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MORALITY BEFORE KNOWLEDGE

Towards a just energy transition and clean energy in Indonesia: Legal challenges from dependence on coal

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ABSTRACT

Background: The energy transition in Indonesia faces fundamental challenges arising from inconsistent regulations that maintain dependence on coal, despite Indonesia's and global commitments to decarbonization. The enactment of Government Regulation No. 40 of 2025 on National Energy Policy and Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for Electricity Providers reflects a dualism in policy, as evidenced by the expansion of the renewable energy mix and the allowance for coal-fired power plants to operate until 2050. **Methods**: This study uses a normative method and critically examines the legal framework. The analysis draws on the theory of energy justice, which focuses on fair distribution of burdens and benefits and on procedural inclusiveness. It also applies the theory of ecological justice, which highlights the need to protect ecosystems and intergenerational rights. **Findings:** This study finds that energy governance in Indonesia reflects dual regulation. The policy continues to rely on coal while claiming to promote renewable energy. Integration of Carbon Capture and Storage (CCS) and Carbon Capture, Utilization, and Storage (CCUS) technologies is presented as a decarbonization strategy, but in reality, it delays the transition to clean energy. **Conclusion:** The energy transition in Indonesia remains hampered by legal inconsistencies. On one hand, policies promote renewable energy; on the other, they maintain coal use. Legal analysis shows that new energy transformation policies fail to achieve justice, inclusiveness, and ecological sustainability. Therefore, a New and Renewable Energy Bill and a Climate Justice Bill are needed to realize an energy transition that is fair, sustainable, and consistent with the Constitution of the Republic of Indonesia. **Novelty/Originality of this study:** This study develops a framework that combines energy and ecological justice to assess Indonesia's energy transition policies from a legal perspective.

KEYWORDS: coal dependence; ecological justice; energy justice; energy transition.

1. Introduction

Indonesia has demonstrated its strengthened commitment through its Enhanced Nationally Determined Contribution (ENDC). The ENDC adjusts greenhouse gas emission reduction targets. The first Nationally Determined Contribution (NDC) targeted a 29% unconditional reduction. Now, it is increased to 31.89% under the Business As Usual (BAU) scenario. Similarly, the conditional target, previously 41%, is now 43.20% with international support (Ministry of Environment and Forestry of the Republic of Indonesia, 2022). The ENDC is a decisive strategic step in formulating Indonesia's second NDC. It is also designed to align with the Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050. The ENDC aims to realize net-zero emissions (NZE) by 2060 or sooner (UNCC, 2021). Efforts focus on mitigating emissions from BAU projections in key sectors: energy, waste, Industrial Processes and Product Use (IPPU), and Forestry and Other Land Uses (FOLU) (Ministry of Environment and Forestry of the Republic of Indonesia, 2022). In

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particular, the energy sector could reduce emissions by around 358 million tons of CO_2 equivalent by 2030. This reduction is integral to accelerating the national energy transition agenda (Nurhidayah et al., 2024).

Indonesia's success in promoting the energy transition is closely related to its commitment to the Paris Agreement, which aims to limit global warming. The main objective is to keep the average global temperature increase well below 2°C relative to pre-industrial levels, while aiming for a stricter limit of 1.5°C (Lolo et al., 2022). The implementation of this commitment in Indonesia was legalized through Law No. 16 of 2016 concerning Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change (Law 16/2016) (Siagian, 2024). As an international, legally binding instrument applicable to all, the Paris Agreement promotes the principle of common but differentiated responsibilities and respective capabilities. Within this framework, developed countries are expected to assume greater obligations, including providing funding, capacity-building, and technology transfer to developing countries, to support global efforts to address climate change (Siagian, 2024).

The global commitment in the Paris Agreement has led to a strategic agenda to reduce carbon emissions. This agenda includes accelerating the transition to clean energy (Bekturganova, 2019). The energy transition process is a major shift from dependence on fossil fuels like oil, coal, and natural gas. It moves towards the use of renewable and new energy sources (Leksono, 2024). This shift is not just about technological innovation. It is a multidimensional transformation involving economic, social, public policy, and environmental spheres. Within this framework, the success of the energy transition depends on balancing supply security, equitable access, and environmental sustainability. This balance is known as the energy trilemma. The World Energy Council introduced the energy trilemma in 2010 as a tool to evaluate a country's energy system (Wardhana & Marifatullah, 2020). The three main pillars in this framework are energy security (guaranteed energy availability), energy equity (equitable access to energy), and environmental sustainability (ecological sustainability) (Word Energy Council, 2025).

To balance energy security, equity, and sustainability in Indonesia, the government established a legal framework. This was done through Law No. 30 of 2007 on Energy (Energy Law). The regulation states that national energy governance must be fair and sustainable to achieve energy independence and security. The direction of energy policy is more clearly outlined in Government Regulation No. 79 of 2014 on the National Energy Policy/*Peraturan Pemerintah tentang Kebijakan Energi Nasional* (PP KEN). This regulation classifies management strategies into two categories: primary regulations and supporting regulations. Primary regulations focus on ensuring energy is available for domestic needs. They set energy development priorities, optimize the use of national energy resources, and maintain strategic energy reserves. Supporting regulations cover energy and resource conservation, energy source diversification, environmental management and safety, pricing, subsidies and incentives, infrastructure development and energy access, energy technology research, and institutional and financing aspects. The synchronization between main and supporting policies in Government Regulation on National Energy Policy confirms Indonesia's mandate to reduce reliance on fossil fuels. Indonesia prioritizes New Energy and Renewable Energy/*Energi Baru dan Energi Terbarukan* (EBET), aiming for 23% renewable energy by 2025 and at least 31% by 2050 (Widyaningsih, 2017).

