clear division of authority between central and regional governments. Article 18 of the 1945 Constitution underscores the principle of decentralization, recognizing the autonomy of regional governments in managing local affairs, including environmental matters. However, overlapping jurisdictions, policy inconsistencies, and weak coordination often hinder environmental governance. Consequently, regional implementation may diverge from national standards, potentially undermining environmental protection efforts.⁸⁵

To address an integrated and legally binding coordination mechanism must be established ideally through a Presidential or Government Regulation to detail the operational division of environmental governance, including coordination, supervision, and evaluation protocols. The principle of subsidiarity, which holds that decisions should be made at the closest competent level of government unless better managed centrally, can guide this restructuring. This would empower local governments to act effectively within a nationally coordinated framework. In line with Harold Lasswell's public policy theory, which views policymaking as a value- and fact-driven process, the central government should provide strategic direction and enforce minimum environmental standards, while regional authorities adapt implementation to local conditions without deviating from legal and sustainability norms. A real-time policy harmonization mechanism, such as a governance dashboard

⁸⁴ Soukphavanh Sawathvong and Kimihiko Hyakumura, 'A Comparison of the Free, Prior, and Informed Consent (FPIC) Guidelines and the "Implementation of Governance, Forest Landscapes, and Livelihoods" Project in Lao PDR: The FPIC Team Composition and the Implementation Process', *Land*, 13.4 (2024) <https://doi.org/10.3390/land13040408>

⁸⁵ Pak-Sing Choi, Ana Espínola-Arredondo and Félix Muñoz-García, 'Environmental Policy Helping Antitrust Decisions: Socially Excessive and Insufficient Merger Approvals', *Resource and Energy Economics*, 67 (2022), 101267 <https://doi.org/https://doi.org/10.1016/j.reseneeco.2021.101267>



or policy alignment matrix, can help monitor coherence between national and regional policies.⁸⁶

From the perspective of administrative law, the principles of legal certainty and effectiveness must guide any restructuring of authority to ensure both normative clarity and functional implementation. Accordingly, revisions to laws governing decentralization and environmental governance such as Law No. 23 of 2014 on Regional Government may be required to enable a more responsive and integrated legal framework⁸⁷ A clearer allocation of responsibilities and more synchronized coordination mechanisms will result in more accountable and effective environmental governance, contributing to the realization of the Sustainable Development Goals (SDGs), maintaining national environmental quality, and ensuring that decentralization is conducted within a framework of consistent and equitable protection.⁸⁸

Finally, legal protection for vulnerable groups, including indigenous peoples and local communities, must be strengthened to ensure distributive justice and the recognition of their right to a healthy environment. This obligation is affirmed by Article 28H of the Constitution and supported by landmark rulings such as Constitutional Court Decision No. 35/PUU-X/2012. In that decision, the Court reaffirmed that the right to a healthy environment is not merely a statutory entitlement under Law No. 32 of 2009, but a constitutional human right under Article 28H (1) and (2). The Court emphasized the necessity of transparent public access to environmental information and mandated that mechanisms like FPIC be treated as legal obligations, not bureaucratic procedures, to ensure social justice and avoid conflict. Moreover, the decision highlighted the need for strict enforcement and oversight of environmental violations.⁸⁹

This ruling has substantial implications for environmental approval policy reform, underscoring that licensing processes must not solely focus on efficiency but must also prioritize precaution, sustainability, human rights, and accountability. In practice, this means incorporating comprehensive environmental impact assessments, ensuring inclusive and meaningful participation, particularly of vulnerable communities, and guaranteeing transparency at all licensing stages. In conclusion, environmental approval reform must extend beyond administrative streamlining. It must be rooted in the precautionary and sustainability principles, supported by effective public participation, transparent governance, and protection of vulnerable groups. Such an

⁸⁶ Ronja Gerdes, Emily Bauske and Florian G Kaiser, 'A General Explanation for Environmental Policy Support: An Example Using Carbon Taxation Approval in Germany', *Journal of Environmental Psychology*, 90 (2023), 102066 <https://doi.org/https://doi.org/10.1016/j.jenvp.2023.102066>

⁸⁷ Juliadi Rusydi, Januri Januri and Rika Santina, 'Tanggungjawab Pemerintah Dalam Penegakan Hukum Lingkungan Hidup Di Tinjau Dari Persepektif Hukum Administrasi Negara', *Audi Et AP: Jurnal Penelitian Hukum*, 2.01 (2023), 54–63 <https://doi.org/10.24967/jaeap.v2i01.2064>

⁸⁸ Nugroho Agung Pambudi and others, 'Understanding Knowledge, Perception, and Acceptance of Geothermal Energy among Indonesian Students: Implications for Sustainable Renewable Energy Initiatives', *Sustainable Energy Technologies and Assessments*, 79 (2025), 104357 <https://doi.org/https://doi.org/10.1016/j.seta.2025.104357>

⁸⁹ Bambang Ali Kusuma and others, 'Establishment of Indonesian Maritime Power : Regulation of Transnational Organized Crime on Illegal , Unreported , and Unregulated (IUU) Fishing', *International Journal of Criminal Justice Science*, 16.2 (2021), 251–66 <https://doi.org/10.5281/zenodo.4756074>



approach will foster a sustainable transition to clean energy while strengthening the rule of law, legal certainty, and social justice the pillars of a modern legal state in Indonesia.⁹⁰

CONCLUSION

Indonesia's energy transition targets 23% renewable energy mix by 2025 and 31% by 2050 are hampered by a bureaucratic and uniform environmental approval system that slows renewable energy development. First, while the OSS RBA has improved legal clarity and efficiency, the system still lacks differentiation between low and high-risk initiatives, favoring small-scale renewables. Accelerating clean energy without sacrificing environmental protections requires proportionate and responsive reforms. Second, the licensing process must be commensurate with project risk, promote sustainability, ensure community engagement, and be supported by effective technology governance and monitoring. Third, Indonesia's approval process is inflexible and less attractive to investors compared to other ASEAN countries, such as Vietnam and Thailand. Lessons from Germany and Australia highlight the benefits of risk-based licensing, transparency, digital infrastructure, and long-term incentives, all critical to the success of Indonesia's energy transition.

ACKNOWLEDGEMENT

The authors would like to thank Universitas Sebelas Maret Surakarta for the granted supports 2025. This research was funded by Universitas Sebelas Maret Surakarta 2025.

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⁹⁰ Muhammad Usman and others, 'Environmental Taxes, Environmental Policy Stringency and Policy Complementarity: A Comprehensive Analysis of EU Economic and Environmental Goals', *International Review of Economics & Finance*, 2025, 104358 <https://doi.org/10.1016/j.iref.2025.104358>



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