Research Article

Quo Vadis Energy Legal Policy towards Equitable and Sustainable Development in Indonesia

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ABSTRACT

Indonesia's energy sector continues to face persistent challenges in the context of rapid economic growth, increasing energy demand, and mounting environmental concerns. Despite the constitutional mandate requiring the state to ensure equitable access to energy and sustainability, existing regulatory frameworks frequently fall short of achieving these objectives. This research aims to examine the legal and policy frameworks governing the energy sector in Indonesia, where energy serves as a critical component of economic development and public welfare.The urgency of this study lies in addressing the disconnect between the normative ideals (*das Sollen*) of equitable and sustainable energy governance and their actual implementation (*das Sein*) in current policy practices. The research employs a normative legal method, relying on a literature review of both primary and secondary legal sources, coupled with conceptual and statutory interpretation.The findings indicate that current policies often fail to ensure equitable distribution, meaningful public participation, and adequate environmental protection. Accordingly, legal reforms are necessary to advance justice in energy access and to establish enforceable emission limits and environmental standards. The conclusion drawn from this study underscores the importance of bridging the gap between normative aspirations and practical realities in order to achieve inclusive, sustainable, and just energy governance.

Keywords: Legal Political; Energy; Equity; Sustainable Development

A. INTRODUCTION

Energy is a critical determinant of a nation's welfare, development, and sustainability. As a developing country with a large population and abundant natural resources, Indonesia possesses considerable potential alongside significant challenges in the development and utilization of its energy resources. Pursuant to the 1945 Constitution of the Republic of Indonesia (as amended), the legal and regulatory foundation for the energy sector is provided under Article 33, Paragraphs (2) and (3) (Astiti, Kartika, & Dewi, 2015). In this regard, Indonesia requires an energy supply that is adequate, affordable, and of high quality to meet the needs of its population and support national economic growth. At the same time, the country must strive to balance economic, social, and environmental interests in its energy management policies, while also

contributing to global efforts to mitigate and adapt to climate change (Winarsi, 2024).

Indonesia's energy pricing structure plays a significant role in determining both affordability and accessibility (Hutauruk et al., 2025). The government has historically subsidized fossil fuels particularly gasoline and electricity in an effort to maintain low consumer prices. However, such subsidies have placed a considerable burden on the national budget and have impeded investment in renewable energy development. Energy access is also uneven across the archipelago. Urban centers, especially in Java and Bali, benefit from relatively stable electricity and access to clean cooking fuels (Putri, Naili, & Natalis, 2024). By contrast, remote and rural areas, particularly in Papua and parts of Kalimantan, continue to experience limited access due to infrastructural shortcomings and geographic challenges.

Indonesia's current energy mix remains heavily dependent on fossil fuels. As of 2022, coal accounted for approximately 66% of electricity generation, while natural gas and oil contributed 13.6% and 2.2%, respectively (Reuters, 2025). Renewable energy sources such as hydropower, geothermal, and biomass comprised 18.2% of electricity generation. Despite having an estimated renewable energy potential exceeding 3,600 gigawatts, actual utilization remains limited. The installed capacity of renewable energy power plants reached only 13,155 MW in 2023, representing roughly 13% of the total energy mix (Milko, 2025).

The government has set a target for sustainable energy to comprise 19.49% of the national energy mix by 2024, with an ultimate goal of reaching 23% by 2025. However, as of 2023, the capacity of new and renewable energy power plants stood at only 13,155 MW, representing approximately 13% of the total national energy mix (Laksmi, 2025).

Indonesia's heavy reliance on coal and imported oil poses significant risks to national energy security, making the country vulnerable to global energy market fluctuations and potential supply disruptions. While Indonesia possesses substantial domestic energy resources, their management and control are frequently influenced by foreign investments and external interests. Efforts to achieve energy independence remain challenged particularly due to the continued construction of coal-fired power plants and the slow progress in developing renewable energy infrastructure.

One of the key strategies adopted by the Indonesian government to address these challenges is the promotion and development of renewable energy as an alternative to fossil fuels, which continue to dominate the national energy mix. Renewable energy is defined as energy generated from naturally replenishing sources, including geothermal, hydropower, wind, solar, biomass, and biofuels (Østergaard et al., 2022).

The utilization of renewable energy sources offers several advantages, including the reduction of greenhouse gas emissions, long-term availability, and the potential to enhance national

energy independence and sovereignty. Despite Indonesia's vast renewable energy potential, it remains significantly underutilized (Hamja, 2025). According to data from the Ministry of Energy and Mineral Resources (ESDM), the contribution of renewable energy to the national energy mix in 2019 reached only 12.36%, which falls considerably short of the 23% target set in Presidential Regulation (Perpres) No. 22 of 2017 concerning the National Energy General Plan (RUEN), to be achieved by 2025 (Najicha, 2021).

One of the key factors influencing the development of renewable energy in Indonesia is the political dimension of energy law. Legal politics in the energy sector represent fundamental policies that determine the direction, form, and content of laws regulating the development and utilization of energy resources, including renewable energy, with the ultimate goal of achieving the objectives of the state (Kartika, Winarsih, & Hermanto, 2024). Legal politics in this domain must reflect the principles of justice (Bechberger & Reiche, 2004), which include the fair and proportionate treatment of all stakeholders government, private sector, and the public as well as the consideration of long-term interests and the rights of future generations.

Furthermore, the politics of justice in the energy sector must support the objectives of sustainable development, which is broadly defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. This concept encompasses economic, social, and environmental dimensions (Jenkins et al., 2017).

Despite these ideals, the political framework governing energy law in Indonesia often fails to align with the principles of justice and sustainability. The concept of Energy Justice, as developed by Heffron and McCauley (2017), provides a comprehensive framework for evaluating energy policies and legal systems through the lenses of equity, fairness, and social responsibility. By integrating the four dimensions of justice distributional, procedural, recognition, and restorative into Indonesia's legal regime, the country could move towards a more just and sustainable energy system.