The existence of Government Regulation on National Energy Policy is seen as an important instrument for promoting the energy transition, strengthening EBET's role, advancing national energy security, and reducing dependence on fossil fuels. Achieving these objectives requires a consistent and focused regulatory framework. This framework should enable the optimal shift from fossil fuels to EBET (Arsita et al., 2021). As a follow-up, the government issued Presidential Regulation No. 112 of 2022 concerning the Acceleration of Renewable Energy Development for Electricity Providers (Presidential decree 112/2022). This regulation was initially seen as a useful policy instrument for accelerating the transformation towards renewable energy. However, its substance presents contradictions. Article 3, paragraph (4), still allows coal-fired power plants to operate until

2050. This provision is seen as contrary to the Government Regulation on National Energy Policy's mandate, which emphasizes achieving a renewable energy mix. The tolerance for coal-fired power plants underscores the difficulty of rapidly moving away from fossil fuels. In addition, Article 2, paragraph (3) of the same Presidential Regulation has not fully integrated the implementation plan for the Electricity Supply Business Plan/*Rencana Usaha Penyediaan Tenaga Listrik* (RUPTL). This is a missed opportunity for a concrete step toward achieving the expected EBET mix target. Thus, although Presidential Regulation 112/2022 was introduced to strengthen the direction of the energy transition, its provisions still leave open the question of how to accelerate the achievement of a national energy mix based on EBET.

Policy misalignment in Indonesia's energy transition aligns with Hastuti (2024), findings. She identified overlapping regulations and weak policy consistency as the main challenges in implementing the ENDC. This often places the economic development agenda above climate commitments. Similarly, Nurhidayah et al. (2024), note that Indonesia's legal framework for energy and the environment is still sectoral and fragmented. This fragmentation impedes the incorporation of climate justice principles into national policy. Iacobuta et al. (2018), reinforce this, emphasizing that the success of ENDCs globally is determined by the consistency of domestic legislation. In Indonesia, regulatory inconsistency remains an obstacle. Heffron (2024), further argue that energy justice requires a multidimensional approach. Such an approach must cover the distribution of benefits and burdens, participation in decision-making, and recognition of vulnerable groups. Thus, bridging this fundamental gap requires legal reformulation. This reformulation should focus on harmonizing and consolidating regulations. It should also ensure that Indonesia's energy transition is fair, supports environmental protection, and fulfills community rights.

Inconsistent regulations in the energy sector have created serious legal and policy problems. These issues ultimately affect environmental sustainability and public health. Uncertainty about the energy transition means coal-fired power plants remain the backbone of the national energy system. This continues even though evidence shows their destructive impact (Suharto et al., 2015). In other words, the lack of consistent and equitable energy policy reform forces the community to bear the negative externalities of coal. These range from ecological damage to increased health threats. Coal combustion produces harmful pollutants, including Nitrogen Oxides (NOx) and Sulfur Dioxide (SO_2). These pollutants can trigger acid rain and worsen fine particulate pollution, such as PM2.5. NOx includes Nitric Oxide (NO) and Nitrogen Dioxide (NO_2). NO_2 is four times more toxic. If inhaled, it can damage lung tissue or even cause death (Pope & Dockery, 2006). SO_2 forms during fossil fuel combustion and contributes to air pollution, significantly harming respiratory health (EPA, 2024). PM2.5, fine particles less than 10 microns in diameter, have also been shown to have adverse effects on lung function (Andriyanu, 2024).

On the other hand, coal combustion remains a major source of pollution. The International Energy Agency (IEA) reports that nearly 44% of global CO_2 emissions originate from coal, sharply increasing greenhouse gas concentrations and accelerating climate change (VOA, 2024). In addition, coal management activities at coal-fired power plants release hazardous chemicals, including arsenic and mercury, threatening the health of nearby communities (Andriyanu, 2024). The effects of air pollution from coal-fired power plants extend beyond environmental harm, damaging fisheries and ecosystems and undermining local economic stability (Sabubu, 2020). The World Bank Group (2023), confirms that Indonesia’s energy sector, especially coal, is the largest source of greenhouse gas emissions. The report urges accelerating the coal phase-out, ending fossil fuel subsidies, and increasing investment in renewables as essential steps to curb emissions and ensure sustainable economic growth.

Protecting the environment and ensuring the public's right to health are explicit constitutional obligations. Article 28H paragraph (1) of the 1945 Constitution states that every individual has the right to physical and spiritual well-being, adequate housing, a healthy environment, and access to health services (Siagian et al., 2022). Furthermore,

Article 33 paragraph (3) establishes that the earth, water, and all natural resources are controlled by the state and must be managed to maximize public welfare. This principle compels the state to ensure sustainable, ecosystem-friendly resource management (Siagian & Haykal, 2024). This constitutional mandate underscores that environmental and public health protections are fundamental duties that require consistent regulation and effective implementation. Based on this, the study emphasizes the critical need to enact new legal frameworks, specifically the EBET Law and the Climate Justice Law, to reinforce oversight in a fair energy transition. These initiatives are designed to promote environmental sustainability and protect the right to health as an essential human right.

This study aims to critically examine the inconsistencies in Indonesia's energy transition policies, particularly the normative tension between Government Regulation No. 79 of 2014 on National Energy Policy (PP KEN), which targets an increase in the share of renewable energy, and Presidential Regulation 112/2022, which continues to legitimize the operation of coal-fired power plants until 2050. This regulatory conflict creates structural problems in the decarbonization agenda, while also revealing the paradox between the commitment to green energy and the reality of dependence on fossil fuels. This study also aims to outline the legal, social, and ecological implications of coal dominance, including threats to environmental quality and public health, which are constitutionally protected by Article 28H, paragraph (1), and Article 33, paragraph (3), of the 1945 Constitution. The research then focuses on evaluating the extent to which national energy policy is consistent with the principles of climate justice, ecological sustainability, and the protection of citizens' constitutional rights. As a practical contribution, this study proposes regulatory recommendations emphasizing the urgency of passing the EBET Law and the Climate Justice Law. These two instruments are considered crucial to ensuring that the energy transition is fair, sustainable, and in line with Indonesia's international commitments in addressing the global climate crisis.

