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Legal Studies on the Use of Renewable Energy in Environmental Management in Indonesia: A Literature Study

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ABSTRACT

This study highlights the development of research that addresses the potential of renewable energy while identifying gaps in understanding the legal implications and challenges associated with its implementation. The method used in this research is Literature Study. This study emphasizes the importance of an effective legal framework to encourage investment and innovation in renewable energy technologies, as well as the role of local regulations in supporting local initiatives. By integrating renewable energy sources into environmental management strategies, the article argues that Indonesia can address critical environmental issues, such as pollution and biodiversity loss, which will ultimately benefit the environment and people's welfare. The findings aim to contribute to the ongoing discourse on renewable energy policy and its implications for environmental law in Indonesia.

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1. INTRODUCTION

Indonesia, as one of the largest archipelagic nations in the world, faces significant environmental challenges, including deforestation, pollution, and climate change (Gernaat et al., 2021; Rakuasa et al., 2024). The urgent need for sustainable development has prompted the Indonesian government to explore renewable energy sources as a viable solution for environmental management (Koubi, 2019; Rakuasa et al., 2024). Renewable energy, which includes solar, wind, hydro, and biomass, offers a cleaner alternative to fossil fuels and plays a crucial role in reducing greenhouse gas emissions

This transition is not only essential for environmental sustainability but also for achieving energy security and economic growth (Adharani et al., 2023). The legal framework governing the use of renewable energy in Indonesia is critical to facilitating this transition. Various laws and regulations have been established to promote the development and utilization of renewable energy sources (Qurbani & Rafiqi, 2022). The Law No. 30 of 2007 on Energy and the Law No. 21 of 2014 on the Renewable Energy and Energy Conservation are key legislative instruments that outline the government's commitment to renewable energy (Rahman et al., 2021). However, the implementation

of these laws often faces challenges, including bureaucratic inefficiencies, lack of public awareness, and insufficient investment in renewable energy infrastructure.

A literature study on the legal aspects of renewable energy use in Indonesia reveals that while there is a growing body of research addressing the potential of renewable energy, there is still a gap in understanding the legal implications and challenges associated with its implementation (Kriswandaru & Lubis, 2024). Studies have shown that effective legal frameworks are essential for encouraging investment and innovation in renewable energy technologies (Karim et al., 2020). Furthermore, the role of local regulations and policies in supporting renewable energy initiatives at the regional level is an area that requires further exploration.

Environmental management in Indonesia is intricately linked to the use of renewable energy. The integration of renewable energy sources into environmental management strategies can enhance the country's ability to address pressing environmental issues, such as air and water pollution, deforestation, and biodiversity loss. According to research, transitioning to renewable energy can significantly reduce the environmental footprint of energy production and consumption (Najicha et al., 2023). This shift not only benefits the environment but also contributes to the health and well-being of communities across the archipelago.

This article aims to provide a comprehensive literature study on the legal studies related to the use of renewable energy in environmental management in Indonesia. By examining existing research, the article will identify key legal frameworks, challenges, and opportunities for enhancing the role of renewable energy in achieving sustainable environmental management. The findings of this study will contribute to the ongoing discourse on renewable energy policy and its implications for environmental law in Indonesia.

2. METHOD

The method used in this research is a Literature Study, which involves a systematic and comprehensive review of existing research on the legal aspects of renewable energy development in Indonesia. This method is implemented through a series of steps, including: (1) a systematic search of academic databases, such as Scopus, Web of Science, and Google Scholar, using keywords related to renewable energy, environmental management, and Indonesia; (2) the application of inclusion and exclusion criteria to select relevant studies; (3) a thematic analysis of the included studies, using a coding framework to identify patterns and themes; and (4) a narrative synthesis of the findings, highlighting the key themes and patterns that emerged from the data.