However, several structural challenges persist. These include: (1) the lack of consistency and harmonization between central and regional policies and regulations, which results in legal uncertainty, overlapping authorities, and conflicting interests; (2) the absence of transparency and public participation in the formulation, implementation, and evaluation of energy-related policies, leading to poor accountability, limited responsiveness, and inadequate mechanisms for public oversight and redress; and (3) the insufficient empowerment and protection of communities affected by energy development projects, particularly renewable energy initiatives, which has led to unequal access, distribution of benefits and burdens, and violations of human rights, including the rights to land, health, environment, and cultural identity (Nurcahyanto, Simsek, & Urmee, 2020).

In this context, energy justice not only emphasizes the need for equitable energy distribution but also underscores the importance of addressing historical injustices, ensuring inclusive participation, and formulating policies that prioritize marginalized communities. For Indonesia, the incorporation of these principles into its energy law and policy reforms could significantly enhance the inclusiveness and fairness of its energy transition, potentially positioning the country as a model for other developing nations pursuing a just and sustainable energy future.

This research differs from previous studies addressing energy policy issues in several key respects. It aims to critically analyze Indonesia's legal and policy framework for the energy sector, with particular emphasis on the extent to which current laws align with the objectives of equitable and sustainable development. The study highlights the urgency of policy reforms that facilitate the acceleration of renewable energy adoption, equitable distribution of energy resources, and long-term sustainability in the face of climate change. To evaluate its contributions relative to existing literature, this study assesses how it builds upon, diverges from, and introduces new perspectives to both national and international scholarship.

The study by Karim, Ghazali, and Ansari (2020) critiques Indonesia's renewable energy legislation by identifying legal gaps that impede the development of clean energy. It proposes specific legal reforms to enhance renewable energy uptake and reduce dependence on fossil fuels. However, the present study (Quo Vadis) advances this discussion by integrating the framework of energy justice an aspect absent in the earlier work. It examines broader socio-economic and environmental implications and emphasizes the need for equity and justice in energy distribution.

Similarly, Kadir and Murray's (2019) research explores the concept of energy sovereignty in Indonesia, arguing that national energy independence should be a central policy objective. Their study assesses the impact of foreign investment on energy infrastructure. While the present research also addresses energy sovereignty, it introduces a more comprehensive approach by situating sovereignty within the broader context of sustainable development goals. It challenges conventional notions of energy independence by advocating for a collaborative energy transition model that incorporates both international partnerships and local community empowerment.

Studies conducted by Erdiwansyah, Mamat, Sani, and Sudhakar (2019) compare the renewable energy policies of various Southeast Asian countries, including Indonesia. Their work offers a comparative analysis of legal frameworks aimed at promoting clean energy across the region. However, the present study extends this regional comparative approach by not only evaluating the broader policy landscape but also critically examining internal contradictions and persistent implementation failures within

Indonesia's energy laws. This research introduces a specific focus on the *role of governance* and *legal reform* in addressing these systemic challenges issues that are not thoroughly explored in the aforementioned study.

Adharani et al. (2022) examine governance structures essential for the successful implementation of sustainable energy policies in developing nations, with particular emphasis on Indonesia's legal frameworks. Legal scholarship on energy governance has increasingly addressed the intersection of energy access, environmental sustainability, and legal certainty. Nevertheless, in the Indonesian context, the discourse remains fragmented often characterized by sectoral approaches and a lack of integration of justice-based legal frameworks.

A valuable comparative perspective is provided by Sovacool et al. (2021), who argue that energy justice should be embedded in policy formulation to ensure not only efficiency but also equity and public participation. Their analysis, which draws on cross-jurisdictional case studies, highlights the necessity of enforceable legal norms in achieving sustainable outcomes. However, such comprehensive frameworks are not yet adequately developed within Indonesia's existing regulatory structure. Although laws such as Law No. 30 of 2007 on Energy articulate broad principles, they fall short of providing specific mechanisms to ensure fairness, accountability, and environmental responsibility.

This research seeks to address that gap by offering a normative critique informed by legal reform perspectives, thereby contributing to the development of a more coherent, equitable, and sustainable legal framework for Indonesia's energy transition.

Furthermore, this study makes a significant contribution to the field by integrating multiple dimensions of energy policy legal, social, economic, and environmental. It presents a unique analytical lens for evaluating the alignment of Indonesia's energy governance with broader objectives of justice and sustainability. In addition to critiquing the shortcomings of current legislation, the study advocates for holistic reforms that balance energy security, national sovereignty, and distributive justice.

The study titled *Quo Vadis Energy Legal Policy Towards Equitable and Sustainable Development in Indonesia* makes a significant contribution to the existing body of research on energy law and policy at both national and international levels. It builds upon previous studies by introducing innovative concepts such as energy justice, governance, and the socio-economic implications of energy law. Through comparative analysis with earlier research, the study identifies gaps in the current legal frameworks and offers actionable recommendations for policy reform that could guide Indonesia toward a more equitable and sustainable energy future.

In light of the limitations identified in prior studies, this article is specifically designed to analyze the legal politics of equitable energy governance in support of sustainable

development in Indonesia, with particular emphasis on the advancement of renewable energy. This research is expected to contribute to the development of legal scholarship and to offer recommendations for improving policies and regulatory instruments related to renewable energy in Indonesia.

Conducting this research is essential for assisting the government in formulating solutions to address the intersection of legal politics and the energy sector, particularly its role in promoting sustainable development. This article seeks to address the following key research questions:1. What are the current conditions and dynamics of legal politics in Indonesia's renewable energy sector?; 2.How can legal politics in Indonesia's renewable energy sector be improved to align more closely with the principles of justice and sustainable development?