2. Methods

This research applies a normative juridical method to examine principles, norms, and relevant regulatory instruments, including applicable legal principles (Soekanto & Mamudji, 2024). The normative approach was chosen because it matches the research objective: to analyze inconsistencies in national energy policy within the framework of a just energy transition. This is particularly focused on Government Regulation on National Energy Policy and Presidential decree 112/2022. The research strategy covers four main dimensions (Marzuki, 2014). First, a statute approach examines the 1945 Constitution, the Energy Law, Law No. 32 of 2009 concerning Environmental Protection and Management (Environmental Law), Law 16/2016 concerning the Ratification of the Paris Agreement, and other regulations related to energy transition. Second, a conceptual approach uses legal doctrines and theories, such as energy justice and ecological justice, as an analytical framework. This helps understand the dimensions of justice, sustainability, and potential structural biases in energy policy. Third, a case approach studies policy implementation, with particular focus on coal-based power plant development and its impacts on the environment and public health. Fourth, a comparative approach examines energy transition practices in other countries to inform alternative policy solutions relevant to Indonesia.

The legal materials in this study are grouped into three categories (Marzuki, 2016). First, primary legal materials include national legislation, international instruments such as the Paris Agreement, and relevant court decisions. Second, secondary legal materials include academic texts, research articles published in journals, research results, reports from international institutions, and expert views on energy transition and climate justice. Third, tertiary legal materials include encyclopedias, legal dictionaries, and other references that support the analysis. Data processing uses a qualitative approach, grounded in legal reasoning. This approach interprets legal norms and relates them to relevant academic principles and doctrines. Through these steps, the research aims to uncover inconsistencies in energy policy, evaluate the environmental and public health implications, and draft

normative recommendations. These recommendations are expected to serve as the basis for the EBET Law and Climate Justice Law as comprehensive tools to accelerate a just energy transition in the country.

3. Results and Discussion

3.1 The transition to new and renewable energy in Indonesia: Criticism of carbon emission reduction targets

When examined through the lens of Energy Law nomenclature, this regulation initially laid the foundation for the legal policy on energy utilization, emphasizing national governance grounded in the principle of environmental conservation. However, recent developments show that the paradigm of energy utilization is shifting towards a broader horizon, namely supporting the sustainable development agenda (Sugiyono, 2004). The main orientation in this context is to encourage the substitution of fossil fuels such as coal, petroleum, and gas with renewable energy, so that carbon and greenhouse gas emissions can be reduced for the sake of global ecological sustainability (Budiarto, 2011). This transformation is not only seen as an environmental mitigation effort, but also as an instrument to drive economic growth through the creation of new jobs while supporting long-term competitiveness (Budiarto, 2011). With its abundant natural resources, Indonesia actually has great potential to develop EBET. Although the Energy Law explicitly includes the term renewable energy, the government's policy implementation in maximizing the use of EBET and consistently reducing dependence on fossil fuels as the foundation for sustainable development has yet to show significant optimization.

Table 1. The difference between new energy and renewable energy in Indonesian regulations

	Energy Law	Law 30/2007	Government Regulation on National Energy Policy	Presidential Regulation 112/2022
Use of Phrases	Always use the phrase "new and renewable energy" as a single unit.	Also use the phrase "new and renewable energy".	Still use the phrase "new energy and renew able energy.	Switch only refers to "renewable energy".
The Position of New & Renewable Energy	Prioritized equally as energy sources that must be increased in utilization (Articles 20–21).	Established as a priority in electricity supply (Articles 6).	Made the basis for achieving the 23% energy mix target by 2025.	Becomes the main focus in electricity development, with pricing schemes and the obligation for PLN to purchase electricity from renewable.
Policy Orientation	Government is required to provide incentives, facilities, and support for research and development.	Its utilization must be prioritized, but with economic conditions must still be considered.	The main priority is renewable energy, while new energy (nuclear, coal liquid) are mentioned as additional options with caution.	Providing certainty pricing (feed-in tariff) and accelerating renewable energy investment.
Inconsistency / roblematic	There is no substantive distinction, even	Inconsistent with the mandate of the Energy Law	There is no clear line: new energy is still placed on	Paradox: despite emphasizing renewable energy,

though "new energy" can be based on modi fied fossil fuels (e.g., liquid coal, nuclear), unlike environmentally friendly "renewable energy."	(2007) which requires economic stimulus, thusappears contradictory.	par with renewable energy in the calculation of targets.	the Presidential Regulation still allows for the operation of coal fired power plants until 2050, thus lacking consistency with the spirit of decarbonization.

The EBET management paradigm in Indonesia still poses conceptual problems, as the terms new energy and renewable energy are often treated as if they have identical meanings (ICEL, 2021). In fact, when viewed from a legal definition, the two have fundamental differences. Article 1, point 4, of the Energy Law stipulates that new energy is energy obtained through the application of innovative technology, whether sourced from renewable energy or otherwise, including hydrogen, nuclear, liquefied coal, coal bed methane, and gasified coal. Conversely, renewable energy is defined as energy sourced from sustainable natural resources, as long as they are managed properly, including geothermal energy, bioenergy, wind power, solar radiation, water flow and waterfalls, and ocean dynamics and temperature differences. The main criticism is that by allowing non-renewable fossil resources under the new energy category, the legal framework undermines efforts to prioritize sustainable resources. Meanwhile, the concept of renewable energy emphasizes an orientation towards resources that are truly sustainable. Although they have distinct characteristics, the national legal framework treats both as equal development priorities, blurring the conceptual boundary between new and renewable energy in regulatory practice. This ongoing conceptual ambiguity continues to hinder the clarity and effectiveness of energy policy implementation in Indonesia.