3. RESULTS AND DISCUSSION

Legal Framework for Renewable Energy Development

The legal framework for renewable energy development in Indonesia is primarily governed by Law No. 32 of 2009 on Environmental Protection and Management (Kementerian Lingkungan Hidup, 2009). This law aims to provide a comprehensive approach to environmental management, integrating renewable energy initiatives into national policy. It emphasizes sustainable practices that align with international environmental standards and reflects a critical recognition of renewable energy's role in mitigating climate change impacts. Despite its potential, the effectiveness of this legal framework is often hindered by **overlapping regulations** from various ministries and local governments, which can create confusion and impede the implementation of renewable energy projects (Adharani et al., 2023). The lack of clear guidelines and streamlined processes exacerbates these issues, making it challenging for stakeholders to navigate the regulatory landscape.

Furthermore, the existing legal framework does not sufficiently differentiate between various types of renewable energy technologies, which may require specific regulatory measures tailored to their unique characteristics. The absence of focused regulations can lead to inefficiencies and

uncertainties that deter investment in renewable energy projects. To enhance the legal framework, it is essential to establish clearer guidelines and processes that streamline approvals and reduce bureaucratic barriers(Paundra & Nurdin, 2022). Additionally, engaging stakeholders in the regulatory development process can foster a sense of ownership and ensure that the framework meets the needs of all parties involved, ultimately contributing to a more effective legal environment for renewable energy development in Indonesia.

Challenges in Implementing Renewable Energy Policies

Despite the established legal framework, several challenges impede the effective implementation of renewable energy policies in Indonesia. Key issues include **bureaucratic inefficiencies**, inadequate infrastructure, and limited financial resources. Bureaucratic inefficiencies often result in lengthy approval processes and a lack of coordination among various governmental agencies, leading to delays in project initiation. These inefficiencies not only slow down renewable energy development but also discourage potential investors who may seek more streamlined processes in other countries. Additionally, the existing infrastructure in many regions is not adequately equipped to support the growth of renewable energy technologies, particularly in remote areas where energy access is most needed (Bakhtyar et al., 2013).

The entrenched reliance on fossil fuels further complicates the transition to renewable energy sources. Indonesia's national energy policy continues to prioritize fossil fuels, making it difficult to shift focus towards cleaner alternatives (Dutu, 2016). Stakeholders have identified the need for a more cohesive strategy that addresses these barriers while promoting investment in renewable technologies. This may involve revising existing energy policies to provide incentives for renewable energy adoption and gradually phasing out fossil fuel subsidies. By addressing these challenges through targeted policies and collaborative efforts, Indonesia can create a more favorable environment for renewable energy development and facilitate a smoother transition towards a sustainable energy future.

Social and Environmental Concerns

The transition to renewable energy also raises significant **social and environmental concerns**. Communities often express apprehension about the potential impacts of renewable energy projects on local ecosystems and livelihoods. For instance, large-scale solar or wind farms may disrupt agricultural activities or displace local populations, leading to resistance from affected communities. These concerns are particularly relevant in rural areas where the local economy heavily relies on land for agriculture or other traditional practices (Fauzi, 2023). To mitigate these apprehensions, it is crucial to implement a participatory approach that actively involves local communities in the planning and decision-making processes for renewable energy projects.

Addressing social and environmental concerns requires a commitment to transparency and inclusivity. Engaging communities through public consultations and dialogue can help ensure that their voices are heard and their rights protected (Widya Yudha & Tjahjono, 2019). This engagement not only fosters trust but also allows for the identification of potential conflicts and the development of strategies to minimize negative impacts. Additionally, emphasizing the potential benefits of renewable energy projects, such as job creation and improved energy access, can help garner community support. By prioritizing the social and environmental aspects of renewable energy development, Indonesia can create a more sustainable and equitable energy transition that benefits both local communities and the environment.