B. RESEARCH METHODS

This research adopts a normative legal methodology. It utilizes three primary approaches: the statutory (legislative) approach, conceptual analysis, and comparative legal analysis. The study is conducted through an extensive literature review, incorporating both primary and secondary legal materials, including statutes, regulations, legal doctrines, and scholarly literature. The primary objective is to provide prescriptive recommendations regarding the legal issues that require attention and reform.

This study, which examines legal politics in the energy sector in pursuit of equity and sustainable development, exemplifies normative legal research. In conducting this research, both the statute-based and conceptual approaches are employed to analyze the normative content of legal instruments and theoretical constructs relevant to the subject matter.

The objective of normative legal research is to identify legal principles and formulate legal norms that ought to govern specific issues. This is consistent with the view of Morris L. Cohen, who asserts that legal research is the process of discovering the legal rules that govern human behavior. According to Cohen, it involves not only identifying applicable legal norms enforced by the state but also understanding the exceptions and interpretations that clarify those norms.

A key characteristic of normative legal research is its reliance on legal materials as its principal source, rather than empirical data or social facts. This is because normative research is concerned with the analysis of legal texts that contain prescriptive rules. Such legal materials are typically classified into primary sources (e.g., statutes, case law, constitutional provisions) and secondary sources (e.g., legal commentaries, academic articles, and expert interpretations).

C. RESULTS AND DISCUSSION

1. The Dynamics of Sustainable Development in Indonesia's Energy Policy

In analyzing energy policy, it is essential to comprehend the interrelationship between key concepts such as *energy justice*, *legal politics*, and *sustainable development*. However, these

concepts are often introduced in isolation, without proper conceptual integration, resulting in fragmented understanding. This section aims to restructure the discussion to present a coherent and systematic explanation of these concepts and their interconnections, particularly within the context of Indonesia's energy policy.

Prior to discussing sustainable development within the energy policy framework, it is necessary to understand the foundational roles of *legal politics* and *energy justice* (Mutawalli et al., 2023). These two concepts critically shape the normative and institutional frameworks through which energy policy is formulated and implemented.

Legal politics refers to the interplay between legal norms, political processes, and the governance of energy systems. It encompasses the ways in which political decisions shape energy legislation and regulation, influenced by various social, economic, and environmental considerations. The political dimension of energy law ensures that energy policy aligns with national priorities, including energy security, economic development, and environmental sustainability.

Energy laws and regulations often reflect the prevailing political agenda, which significantly influences the formulation of sustainable energy policies (Fasha & Saraswati, 2022). For instance, in countries heavily reliant on fossil fuels, energy policies may prioritize economic growth and energy security, often at the expense of environmental protection unless the legal framework explicitly integrates sustainability principles (Maidasari, Prakoso, & Murtiana, 2023).

Energy justice is a normative concept that advocates for the fair and equitable distribution of energy resources. It emphasizes accessibility, affordability, and fairness in energy governance, particularly for vulnerable and marginalized communities. Energy justice seeks to ensure that energy policies do not disproportionately burden disadvantaged populations and instead promote transparency, accountability, and inclusivity in energy-related decision-making processes.

Incorporating *energy justice* into energy policy is essential to preventing unequal access to energy resources. Policies that overlook principles of social equity risk marginalizing specific groups such as low-income communities, rural populations, and indigenous peoples during the transition to clean energy. Accordingly, energy justice ensures that the formulation of energy law and policy is guided not only by economic and political interests, but also by the imperative of fairness, inclusivity, and equitable distribution of energy benefits.

The *Sustainable Development Goals* (SDGs), established by the United Nations, represent a comprehensive framework aimed at addressing a wide range of global challenges, including issues related to justice and inequality. Specifically, the justice-related SDGs encompass several targets that promote the establishment of a just, equitable, and inclusive society, including within the energy sector. These targets emphasize access to affordable, reliable,

sustainable, and modern energy for all, in line with broader goals of social and environmental justice.

Sustainable development in the context of energy policy refers to meeting the energy needs of the present without compromising the ability of future generations to meet their own needs (Santika et al., 2020). This involves balancing three key dimensions: Environmental Sustainability: Ensuring that energy production and consumption do not harm the environment, especially through the reduction of greenhouse gas emissions and pollution (Suartha, Martha & Hermanto, 2021). Social Sustainability: Promoting energy policies that are equitable, ensuring access to affordable energy for all citizens, regardless of their socio-economic status or location (Ordóñez & Duinker, 2010). Economic Sustainability fostering an energy system that can support long-term economic growth (Yusa & Hermanto, 2018), by making efficient use of resources and ensuring energy security for future generations (Husada et al., 2023). In that case, Indonesia energy legal politics that prioritizes sustainability can also encourage investment in green technologies (Azhar & Satriawan, 2018), job creation in renewable energy industries, and the promotion of local energy solutions, contributing to both environmental and economic sustainability (Sinaga et al., 2024).

In accordance with Government Regulation No. 79 of 2014 on the National Energy Policy, Indonesia aims to achieve a minimum target of 23% of its national energy mix from new and renewable energy sources by 2025. The renewable energy sources that may be utilized to fulfill this target include geothermal energy, wind energy, bioenergy, solar energy, hydro energy, kinetic energy, and ocean thermal energy conversion. In addition, new technologies utilizing non-renewable energy sources such as nuclear, hydrogen, coal bed methane, liquefied coal, and gasified coal may also be integrated into the national energy mix to support this goal. Indonesia possesses significant potential to harness these renewable energy sources effectively.

Indonesia has further demonstrated its commitment to achieving the United Nations Sustainable Development Goals (SDGs) through the adoption of national policies and regulatory instruments. Key legal frameworks for the implementation of the SDGs include Presidential Regulation (Perpres) No. 59 of 2017 and Presidential Regulation No. 111 of 2022. These instruments, along with other strategic documents such as the National Medium-Term Development Plan (RPJMN), constitute the foundation of Indonesia's commitment to sustainable development, particularly in the energy sector (Winarsi et al., 2023).