The absence of regulatory distinctions between energy sources in Indonesia, specifically in the classification of EBET, has resulted in both being positioned equally as priority energy sources. As a result, both have the right to receive various forms of incentives and facilities. However, to ensure an effective energy transition, policy direction should prioritize the rapid and equitable development of environmentally friendly resources that can best support public welfare. Heffron & Cauley (2017), defines energy justice as the application of social and ecological rights in every aspect of the energy system. The principle of just transition also emphasizes ensuring justice and equity from the planning phase, through implementation, to a comprehensive evaluation that frames the entire transition process (Carley & Konisky, 2020). Nevertheless, Indonesia's transition implementation still faces serious obstacles (Permana, 2024). One major challenge is the high dependence on fossil fuels, especially coal, which remains the main pillar of national electricity supply (see Figure 1).

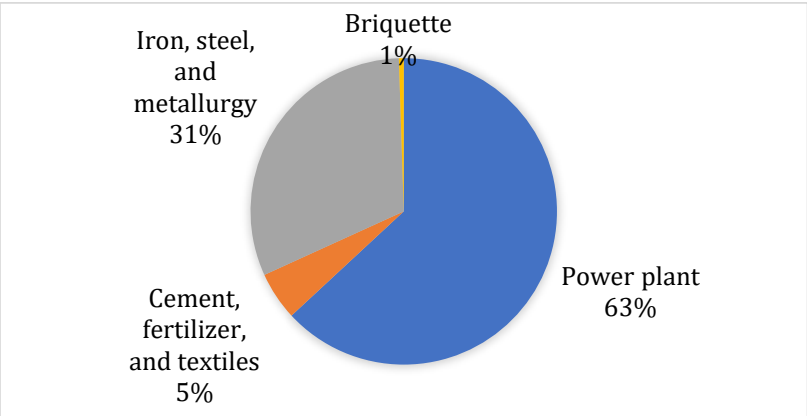

Fig. 1. Coal use by sector in 2023
(Permana, 2024)

In line with the dynamics of national legal developments, the Energy Law, which is oriented towards the energy transition agenda, has been further reinforced by the issuance of the Government Regulation on National Energy Policy. This regulation promotes the principles of energy management, including fairness, sustainability, and environmental awareness, with the aim of ultimately advancing Indonesia's energy independence and security (Siagian et al., 2022). The Government Regulation on National Energy Policy formulates more detailed and comprehensive objectives regarding the national determination to optimize independent energy utilization. The legal policy direction established in this norm focuses on strengthening the energy transition process in the future. As stated in Article 11, paragraph (1), letter a, the norm emphasizes energy development by considering economic aspects, security of supply, and ecological sustainability. To maintain energy economic balance, the development strategy is directed at optimizing the use of EBET by balancing cost efficiency and reducing dependence on petroleum. This target aims to achieve the national energy mix, in which EBET is expected to reach at least 23% by 2025 as a milestone in the energy transition. Thus, this regulation also provides a basis for the legitimacy of the Indonesian government's commitment to realizing a tangible and measurable energy transformation.

Although Government Regulation on National Energy Policy is intended to strengthen the direction of the national energy transition, its substance has actually sparked controversy because it contains fundamental contradictions that open the door to the legitimacy of fossil fuel sustainability. Upon closer inspection, this regulation includes terminology regarding the use of coal that is considered contrary to the legal policy framework being developed. Article 11, paragraph (1) letter a does indeed emphasize that energy development must take into account economic balance, guaranteed supply sustainability, and environmental protection. However, Article 11 paragraph (2) letter d explicitly places coal as the mainstay of the national energy supply. This provision provides a normative basis for the government to continue intensifying coal use, even though this clearly contradicts the spirit of the Energy Law, which, from the outset, has been directed toward energy independence and security through the optimization of renewable energy and the reduction of fossil fuel use.

Within the framework of Presidential Regulation No. 22 of 2017 concerning the National Energy General Plan/ *Peraturan Presiden tentang Rencana Umum Energi Nasional* (Perpres RUEN), as mentioned in Government Regulation on National Energy Policy, is listed as the last option in the hierarchy of priorities for national energy development. However, field practices show the opposite trend; coal remains the primary choice in Indonesia's energy strategy (Isaad, 2021). This fact is reflected in the existence of a massive coal pipeline network that is being prepared for operation with the full support of the government (see Figure 2). Regionally, Indonesia, together with Vietnam and the Philippines, has a combined capacity of nearly 45 GW from coal pipeline networks, projected to add to the load in the first half of this decade (Isaad, 2021). The controversy over the dominance of coal use remains unresolved and is even intensifying. The inconsistency of energy law and policy became increasingly apparent when the government implemented Government Regulation No. 22 of 2021 concerning the Implementation of Environmental Protection and Management (PP 22/2021), which provides leeway for fossil fuels. This can be seen in the explanation of Article 459, paragraph (3), letter c, which excludes Flying Ash and Bottom Ash (FABA) from the category of Hazardous and Toxic Waste/*Bahan Bebahaya dan Beracun* (B3). This type of regulatory formulation not only facilitates the continuation of fossil fuels but also ignores the principle of environmental preservation, which should be the spirit of sustainable energy policy.

The Figure 2 shows that Indonesia relies heavily on foreign financing for energy development. Much of this support comes from Japan through the Japan Bank for International Cooperation (JBIC) and from China through the Export-Import Bank of China (CHEXIM). Large projects, such as the Java 9 & 10 coal-fired power plants, have also received significant backing from the Export-Import Bank of Korea. These examples highlight that fossil fuel investments in Indonesia remain dependent on international financial schemes.