Role of International Cooperation

International cooperation plays a crucial role in advancing Indonesia's renewable energy agenda. Collaborative efforts with foreign governments and organizations can facilitate **technology transfer**, capacity building, and financial support for renewable energy projects. This cooperation is vital for Indonesia to leverage external expertise and resources as it seeks to enhance its renewable energy infrastructure and diversify its energy sources. For instance, partnerships with countries that have made significant progress in renewable energy, such as Germany and Japan, can provide Indonesia with access to advanced technologies and best practices that can be adapted to local contexts (Situmeang et al., 2024). These international collaborations can also help Indonesia align its renewable energy policies with global sustainability goals, ensuring that its efforts contribute to broader climate objectives.

Furthermore, the involvement of international stakeholders can assist in establishing frameworks for knowledge sharing and joint research initiatives. Such partnerships not only facilitate the exchange of technology but also promote mutual learning among countries facing similar energy challenges . By engaging with international organizations and participating in global forums, Indonesia can advocate for its interests while gaining insights into innovative solutions and funding mechanisms available through international channels. Ultimately, robust international cooperation can enhance Indonesia's capacity to meet its climate commitments, improve energy security, and promote sustainable development across the nation.

Community-Based Renewable Energy Projects

Community-based renewable energy projects have emerged as a viable solution to enhance local energy access while promoting sustainable practices. These initiatives empower local communities to take charge of their energy needs, which often leads to increased public support for renewable energy development (Fathoni et al., 2021). By involving community members in the planning and implementation phases, projects can be tailored to meet the specific needs and priorities of local populations. Successful examples from various regions in Indonesia demonstrate that when communities actively participate, they are more likely to embrace renewable energy projects, resulting in positive social and environmental outcomes.

Moreover, community-based projects can foster a sense of ownership and responsibility among local residents, encouraging them to invest in and maintain the renewable energy systems. This local engagement not only improves the sustainability of the projects but also contributes to job creation and economic development within the community (Prilandita et al., 2022). Additionally, these projects can serve as educational platforms, helping to raise awareness about the benefits of renewable energy and environmental stewardship. By showcasing successful community-based initiatives, Indonesia can inspire other regions to adopt similar approaches, ultimately contributing to a broader transition toward sustainable energy practices throughout the country.

Public Awareness and Education

Raising public awareness and education about renewable energy is vital for fostering a supportive environment for policy implementation. Many Indonesians remain unaware of the benefits of renewable energy and the potential for local job creation. Educational campaigns that highlight the importance of sustainability and the role of renewable energy in combating climate change can help shift public perception. Increased awareness can lead to greater public support for renewable energy initiatives, encouraging communities to advocate for policies that promote clean energy development.

Effective communication strategies, including the use of social media, community forums, and local media, can amplify these messages and engage diverse audiences (Muslim et al., 2021).

Furthermore, integrating renewable energy education into school curricula can instill a culture of sustainability among the younger generation. By equipping students with knowledge about renewable energy technologies and their environmental benefits, Indonesia can nurture a future workforce that is prepared to engage with and promote sustainable practices. Additionally, partnerships with local organizations and NGOs can help facilitate workshops and training sessions for community members, enhancing their understanding of renewable energy options and encouraging grassroots involvement (Prilandita & Fikri, 2024). Overall, a comprehensive approach to public awareness and education is essential for building a strong foundation of support for renewable energy policies and initiatives across Indonesia.

Policy Recommendations

To enhance the effectiveness of renewable energy policies in Indonesia, several recommendations can be made. First, there is a critical need for **clearer regulatory frameworks** that reduce bureaucratic hurdles and streamline processes for project approval. The current regulatory landscape is often characterized by ambiguity and overlapping responsibilities among various government agencies, which can lead to delays and confusion for investors and project developers. Simplifying these procedures would not only accelerate project timelines but also foster a more attractive environment for investment in renewable energy technologies. Establishing a centralized regulatory body dedicated to renewable energy could facilitate more coordinated efforts and ensure that stakeholders have a single point of contact for guidance and support (Halimatussadiah et al., 2024).