Presidential Regulation (Perpres) Number 59 of 2017 constitutes a critical regulatory framework for the implementation of the Sustainable Development Goals (SDGs) in Indonesia. This regulation formalizes the National Action Plan for SDGs by aligning Indonesia's development policies with global sustainability

objectives (Diantoro, 2025). Building upon the foundation established by Perpres No. 59/2017, Presidential Regulation Number 111 of 2022 introduces more detailed and updated guidelines for the operationalization and monitoring of SDG implementation. It emphasizes the enhancement of institutional mechanisms, improvements in data collection, and the translation of SDG principles into actionable government policies.

The National Medium-Term Development Plan (RPJMN) also plays a pivotal role in guiding Indonesia's sustainable development agenda, including in the energy sector. As the government's primary five-year development planning instrument, the RPJMN has been increasingly aligned with the SDGs (Hartono et al., 2020). It outlines specific policy targets for sustainable energy, which are integral to Indonesia's energy transition strategy. These commitments include increasing the share of renewable energy in the national energy mix to 23% by 2025 and 31% by 2050, reducing reliance on fossil fuels, and investing in cleaner energy sources such as geothermal, hydropower, solar, and wind. The RPJMN further promotes energy efficiency, universal access to energy, and the provision of affordable energy for all citizens.

Accordingly, the RPJMN serves as a key instrument in advancing the achievement of SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action), and other sustainability-related goals (Setyowati & Quist, 2022). The integration of the SDGs into the RPJMN represents a crucial step in ensuring that Indonesia's medium-term development planning is aligned with global sustainability frameworks. The RPJMN not only reflects Indonesia's commitment to SDG 7 but also underscores the importance of inclusive and green growth within the energy sector.

In light of this framework, it becomes evident that legal politics encompasses the processes of formulating and implementing laws that reflect the fundamental character and direction of a legal system (Hermanto, 2023a). It can be reasonably concluded that legislation in the energy sector will be effective and achieve its intended objectives only if such laws and regulations are developed based on well-founded, transparent, and comprehensive legal policy considerations (Astariyani et al., 2023). This view suggests that, in order to support development that meets the needs of society, the law must be capable of anticipating change as part of its normative function.

Furthermore, legal policy serves as a conceptual framework for defining and understanding legal direction in the energy sector. It enables the identification of the intended course of legal development and the legal reforms sought through energy-related legislation. As such, legal policy functions as both a guide and a foundation for regulatory and institutional advancements in the energy field.

In Indonesia, the decisions of the Constitutional Court have played a significant role in shaping energy-related regulations by directing lawmakers to comply with constitutional mandates and ensuring a balance between economic

development and social justice. The Constitutional Court has served as a vital institution for reviewing the constitutionality of laws and regulations, including those governing energy policy. Over the years, several key regulatory provisions related to energy have been contested, prompting judicial scrutiny of their alignment with the Indonesian Constitution. This section examines selected landmark cases in which the Court's rulings have had a substantial impact on the development of equitable and constitutionally compliant energy policies.

a. Law No. 30 of 2007 on Electricity

One of the most significant legislative instruments governing Indonesia's energy sector is Law No. 30 of 2007 on Electricity, which regulates the generation, transmission, distribution, and consumption of electricity across the country. This law marked a pivotal shift by introducing the possibility of privatization within the electricity sector and permitting private investment. However, it also raised substantial concerns regarding the equitable distribution of electricity and its potential impact on public welfare.

The law was subsequently challenged before the Constitutional Court on the basis that it facilitated the privatization of essential public services. Critics contended that such privatization could lead to unequal access to electricity, particularly in remote or economically disadvantaged regions. The central concern was that private entities might prioritize profit over the public interest, thereby undermining the constitutional obligation to ensure access to energy as a basic right for all citizens, especially those from low-income communities.

The Court's decision significantly influenced the future direction of Indonesia's electricity policy. It underscored the principle that the distribution of energy must be regulated by the state to ensure fair and equitable access. The ruling reaffirmed the government's constitutional duty to retain control over essential services such as electricity while still allowing private sector participation provided it operates within a legal framework that protects and promotes the public interest.

b. Geothermal Energy Law (Law No. 27 of 2003)

Indonesia, endowed with abundant geothermal resources, enacted Law No. 27 of 2003 on Geothermal Energy to regulate the exploration and exploitation of geothermal energy. However, the law faced criticism for its inadequate recognition of indigenous rights and its potential to displace local communities from their ancestral lands and natural resources.

The law was brought before the Constitutional Court on the grounds that it failed to sufficiently safeguard the rights of local communities, particularly indigenous groups, whose lands were designated for geothermal development projects. Critics argued that the law contravened constitutional provisions guaranteeing indigenous peoples' rights to manage and protect their traditional lands and natural resources.

The Court's ruling shaped subsequent energy legislation by emphasizing that local communities, especially indigenous peoples, must be properly consulted and fairly compensated for any use of their land. The decision also underscored the necessity of community involvement in the development of renewable energy, such as geothermal energy, and reinforced the alignment of energy policies with the principles of energy justice.

c. Law No. 4 of 2009 on Mineral and Coal Mining (UU Minerba)

The Mineral and Coal Mining Law (Law No. 4 of 2009), commonly referred to as the Minerba Law, is another key legal framework governing Indonesia's energy sector. It regulates the extraction of mineral and coal resources, which constitute significant components of the national energy mix. Despite its importance, the law has been widely criticized, particularly for its provisions related to foreign investment and its failure to adequately address environmental concerns.