As a result, Indonesia faces legal and policy vulnerabilities. The national energy transition is exposed to the political dynamics and climate policies of donor countries.

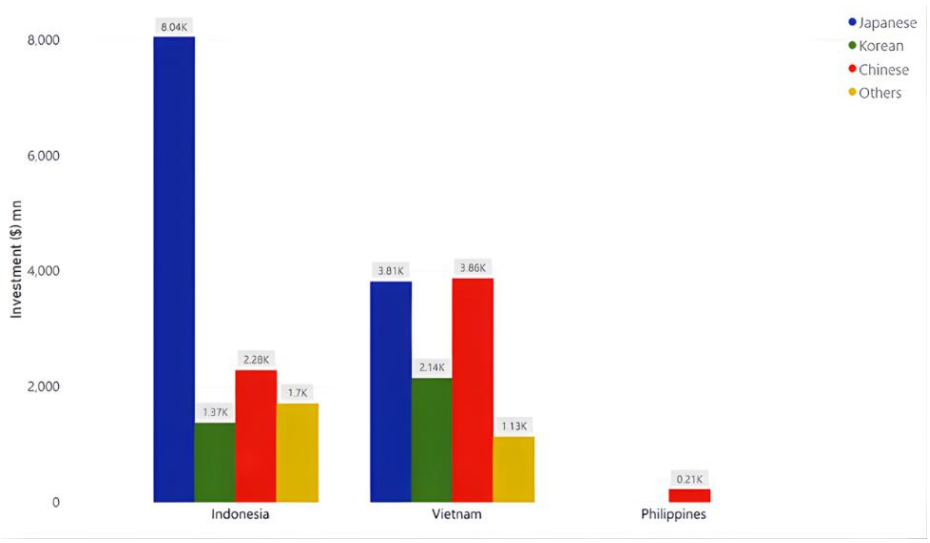

Fig. 2. Main sources of financing for coal pipeline projects in Southeast Asia (2021-2030) (Isaad, 2021)

The use of coal, which remains the mainstay of the national energy supply in the Government Regulation on National Energy Policy, is then explained in the National Energy General Plan as a last resort under the principle of energy development priorities. However, empirical evidence shows that Indonesia is still aggressively maximizing the potential of coal as a top priority. This is evidenced by the energy mix in 2023, which shows that coal is the highest priority at 41% (Figure 3). The high use of coal is intended as the main source of supply for power plants, as confirmed in the Minister of Energy and Mineral Resources Decree No. 301.K/MB.01/MEM.B/2022 concerning the 2022-2027 National Mineral and Coal Management Plan, which notes that in 2021, coal use for electricity/power plant needs reached 112.13 million tons, followed by metallurgical/smelter needs at 11.39 million tons, and the cement industry at 4.45 million tons.

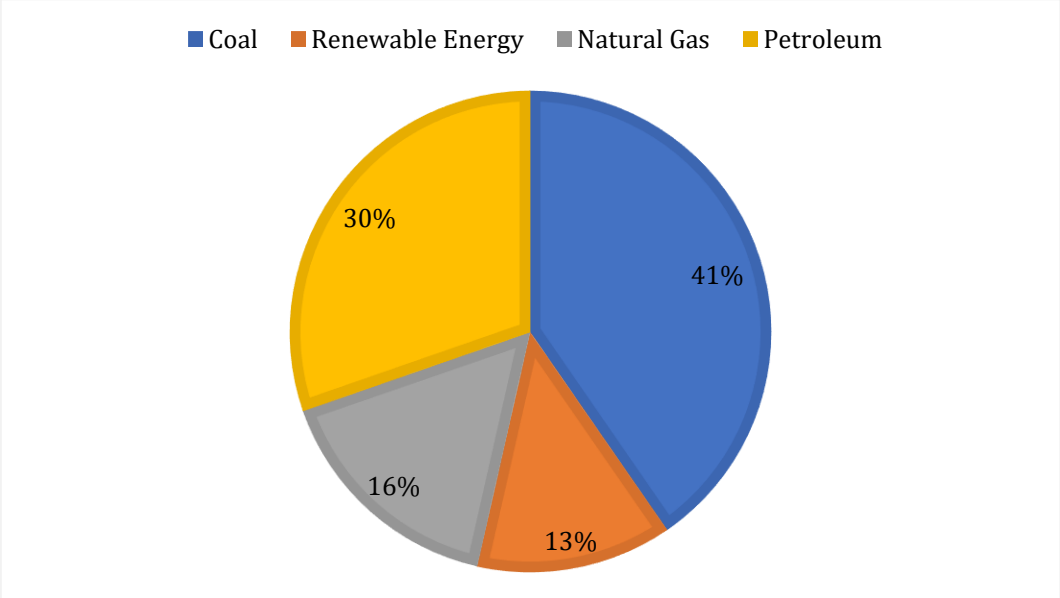

Fig. 3. Indonesia's energy mix in 2023 (Hastuti, 2024)

The EBET mix target has not been achieved, particularly the 23% target for 2025 as stipulated in the Government Regulation on National Energy Policy. The government has now revised the EBET mix target through the Revision of Government Regulation on National Energy Policy (Draft Government Regulation on National Energy Policy/*Rancangan Peraturan Pemerintah tentang Kebijakan Energi Nasional* or RPP KEN) (PWYP Indonesia, 2024). However, Draft Government Regulation on National Energy Policy actually shows fundamental inconsistencies. Instead of accelerating decarbonization, this document still maintains the dominance of fossil fuels, particularly coal and natural gas, for decades to come. This is reinforced by Trend Asia's (2024) critical notes, which strengthen this analysis (Trend Asia, 2024). First, the Draft Government Regulation on National Energy Policy does not prioritize the principle of energy democratization. The policy drafting process was carried out in an elitist manner, with inadequate public access to information, even though the direction of this policy will determine the national energy map until 2060. The lack of public participation has implications for potential violations of the right to living space, land grabbing, and multidimensional socio-ecological conflicts. Second, the Draft Government Regulation on National Energy Policy still allows the continued use of fossil fuels. Coal, for example, is projected to remain in use until 2060, while natural gas is promoted as a "transition bridge". However, in the global context, gas is increasingly being questioned because its methane emissions have a global warming impact 86 times greater than CO_2 over a 20-year horizon (International Energy Agency, 2022). This is contrary to international demands for a coal phase-out and more urgent climate crisis control targets.