Second, increasing **financial incentives** for renewable energy investments is essential for attracting both domestic and foreign investors. This could involve offering tax breaks, subsidies, or low-interest loans specifically for renewable energy projects. By reducing the financial burden associated with the initial capital outlay, the government can encourage more stakeholders to engage with the renewable energy sector. Furthermore, creating mechanisms for long-term power purchase agreements (PPAs) can provide investors with the certainty they need to commit to large-scale projects (Widya Yudha & Tjahjono, 2019). Such financial incentives would not only stimulate investment but also contribute to the overall growth of the renewable energy market in Indonesia.

Lastly, **fostering collaboration** between government agencies, the private sector, and local communities is vital for creating a cohesive approach to renewable energy development. Multi-stakeholder engagement can facilitate the sharing of knowledge, resources, and best practices, ultimately leading to more effective and sustainable energy solutions. Establishing platforms for dialogue and partnership can help align the interests of various stakeholders, ensuring that projects are designed to meet both local needs and national energy goals (Qurbani & Rafiqi, 2022). By promoting collaboration, Indonesia can harness the collective strengths of different sectors to overcome the challenges facing renewable energy development.

Comparison with Previous Research

Comparative studies indicate that Indonesia's renewable energy policies lag behind those of other Southeast Asian nations, which have successfully integrated renewable sources into their energy mix. For example, countries like Thailand and Vietnam have implemented regulatory frameworks that support the rapid deployment of renewable energy technologies. These nations have adopted best practices such as feed-in tariffs and robust incentive structures that encourage investment and

innovation. This gap highlights the need for Indonesia to learn from the experiences of its neighbors and adapt successful strategies to its unique socio-economic context.

Moreover, previous research emphasizes the importance of a **multi-stakeholder approach** in overcoming barriers to renewable energy adoption. Engaging various stakeholders—including government agencies, private investors, civil society, and local communities—can facilitate a more comprehensive understanding of the challenges and opportunities within the renewable energy sector (Kurniawan et al., 2022). By fostering collaboration among these groups, Indonesia can develop policies that are more effective and inclusive, ultimately leading to greater acceptance and support for renewable energy initiatives. Learning from the successes and challenges faced by other countries can provide valuable insights that inform Indonesia's strategy for renewable energy development. In conclusion, the comparative analysis underscores the urgency for Indonesia to reassess its policies and practices related to renewable energy. By adopting a more proactive and learning-oriented approach, Indonesia can enhance its renewable energy capabilities and accelerate the transition towards a more sustainable energy future (Hartono et al., 2020). This not only aligns with global sustainability goals but also positions Indonesia as a potential leader in renewable energy within the Southeast Asian region.

Implications for Policy Makers and Practitioners

The findings of this literature study have significant implications for policymakers and practitioners in Indonesia. A more integrated approach to renewable energy development that considers **legal, social, and environmental dimensions** is crucial for achieving sustainable outcomes. Policymakers must prioritize stakeholder engagement and public education to build a supportive framework for renewable energy initiatives. This involves not only the creation of clear policies but also the establishment of channels for continuous dialogue with affected communities, ensuring that their concerns and aspirations are adequately addressed.

Practitioners should focus on implementing **community-based projects** that align with local needs and capacities. Such projects can empower communities to take ownership of their energy resources and promote sustainable practices that benefit both the environment and local economies (Anuar & Dewayanti, 2021). By actively involving communities in the planning and execution of renewable energy initiatives, practitioners can foster trust and collaboration, leading to more successful and widely accepted projects. This grassroots approach can also help to identify and address potential social and environmental challenges before they escalate.