One of the Constitutional Court's most critical functions is its authority to annul laws or provisions that conflict with the 1945 Constitution. Several energy-related regulations have been invalidated by the Court, thereby ensuring that energy policies remain consistent with Indonesia's constitutional mandates regarding social justice, environmental sustainability, and equitable development.

By striking down legal provisions that violate constitutional norms, the Court plays a crucial role in ensuring that energy resources are managed in the public interest. Its decisions uphold the constitutional commitment that energy resources must serve the welfare of the people, contribute to economic justice, and promote sustainable development.

Over the past decade, Indonesia has made notable progress in addressing its growing energy demands, increasingly recognizing the importance of integrating renewable energy into its energy portfolio. Nevertheless, the country's legal frameworks must continue to evolve to align with global commitments such as those under international climate agreements and to support the transition toward a more sustainable and just energy system.

i) The National Energy Policy (KEN) and Presidential Regulation No. 112 of 2007

Indonesia's transition toward a sustainable energy future began with the formulation of the National Energy Policy (KEN) and Presidential Regulation No. 112 of 2007 concerning the National Energy Management Plan. The KEN emphasizes energy diversification, energy security, and the increased utilization of renewable energy sources. Within this framework, Indonesia has set a target of achieving a 23% share of renewable energy in the national energy mix by 2025.

In 2022, the government enacted Presidential Regulation No. 111 of 2022 on Renewable Energy, which aims to enhance renewable energy capacity and provide regulatory clarity for both developers and investors. This

regulation establishes a more structured pathway for the development of renewable energy projects, including solar, wind, hydro, and geothermal power. Nevertheless, the current regulatory landscape continues to evolve, and a balanced legal framework remains necessary to ensure the simultaneous realization of economic growth, energy security, and sustainability objectives.

ii) Electricity Law and Its Impact on Renewable Energy

A pivotal legislative instrument within Indonesia's energy sector is Law No. 30 of 2009 on Electricity, which serves as the foundation for the generation, distribution, and provision of electricity nationwide. In 2021, the law underwent revisions intended to stimulate investments in renewable energy by modifying tariff structures and providing investment incentives.

However, critics argue that, despite these reforms, the law still grants excessive control to the state-owned electricity company (PLN), which may hinder market competition and innovation in the renewable energy sector. One of the key legal challenges identified is the absence of comprehensive and clear regulations governing land use for renewable energy development, which remains a significant barrier to project implementation and private sector participation (Hermanto, 2023b).

2. Comparative Perspective on the Legal Politics of Renewable Energy

Germany, Denmark, and Sweden, as member states of the European Union (EU), operate within the broader legal and regulatory frameworks established by the EU. These countries have consistently been global leaders in the development of renewable energy, and their national policies and strategies are closely aligned with EU energy law.

Germany, Denmark, and Sweden serve as prominent case studies of how coherent legal frameworks and political commitment can facilitate successful energy transitions. These countries are pioneers in advancing wind energy, solar energy, bioenergy, and energy efficiency measures. In addition to complying with EU directives, they actively contribute to shaping EU energy policy, particularly in the renewable energy sector.

Through their leadership, these nations have significantly influenced EU-level initiatives such as the *Clean Energy for All Europeans* package and the *EU Emissions Trading System (ETS)* a cornerstone of the EU's strategy for carbon pricing and emissions reduction across member states.

Germany has exemplified how a highly industrialized country can reduce dependence on fossil fuels while integrating renewable energy at scale. Denmark, through its technological advancement in wind energy, plays a central role in the EU's strategy for expanding offshore wind infrastructure. Sweden, with its success in bioenergy and district heating, is a key contributor to the EU's approach to sustainable and decentralized energy systems.

In 2023, the European Union adopted the Renewable Energy Directive (RED III), which establishes binding targets for renewable energy production across all member states and requires the transposition of its provisions into national legislation. This section examines the influence of RED III on the energy policies of Germany, Denmark, and Sweden, with a focus on compliance, implementation strategies, and the overarching EU legal framework governing renewable energy transitions.

The Renewable Energy Directive (RED III), adopted in 2023, represents a pivotal component of the EU's strategy to achieve climate neutrality by 2050. The directive mandates that at least 40% of the EU's total energy consumption must be derived from renewable sources by 2030. It also includes provisions aimed at improving the integration of renewable energy, enhancing energy efficiency, and promoting the development of renewable technologies.

Germany has long been a leader in renewable energy policy, particularly through its *Energiewende* (Energy Transition) initiative, which began in the early 2000s. This initiative seeks to shift Germany's energy system away from fossil fuels and nuclear power toward renewable sources (Baran, 2015). Germany's energy policies are fully aligned with RED III and the EU's 2030 climate objectives (Rechsteiner, 2021). In 2023, Germany reaffirmed its national target to achieve a 60% share of renewable energy in its total energy mix by 2030.

Germany is also investing significantly in green hydrogen technologies, in line with the EU's decarbonization agenda for industrial and transport sectors (Schmidt, Schmid, & Sewerin, 2019). The German Hydrogen Strategy, adopted in 2020, supports EU-wide collaboration in renewable hydrogen development (Renn & Marshall, 2016). As a major player in the European energy market, Germany has strengthened cross-border electricity interconnections, facilitating the flow of renewable electricity within the EU and contributing to a fully integrated energy market.

Denmark has been a frontrunner in the global transition to renewable energy, especially in wind energy, where it holds a competitive technological advantage (Sovacool & Blyth, 2015). Danish energy policy is deeply integrated with EU frameworks, and the country has adopted ambitious national goals that exceed EU benchmarks. Denmark targets 50% of its total energy consumption to come from renewable sources by 2030, surpassing the EU's 40% requirement under RED III (Sovacool, 2013).