Third, bioenergy is positioned as a transitional solution. This is mainly achieved through co-firing programs in coal-fired power plants and the construction of Biomass Power Plants/*Pembangkit Listrik Tenaga Biomassa* (PLTBm). However, this strategy creates new problems; deforestation, extra emissions from land-use change, conflicts with indigenous peoples and farmers, and disruptions to food security. Thus, bioenergy may be a "false solution" that prolongs dependence on coal-fired power plants. Instead of reducing carbon emissions, it risks maintaining the current system. Fourth, the EBET mix target has been weakened. It was previously set at 23% in the 2025 Government Regulation on National Energy Policy, but has now been lowered to 17-19%. This weaker commitment shows the government prefers changing targets over improving policies to boost renewable energy. These points indicate a compromising stance. Short-term fossil energy security is put above long-term environmental sustainability. From both legal and energy governance perspectives, the Government Regulation on National Energy Policy reflects a major contradiction. The government claims commitment to sustainability and climate justice. However, the policies maintain reliance on fossil fuels and promote false solutions that worsen the ecological crisis.

Furthermore, Presidential Regulation No. 112/2022 is seen as a legal basis for implementing the energy transition in Indonesia. One of its contents is a roadmap to accelerate the cessation of coal-fired power plant operations. This roadmap is formally outlined in sectoral planning documents. However, the drafting process faced various serious problems, particularly minimal public participation and a lack of transparency. These issues affected the quality and legitimacy of the intended transition roadmap. Access to participation is a prerequisite for ensuring a legal procedure in decision-making on energy justice. Presidential Regulation 112/2022 does not mandate the delegation of authority to the Minister of Energy and Mineral Resources for formulating technical mechanisms. As a result, the policy formulation process takes place without a clear operational framework to ensure transparency, accountability, and substantive participation (Adhinegara et al., 2024). This procedural vacuum creates the risk of policy disorientation, a closed formulation process, and mixnimal public control. These factors can hinder the realization of the fundamental objectives of Indonesia's energy transition.

The absence of a clear mechanism can be understood as neglecting procedural justice in energy justice, as Heffron (2024), notes. Procedural justice requires transparency, accountability, and genuine participation at every stage of energy-sector decision-making. Therefore, the energy transition roadmap should adhere to these principles. The

government must ensure that Indonesia's energy transformation is grounded in legal justice, environmental sustainability, public health, and socio-economic dimensions. Clear procedures are essential for consistent planning, as shown in existing documents. These include Presidential Regulation No. 1 of 2014 on the National Energy General Plan, Minister of Energy and Mineral Resources Regulation No. 8 of 2021 on procedures for the National and Regional Electricity Master Plan, and Minister of Energy and Mineral Resources Regulation No. 10 of 2019 on procedures for the Electricity Supply Business Plan. The presence of these regulations underscores the importance of a structured procedural framework for energy planning to avoid conceptual errors and inconsistencies during implementation.

Based on the mandate contained in Article 3 of Presidential Regulation 112/2022, the government operationalized this authority by issuing Minister of Energy and Mineral Resources Regulation No. 10 of 2025 concerning the Road Map for Energy Transition in the Electricity Sector (Permen ESDM 10/2025). This regulation details the stages of coal-fired power plant phase-out by classifying a number of strategic steps, including Table 2.

Table 2. Steps in the process of early retirement for coal-fired power plants based on ESDM Regulation No. 10/2025

Process Stages	Description
ImplementationCCS/CCUS and Coal Fired Power Plants Restrictions	Integration of Carbon Capture and Storage (CCS) and Carbon Capture, Utilization, and Storage (CCUS) technologies in certain sectors, accompanied by the cessation of new Coal Fired Power Plants construction
Natural Retirement of Coal Fired Power Plants and Application of CCS/CCUS	Gradual cessation of coal-fired power plant operations through natural retirement mechanisms, while implementing CCS/CCUS in strategic sectors to reduce carbon emissions.
Continuing Natural Retirement of Coal-Fired Power Plants	The next phase of the natural retirement program for coal-fired power plants, accompanied by the transition to cleaner and more sustainable energy sources.
Expansion of Retirement	Expansion of Coal Fired Power Plants decommissioning to be replaced by environmentally friendly power plants or through the application of CCS/CCUS as a carbon emission reduction instrument.

(Saleh et al., 2025)

The Indonesian government has designed various technological strategies to reduce carbon emissions without compromising national energy security. One commonly proposed approach is CCS/CCUS. This technology is considered a transitional alternative to reduce CO_2 emissions from coal-fired power plants. Coal remains a dominant part of the national energy mix. However, CCS/CCUS in Indonesia is still in the research and trial phase. The investment costs are very high, and its effectiveness is not yet widely tested. Making CCS/CCUS the main gateway to the energy transition could delay, rather than accelerate, the phase-out of coal-fired power plants. Adding a natural retirement scheme for these plants, combined with CCS/CCUS in specific sectors, shows that coal-fired power plants will likely operate in the long term. There is still no certainty about when they will be phased out.