4. CONCLUSION

The results show that while Indonesia has made progress in establishing a legal framework for renewable energy, there are still significant challenges in effective implementation. The research highlights the need for a more integrated approach that includes legal, social and environmental dimensions to achieve sustainable outcomes. Policymakers are urged to prioritize stakeholder engagement and public education to foster an enabling environment for renewable energy initiatives. In addition, the Research also advocates for community-based projects that are aligned with local needs, encouraging ownership and collaboration among communities. Ultimately, addressing these challenges through international cooperation, community engagement, and increased public awareness is considered essential to unlocking the potential of renewable energy in Indonesia's environmental management strategy, so that it can contribute to socio-economic development and resilience to climate change.

REFERENCES

Adharani, Y., Nurlinda, I., Siswandi, G., Priyanta, M., & Salsabila, R. (2023). Renewable Energy Development in Indonesia From New Normal to Better Normal: Environmental Law Perspectives. *PADJADJARAN Jurnal Ilmu Hukum (Journal of Law)*, *10*(3), 431–452. https://doi.org/10.22304/pjih.v10n3.a7

Anuar, A., & Dewayanti, A. (2021). Trust in the Process: Renewable Energy Governance in Malaysia and Indonesia. *Politics & Policy*, *49*(3), 740–770. https://doi.org/10.1111/polp.12409

Bakhtyar, B., Sopian, K., Zaharim, A., Salleh, E., & Lim, C. H. (2013). Potentials and challenges in implementing feed-in tariff policy in Indonesia and the Philippines. *Energy Policy*, *60*, 418–423. https://doi.org/10.1016/j.enpol.2013.05.034

Dutu, R. (2016). Challenges and policies in Indonesia's energy sector. *Energy Policy*, *98*, 513–519. https://doi.org/10.1016/j.enpol.2016.09.009

Fathoni, H. S., Setyowati, A. B., & Prest, J. (2021). Is community renewable energy always just? Examining energy injustices and inequalities in rural Indonesia. *Energy Research & Social Science*, *71*, 101825. https://doi.org/10.1016/j.erss.2020.101825

Fauzi, M. (2023). Legal Discourse of the New and Renewable Energy to Green Power Plants to Realize Green Investment in Indonesia. *Proceedings of the 5th International Conference on Indonesian Legal Studies, ICILS 2022, 27-28 July 2022, Semarang, Central Java, Indonesia*. https://doi.org/10.4108/eai.27-7-2022.2342451

Gernaat, D. E. H. J., de Boer, H. S., Daioglou, V., Yalew, S. G., Müller, C., & van Vuuren, D. P. (2021). Climate change impacts on renewable energy supply. *Nature Climate Change*, *11*(2), 119–125. https://doi.org/10.1038/s41558-020-00949-9

Halimatussadiah, A., Kruger, W., Wagner, F., Afifi, F. A. R., Lufti, R. E. G., & Kitzing, L. (2024). The country of perpetual potential: Why is it so difficult to procure renewable energy in Indonesia? *Renewable and Sustainable Energy Reviews*, *201*, 114627. https://doi.org/10.1016/j.rser.2024.114627

Hartono, D., Hastuti, S. H., Halimatussadiah, A., Saraswati, A., Mita, A. F., & Indriani, V. (2020). Comparing the impacts of fossil and renewable energy investments in Indonesia: A simple general equilibrium analysis. *Heliyon*, *6*(6), e04120. https://doi.org/10.1016/j.heliyon.2020.e04120

Heinrich Rakuasa, Dzaka A Faris, Philia Christi Latue, Y. P. (2024). Analysis of Indonesia's Foreign Policy in the Face of Climate Change: A Review from an International Relations Perspective. *Journal of International Multidisciplinary Research*, *2*(4), 41–48. https://doi.org/https://doi.org/10.62504/bx9g2j06

Karim, R., Ghazali, F., & Ansari, A. H. (2020). Renewable Energy Regulations in Indonesia and India: A Comparative Study on Legal Framework. *Journal of Indonesian Legal Studies*, *5*(2), 361–390. https://doi.org/10.15294/jils.v5i2.41986