The *Danish Energy Agreement* of 2018 outlines a comprehensive plan to phase out coal by 2030, scale up offshore and onshore wind energy, and increase solar energy capacity. Denmark hosts some of the world's leading wind turbine manufacturers and is a central actor in the EU's offshore wind expansion (Wang, Moreno-Casas, & de Soto, 2021). Through the *Green Transition Fund*, Denmark supports innovation in green technologies including hydrogen and

bioenergy—which aligns with RED III and promotes long-term sustainability (Petersen, 2018; Toke & Nielsen, 2015).

Sweden stands among the EU's most successful countries in meeting renewable energy targets, driven by its strong national commitment to sustainability and environmental stewardship (Hanny et al., 2022). Sweden's energy policy is fully aligned with RED III, and its national goals significantly surpass EU minimums. Sweden aims to achieve 100% renewable electricity generation by 2040 (Lindgren et al., 2023; Ramasar et al., 2022).

The *Swedish Energy Agency* (*Energimyndigheten*) plays a central role in executing national renewable energy policies and ensuring compliance with EU regulations (Meyer, 2007). The agency actively supports the development of biomass, hydropower, wind, and solar energy (Ring et al., 2022). Sweden's policy mix reflects a long-standing commitment to energy efficiency, environmental protection, and technological innovation.

The EU's Renewable Energy Directive serves as a cornerstone of member states' energy legislation, offering a unified regulatory framework for the energy transition. While Germany, Denmark, and Sweden have demonstrated leadership in renewable energy deployment, they remain bound by EU law, especially under RED III, to align their national policies with broader EU objectives. These countries not only contribute significantly to the EU's renewable energy targets but also support the overarching goal of a just and sustainable green transition.

3. The objective is to enhance the legal politics of renewable energy in Indonesia in accordance with the principles of justice and sustainable development

Legal politics, in the form of regulations, play a crucial role in either facilitating or hindering the adoption of renewable energy (Lestari & Kartika, 2023). Well-crafted laws can boost investment, accelerate technological innovation, and promote the use of renewable energy. Conversely, ineffective policies or poor implementation can lead to significant challenges and barriers (Hermanto & Aryani, 2021). Success in renewable energy adoption often hinges on striking a balance between supportive incentives and regulatory measures, as well as maintaining consistent monitoring and adaptability to respond to emerging issues (Juliani et al., 2023).

There are three major challenges in the implementation of legal policy in this context:

a. Implementation Costs.

Many renewable energy policies require substantial initial investments in infrastructure, technology, and systems. These financial demands can be burdensome for both governments and private sectors, particularly in developing countries. Governments may struggle to allocate adequate funds to support subsidies or incentives that promote the adoption of renewable energy technologies (Harris, Wahyuni, & Prihatiningtyas, 2023).

b. Political and Policy Interests.

Political transitions pose challenges for legal policy implementation in Indonesia, as evidenced by the shift from the Joko Widodo administration (2014–2024) to the upcoming Prabowo Subianto administration (beginning in 2025, with evolving policy directions). Changes in political leadership can lead to shifts in priorities, disrupting the momentum of energy policy initiatives. For instance, the Joko Widodo administration prioritized infrastructure development, which at times overshadowed environmental protection and social justice efforts.

Despite increasing interest in renewable energy, Indonesia continues to face regulatory and investment-related hurdles. Investors frequently encounter uncertainties such as land acquisition issues, lengthy licensing processes, and legal disputes over land use rights. Moreover, tensions between economic development goals and environmental and social justice persist. Energy projects whether involving fossil fuels or renewables often affect indigenous communities, local populations, and vulnerable groups. Both the Widodo and Subianto administrations have faced, and will likely continue to face, critical challenges in implementing energy sector reforms. Core issues such as institutional fragmentation, inconsistent political will, investment barriers, and inadequate attention to social justice remain unresolved. For Indonesia to succeed in its energy transition, future administrations must address these structural challenges by enhancing regulatory coherence, ensuring policy continuity, and fostering inclusive participation of local communities and marginalized groups in energy planning and decision-making. Furthermore, balancing economic development with the imperatives of social justice and environmental sustainability is essential (Hanum, Handayani, & Tegnan,2023).

Energy policy is often susceptible to political cycles. Governmental changes can lead to shifting priorities and weakened policy commitments, which in turn undermine implementation and program continuity (Dutu, 2016). Additionally, established fossil fuel industries possess significant political influence and often resist policy changes that could threaten their interests, leading to delays or reductions in support for renewable energy initiatives.

c. Economic Uncertainty.

Fluctuations in global energy prices, technological limitations, the high costs of new technologies, and challenges related to integrating renewable energy with existing infrastructure all pose risks to long-term investments. Moreover, public perception and information campaigns are critical in building support for energy reforms.

Effective policy implementation also requires robust enforcement mechanisms to ensure compliance with regulations. Weak enforcement undermines the effectiveness of policies. Without clear and firm sanctions, violations such as noncompliance with energy efficiency standards or renewable energy targets

may go unpunished, reducing incentives for adherence (Nur, Al-Fatih, & Intania, 2024).

Reliable data on energy consumption, emissions, and efficiency is crucial for evaluating policy performance. However, limitations in data quality or availability can hinder accurate assessments. Inadequate reporting systems or lack of transparency may further obscure whether policies are being implemented properly and whether they are achieving their intended goals (Susanto, 2024).

Case studies of countries regarding energy policies and the challenges they face, including:

Germany's *Energiewende* is one of the most ambitious energy policies in the world. It aims to phase out nuclear energy, reduce greenhouse gas emissions, and transition to a renewable energy-based system. Indonesia, being rich in renewable resources like geothermal, solar, and biomass, could benefit from similar feed-in tariffs and incentives for renewable energy development (Kockel et al., 2024).