This situation not only prolongs dependence on coal-fired power plants but also reinforces the dominant role of fossil fuels in the national electricity system. In the next phase, natural retirement and expansion of the retirement scheme suggest movement toward phasing out plants, but progress is slow. The heavy dependence on coal-fired power plants and weak regulatory support burdens this process. This gradual phase-out model weakens the urgency to accelerate the energy transition and allows policies to keep favoring fossil-based economic expansion. As a result, renewable energy development as a substitute for coal-fired plants has been delayed. Both the government and state-owned energy

companies, such as PLN, still prefer long-term strategies that are costly and not fully proven to be effective.

3.2 The urgency of introducing the new energy and renewable energy bill in the context of justice

In discussing Indonesia's transition to EBET, fairness is the most crucial dimension. This is important because without efforts to ensure energy justice, not all parties will feel the benefits equally (Carley & Konisky, 2020). The dimension of justice in energy aims to ensure that the distribution of benefits in energy and climate policies places social justice and equity as a support for economic development for individuals and communities negatively affected by the transition to renewable energy sources. The definition of energy justice is the application of human rights principles throughout the entire energy cycle, from extraction, production, and operation (including distribution) to consumption, waste, and decommissioning (Heffron, 2022). In academic literature and practice, five principles have been identified that, if implemented consistently, are believed to be able to realize a just energy system. The five principles include; procedural justice, distributive justice, restorative justice, recognition justice, and cosmopolitan justice (Heffron, 2024). In short, these principles provide a conceptual framework to ensure that energy policies are not only technically and economically effective, but also socially and ecologically just.

To ensure a just energy transition in Indonesia, a regulatory framework is needed. This framework should provide legal certainty during the dynamic transition from fossil fuels to clean energy. Currently, the legal instrument being prepared is the EBET Bill. It has the status of ius constituendum, or aspirational law, and primarily focuses on renewable energy development (Louhenapessy & Nurseha, 2023). Article 3, letter b, of the EBET Bill states that EBET implementation aims to replace non-renewable energy sources. This process should be measured, gradual, and rational, while ensuring balance between demand and supply. It also considers the readiness of the national electricity infrastructure. This formulation confirms EBET's role as the foundation of sustainable development. It is projected to drive national economic growth and increase competitiveness in Indonesia's industrial and trade sectors. However, the EBET Bill still includes coal as a new energy source in derivative forms such as coal liquefaction, coal bed methane, and coal gasification. This inclusion causes normative tension. It contradicts the principles of usefulness, efficiency, sustainability, and environmental friendliness. These principles should be the main pillars when drafting clean energy regulations.

Indonesia can use Germany's experience as a reference, especially since the EBET Bill still has fundamental weaknesses: it does not truly accommodate the development of new energy but instead opens the door to the continued use of fossil fuels such as coal and nuclear energy. This formulation clearly contradicts the mandate of the Environmental Law, which explicitly requires that every regulation, at both the central and regional levels, be based on the principles of environmental protection and management (Alidrus & Naufal, 2025). The energy transition policy in Germany is also designed to prioritize social dialogue, the provision of special funding, the formation of commissions and working units that function as management bodies, the application of multi-level governance, and the development of new infrastructure. This certainly includes the phasing out of coal mining and the provision of direct support for affected workers, as a vision for the direction of transition, the active involvement of stakeholders through social dialogue, a strong commitment from the government, the existence of the German Coal Commission as a special management body, and a special funding mechanism in the form of a Just Transition Fund (Lestari & Inayah, 2023).

The elements of a just energy transition have begun to be considered, albeit implicitly, in Indonesian regulations. Examples include Article 7 of the Energy Law and Article 1 of Government Regulation 22/2022, which discuss energy management in a just manner. Currently, mitigation efforts in the energy sector focus solely on accelerating the adoption of renewable energy and increasing energy efficiency. However, details on employment, a

dimension of justice in the energy transition, remain very limited. Therefore, it is very important to consider aspects of social inclusion and equality in the transition phase in Indonesia. The basis for this urgency is strongly legitimized by Article 33 paragraph (3) of the 1945 Constitution and Article 2 paragraph (1) of Law No. 5 of 1960 concerning Basic Agrarian Principles, which stipulates that all natural resources are under the authority of the state and must be utilized as much as possible for the welfare of the people. In line with this, the Energy Law also considers energy resources an integral part of natural resources, the management of which must be in the public interest. All of these norms emphasize that the government is essentially an extension of the people, with the obligation to manage natural resources for the people's benefit. Thus, incorporating the element of "justice" into energy transition governance will enable the EBET Bill to better accommodate the interests of the people in a more tangible and equitable manner.

3.3 Coal, air pollution, and the urgency of ecological justice in the formulation of the climate justice bill in Indonesia

Coal is an abundant fossil fuel that accounts for around 38% of global electricity generation (International Energy Agency, 2022). A report published by the Central Statistics Agency in December 2020 shows that, from 2015 to 2019, coal ranked second in final energy consumption, accounting for 20,79 terajoules out of a total of 100 terajoules in 2019. This shows inconsistency. The government, in implementing the objectives set out in the RUEN Presidential Regulation, states that coal is the "last resort" in the principle of national energy security. The use of coal as a fossil fuel source in power plants is inherently contrary to the principle of sustainable energy. Emissions from coal-fired power plants have long been the focus of atmospheric research, including studies related to air quality around power plant installations. An IEA report even notes that coal accounts for about 44% of total global CO_2 emissions (International Energy Agency, 2022).