Kementerian Lingkungan Hidup. (2009). *Undang-Undang Republik Indonesia Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup.*

Koubi, V. (2019). Climate Change and Conflict. *Annual Review of Political Science*, *22*(1), 343–360. https://doi.org/10.1146/annurev-polisci-050317-070830

Kriswandaru, A. S., & Lubis, A. F. (2024). IMPLEMENTATION OF ENVIRONMENTAL LAW AND ENVIRONMENTAL PRESERVATION EFFORTS IN INDONESIA. *ANAYASA : Journal of Legal Studies*, *1*(2), 90–99. https://doi.org/10.61397/ays.v1i2.93

Kurniawan, I., Ichwani, R., Fionasari, R., Batubara, A., & Huda, A. (2022). Indonesia's Renewable Energy Outlook: What to Expect in The Future Renewable Energy of Indonesia. A Brief Review. *Elkawnie*, *8*(2), 298. https://doi.org/10.22373/ekw.v8i2.18738

Muslim, R., Saputro, H., & Thamrin, A. (2021). Case study: Vocational student's knowledge and awareness level toward renewable energy in Indonesia. *Open Engineering*, *11*(1), 690–708. https://doi.org/10.1515/eng-2021-0067

Najicha, F. U., Mukhlishin, M., Supiandi, S., Saparwadi, S., & Sulthani, D. A. (2023). The Shaping of Future Sustainable Energy Policy in Management Areas of Indonesia's Energy Transition. *Journal*

of Human Rights, Culture and Legal System, *3*(2), 362–382. https://doi.org/10.53955/jhcls.v3i2.110

Paundra, F., & Nurdin, A. (2022). STUDY OF THE POTENTIAL AND DEVELOPMENT OF RENEWABLE ENERGY POWER IN INDONESIA : A REVIEW. *Steam Engineering*, *3*(2), 62–72. https://doi.org/10.37304/jptm.v3i2.4024

Prilandita, N., & Fikri, H. Z. (2024). *Socio-political acceptance to renewable energy program in Educational facilities (case study: PV school TERANG project in East Sumba, Indonesia)*. 090016. https://doi.org/10.1063/5.0144962

Prilandita, N., Sagala, S., Azhari, D., & Habib, A. H. (2022). Rural renewable energy development: lessons learned from community-based renewable energy business model in East Sumba, Indonesia. *IOP Conference Series: Earth and Environmental Science*, *1015*(1), 012017. https://doi.org/10.1088/1755-1315/1015/1/012017

Qurbani, I. D., & Rafiqi, I. D. (2022). Prospective green constitution in new and renewable energy regulation. *Legality : Jurnal Ilmiah Hukum*, *30*(1), 68–87. https://doi.org/10.22219/ljih.v30i1.18289

Rahman, A., Dargusch, P., & Wadley, D. (2021). The political economy of oil supply in Indonesia and the implications for renewable energy development. *Renewable and Sustainable Energy Reviews*, *144*, 111027. https://doi.org/10.1016/j.rser.2021.111027

Rakuasa, H., Latue, P. C., & Pakniany, Y. (2024). Climate Change and its Impact on Asian Forest Landscapes: A Critical Review. *International Journal of Selvicoltura Asean*, *1*(1), 23–32. https://journal.ypidathu.or.id/index.php/selvicoltura/article/view/860

Situmeang, N., Putri, S. Y., Desbrantoro, S. Q., Gultom, Y. S. M., & Putri, S. A. (2024). The International Energy Agency's Role in Supporting the Sustainability of Renewable Energy Supply in Indonesia. *SOSHUM : Jurnal Sosial Dan Humaniora*, *14*(1), 1–9. https://doi.org/10.31940/soshum.v14i1.1-9

Widya Yudha, S., & Tjahjono, B. (2019). Stakeholder Mapping and Analysis of the Renewable Energy Industry in Indonesia. *Energies*, *12*(4), 602. https://doi.org/10.3390/en12040602