Denmark is a world leader in wind power and has developed highly effective district heating systems that use renewable energy sources. Key aspects of Denmark's energy policy. Indonesia has some potential for wind energy, especially in areas like Sulawesi and Nusa Tenggara. While Indonesia does not have the same wind resources as Denmark, smaller-scale wind farms could still play a role in the country's renewable energy mix (Sovacool & Tambo, 2016). A policy similar to Denmark's could promote offshore wind development and boost local manufacturing of wind turbines. While district heating is not common in Indonesia due to its warm climate, the concept could be adapted for cooling purposes in urban areas through systems that use renewable energy sources such as geothermal, solar, or waste heat. Also, to introduce a carbon tax or other market-based policies like cap-and-trade could incentivize Indonesian industries to reduce emissions and invest in cleaner technologies (Cook & Lawell, 2020). However, such a policy would require strong political will and public support, given the challenge of balancing economic growth with environmental goals.

Sweden is a pioneer in the transition to renewable energy, with a focus on sustainability and carbon neutrality by 2045. Indonesia has large amounts of agricultural waste and biomass that could be used for energy production, similar to Sweden’s use of biomass for district heating (Maliszewska-Nienartowicz & Oskar, 2024). Indonesia could invest in modernizing bioenergy technology and scaling up the use of biomass to produce both electricity and heat.

While, Indonesia could adopt Sweden’s approach to hydropower and wind energy. Given Indonesia’s extensive coastline, offshore wind energy could be a viable option, particularly in areas where onshore wind is not feasible. Sweden's carbon pricing model could be adapted in Indonesia, although the country would need to carefully consider the economic impacts. Implementing carbon taxes or cap-and-trade could encourage industries to reduce emissions

while generating revenue for further renewable energy investments.

Legal policies in the energy sector must evolve to accommodate future trends and effectively support the transition toward a more sustainable energy system. One of the foremost areas of development is legal innovation, which should align with emerging technologies and shifting societal needs.

i. Legal Innovation for Sustainable Technologies

Future legal policies must incorporate incentives and regulatory frameworks that promote the adoption of advanced energy technologies. These include fair feed-in tariffs, support for grid integration, and the development of supportive infrastructure (Wojtaszek et al., 2024). Hydrogen, as a clean and versatile energy source, is gaining prominence, particularly in sectors such as transportation and heavy industry (Karel et al., 2019). Legal frameworks must set clear standards for the production, storage, and distribution of hydrogen, while also offering incentives to encourage investment in hydrogen infrastructure.

Furthermore, energy storage technologies, such as battery systems and thermal storage, require comprehensive legal support to facilitate integration into national energy systems. Regulations must also accommodate the deployment of smart grids, ensuring efficient and flexible energy flow management while safeguarding consumer data and privacy.

ii. Regulation of Emerging Technologies

Technologies like blockchain and the Internet of Things (IoT) are transforming energy systems by enhancing transparency, traceability, and operational efficiency. Legal policies should address issues such as data security, the integrity of blockchain-based transactions, and interoperability of IoT devices. In particular, regulations must ensure cybersecurity and data privacy while supporting innovation in real-time energy monitoring and control.

iii. The Role of Public-Private Partnerships (PPPs)

Public-private partnerships are crucial for financing and scaling up renewable energy infrastructure. Legal frameworks should be designed to facilitate PPPs through tax incentives, subsidies, and innovative financial mechanisms (Hermanto, Nur & Subawa, 2024). These frameworks must clearly define the rights and obligations of all parties involved, equitably allocate risks and benefits, and encourage collaboration between government agencies, private enterprises, and research institutions. Support for joint R&D funding and international partnerships will further accelerate innovation in energy technologies.

iv. Community-Based Energy Projects

Community energy projects such as cooperatives managing shared solar panels or wind turbines are becoming increasingly popular for their social, economic, and environmental benefits. Legal policies must support the formation and operation of such projects,

addressing issues of ownership, governance, benefit distribution, and access to energy markets. Governments should simplify licensing processes, provide technical assistance, and offer financial support to empower local communities. Moreover, participatory legal mechanisms should ensure that communities are actively involved in the planning and decision-making processes of energy projects.

v. Adaptive and Principles-Based Legal Frameworks

With the rapid pace of technological advancement, legal systems must become more flexible and adaptive. A principles-based regulatory approach focusing on overarching goals such as sustainability, transparency, and inclusivity can be more effective than rigid, prescriptive rules. In parallel, data governance must be prioritized, especially with the growing reliance on digital technologies. Governments should implement green certification standards to verify and encourage the adoption of genuinely sustainable energy solutions.

The future of legal policy in the energy sector will depend on how effectively countries respond to emerging technologies, leverage cross-sector collaboration, and empower local communities. Legal innovations that emphasize adaptability, data protection, and environmental integrity will be essential to ensuring a just and effective energy transition. Ultimately, inclusive, data-driven, and flexible legal policies will facilitate the growth of sustainable energy technologies and contribute to building a more resilient, equitable, and environmentally responsible energy system (Aditya et al., 2025).

Legal policies in the energy sector must be flexible and adaptive to continuously developing technologies, such as energy storage, hydrogen energy and smart grids. Legal innovation needs to include a dynamic approach to supporting technological progress while protecting the public interest (Sudiyana & Zahir, 2025). Public-private partnerships and community-based projects play an important role in the development and implementation of energy policy. Support for this collaboration can accelerate the sustainable energy transition and support the development of local projects. Policies must ensure that the benefits of renewable energy are felt by all levels of society, especially disadvantaged groups maintain the integrity of the energy system (Jakob et al., 2020).

First, Regulatory Certainty. Legal clarity and certainty in energy policies give businesses and investors the confidence to commit capital to long-term projects, such as wind farms, solar installations, and bioenergy production. In many countries, inconsistent or unpredictable energy policies can cause hesitancy, as investors might fear that policy shifts could render their investments less profitable or unviable.

Second, Property Rights and Access to Resources. Legal frameworks that ensure the security of property rights are crucial for attracting investment in renewable energy. For example, in wind power projects, securing land rights to build wind turbines and access to wind resources is

vital. Legal disputes over land ownership can delay projects, increasing costs and risks for investors.

Third, Contract Enforcement and Legal Predictability. The ability to enforce contracts, particularly Power Purchase Agreements (PPAs), is fundamental to attracting private sector investment in renewable energy projects. A PPA is a contract between an energy producer and a buyer (typically a utility or a large corporate consumer) to purchase the renewable energy produced for a fixed price.

Fourth, Tax Incentives and Subsidies. Tax policies, such as tax credits, rebates, or subsidies, are effective legal tools for incentivizing investment in renewable energy technologies. These policies can lower the initial capital expenditure needed to start renewable energy projects, improving financial returns for businesses. Indonesia could adopt similar tax incentives or grants, particularly for solar, wind, and geothermal projects, which would encourage both domestic and foreign investors to enter the renewable energy sector.

Fifth, Feed-in Tariffs (FiTs) and Power Purchase Agreements (PPAs). Feed-in Tariffs (FiTs) are a legal commitment by the government to purchase renewable energy at a guaranteed price for a fixed period. This provides a stable revenue stream for renewable energy producers, making the sector attractive to investors. Power Purchase Agreements (PPAs), typically signed between independent producers and utilities, also provide long-term pricing stability (Hartono et al., 2023). FiTs and PPAs reduce the risks associated with renewable energy investments, especially in emerging markets. With assured returns and legally binding contracts, businesses are more likely to invest in long-term infrastructure projects such as solar or wind farms.

Sixth, Carbon Pricing and Emission Trading Schemes (ETS). Carbon pricing (through a carbon tax or an Emission Trading Scheme (ETS)) legally forces businesses to internalize the environmental costs of fossil fuel emissions. This makes renewable energy projects more financially competitive because renewables typically have lower carbon emissions (Setyowati, 2021). Sweden has one of the world's highest carbon taxes, which has incentivized companies to shift toward cleaner technologies, such as biomass, wind, and solar power. The legal framew ork for carbon pricing in Sweden has reduced the financial attractiveness of fossil fuels, making investments in renewable energy more appealing.

Seventh, Renewable Energy Standards (RPS) or Renewable Portfolio Standards (RPS). Renewable Portfolio Standards require utilities to obtain a certain percentage of their energy from renewable sources. This creates a legal obligation for energy providers to invest in or purchase renewable energy (Rudenko & Tanasov, 2022). Utilities that are required to meet RPS targets are incentivized to purchase energy from renewable sources, which boosts demand for renewable energy projects. Developers can expect a ready market for their energy production.

Eighth, Green Bonds and Renewable Energy Financing. Governments and businesses can establish green bonds, which are legal financial instruments specifically designed to fund renewable energy projects. Investors who purchase green bonds are essentially financing renewable energy initiatives.

Green bonds provide a mechanism for the private sector to raise funds for renewable energy projects. Legal regulations surrounding green bonds, such as clear definitions of what qualifies as "green" or sustainable, are important to ensure transparency and prevent greenwashing (misleading claims about environmental benefits).

Ninth, Intellectual Property (IP) Protection. Laws protecting intellectual property (IP) such as patents and copyrights can incentivize innovation in renewable energy technologies. Entrepreneurs and companies are more likely to invest in the development of new technologies if they are legally protected from the risk of competitors copying their innovations. IP protection helps ensure that innovators can capitalize on their inventions, giving them the financial returns necessary to fund further research and development in renewable energy (Yuniza et al., 2024).

Despite the positive potential, there are significant challenges in using legal structures to promote renewable energy investment:

Political and Regulatory Uncertainty especially changes in government or political priorities can undermine investor confidence. If renewable energy incentives or policies are reversed or altered significantly, businesses may incur financial losses (Kartika et al., 2024).

Market Distortions especially faces subsidies and tariffs can drive renewable energy development, they can also distort market competition, particularly if they are not phased out once renewable energy becomes cost-competitive with fossil fuels.

Enforcement Challenges, as others developing countries, including Indonesia, weak enforcement of property rights, contract disputes, or legal inefficiencies may deter investment in energy projects.

The Law and Economics approach shows that a combination of stable, predictable legal frameworks, financial incentives, and market-based mechanisms can have a substantial impact on encouraging businesses to invest in renewable energy. Governments can create a supportive environment for renewable energy. The challenge lies in ensuring that these laws are not only well-designed but are consistently enforced and adjusted to keep pace with technological advancements and market dynamics.

D. CONCLUSION

Legal policies play a vital role in shaping a just and sustainable energy system. As strategic instruments guiding the energy transition, these policies must incorporate the principles of sustainability, social justice, and technological innovation to ensure the greatest possible benefits for both society and the environment.

The following is a recap of the key importance of legal policies in promoting just and sustainable energy, along with a call to action for policymakers and stakeholders:

Legal policies provide a clear framework for the development, implementation, and monitoring of renewable energy technologies. They ensure that energy practices adhere to high environmental and social standards. Through incentives, subsidies, and regulatory mechanisms, legal policies foster the adoption of clean and efficient energy technologies, reduce reliance on fossil fuels, and accelerate the transition to renewable energy sources.

Effective legal frameworks must ensure an equitable distribution of benefits, address energy inequality, and encourage community participation in decision-making processes. Such inclusivity helps build an energy system that is fair and responsive to the needs of all segments of society.

Moreover, legal policies set emission standards and environmental protections to minimize the negative impacts of energy use, preserve ecological integrity, and support efforts to mitigate climate change.

In conclusion, the success of the global energy transition relies not only on technological advancements and financial investment but also on strong, adaptive, and inclusive legal frameworks that promote justice, sustainability, and resilience in the energy sector.

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