Based on national primary energy mix data for 2015-2019, comparing the growth of coal and renewable energy shows an imbalance: coal increased faster than renewable energy. In the 2015 2019 period, the use of coal as primary energy increased by 9.17%, while new and renewable energy only increased by 4.75%. This is quite unfortunate, as in 2014, through the Government Regulation on National Energy Policy, the government set a target for Indonesia to achieve 23% of national renewable energy by 2025 (Khan, 2022). Coal combustion is a major contributor to GHG emissions, which accelerate the climate crisis and worsen air quality. This process produces a variety of hazardous pollutants, ranging from sulfur dioxide, nitrogen oxides, and carbon monoxide to heavy metals such as mercury and fine particulates, which have a serious impact on public health. Air pollution is known as a silent killer, with coal combustion contributing significantly to 3 million premature deaths globally. The consequences include an increased risk of lung cancer, stroke, cardiovascular disorders, and various respiratory diseases (Andriyanu, 2024). Future estimates indicate that the death toll could reach approximately 15,700 lives per year, in line with efforts to build new coal-fired power plants. Meanwhile, WHO data from 2018 shows that air pollution contributes to approximately 7 million deaths annually worldwide. Particulate pollution is one of the most serious environmental health threats, both globally and in Indonesia. In 2019, for example, particulate pollution was recorded as the cause of around 107,000 deaths in Indonesia alone (Andriyanu, 2024).

One important source of air pollution from coal-fired power plants is fly ash, a major component of coal combustion products (CCPs), also known as coal ash. When coal is burned to produce energy, CCPs such as fly ash, bottom ash, boiler slag, and flue gas desulfurization agents are generated. Research shows that one ton of coal ash is produced for every four tons of coal burned (Baig & Yousaf, 2017). Coal with high ash content produces more coal ash. In this study, we focus on fly ash, which constitutes the majority of CCP, representing approximately 40-90% of the total product (Dwivedi & Jain, 2014). Fly ash is produced when pulverized coal is blown into the combustion chamber (Zierold &

Odoh, 2020). Inside the combustion chamber, the pulverized coal burns, producing heat and molten mineral residue (Jambhulkar et al., 2018).

Globally, fly ash is considered a toxic waste that poses an environmental threat. As for particle exposure, fly ash in humans is often linked to serious health disorders, including respiratory diseases and cardiovascular disorders (Bourliva et al., 2020). However, through PP 22/2021, regulations regarding fly ash as hazardous waste have recently been abolished. This is unfortunate because many compounds are harmful to the environment and humans. Fly ash, when considered hazardous waste, can be used beneficially, but removing it from the hazardous waste category raises concerns that waste management will not comply with previous standards. If not managed properly, fly ash can harm the environment and communities around mines, for example, due to high environmental costs. The annual losses from cross-border pollution from coal-fired power plants in the Greater Jakarta area are projected to reach around IDR 5.1 trillion (Qodriyatun, 2021).

The definition of environmental cost was proposed in 1998: the total cost of repairing environmental damage caused by a company's production activities, plus other related costs required to achieve the objectives. Environment (Zeng et al., 2019). Modern society has experienced environmental pollution, and attention must be paid to environmental impacts when developing the economy. Environmental prevention costs refer to the costs associated with reducing pollutant emissions before coal-fired power plants pollute the environment (Zeng et al., 2019). In the context of addressing climate change, relevant national laws and regulations set increasingly high environmental protection requirements for companies, and environmental pressure on companies has increased sharply. At the same time, the development of new energy has also had a significant impact on traditional coal-fired power plants. If coal-fired power companies want to develop better, they cannot passively respond to new national environmental protection regulations. They must start within the company to prioritize environmental protection to achieve a win-win between the economy and the environment.

Ecological justice theory is a concept of justice that attends to the fulfillment of justice for both living and non-living organisms in the environment. John Rawls' view on ecological justice holds that there are two principles of justice: the equality of environmental rights for everyone within and between generations, and compensation for communities affected by environmental damage, with the greatest value. Brian Baxter also explains that ecological justice embodies the concept of distributive justice. To realize distributive justice, several concepts of justice must be fulfilled, namely; First, Justice that can only be felt by a group of beings who work together to create that justice; second, the transfer of property rights to the subjects receiving justice; third, the existence of a reciprocal relationship between the beneficiaries of justice (Baxter, 2004).

However, looking at the various paradigms explained, the government's inconsistency in implementing EBT in Indonesia can impact ecological injustice as follows, (1) unequal environmental burden, coal-fired power plants contribute significantly to pollutants such as SO2, PM10, and NOx. Communities living near these plants, mainly vulnerable groups, bear the heaviest impact. A 2018 WHO report noted that air pollution causes about 7 million deaths yearly. (In concept, this fails the first element of ecological justice because there are no shared benefits, only new problems that harm others.); (2) neglect of the right to a healthy environment, the continued reliance on coal denies citizens their constitutional right to a decent and healthy environment. The government's actions also disregard the principle of environmental preservation. (This does not fulfill the second element of ecological justice, as the right to a livable environment is unmet due to fossil fuel pollution.); (3) energy transition anomaly, data show that renewable energy use in Indonesia has increased alongside coal consumption. This anomaly reveals that the energy transition has not reduced reliance on fossil fuels. The aim of a 23% renewable energy mix by 2025 is likely to remain unrealized, reduced to mere normative discourse. If fossil fuels continue to be used, long-term environmental management will not be achieved.

In addition to ecological justice, the fifth principle of Pancasila establishes values of social justice. Article 28H, paragraph (1) of the 1945 Constitution reinforces this, making

the state responsible for guaranteeing the welfare and human rights of its citizens (Pakpahan & Sihombing, 2018). One of these rights is the right to a decent and healthy environment, which the state must protect. This environment means a space where humans and other living things can grow and develop in balance and harmony. Therefore, the state must work continually to improve and maintain environmental quality for its citizens (Angga, 2024). Although guaranteed by law, in reality, there are various human rights violations, including in the environmental sector. This can be interpreted as a serious threat to civilization (Angga, 2024).

If this is allowed to continue, these violations could trigger a domino effect, resulting in the accumulation of other violations, including economic, social, and cultural rights, and even civil and political rights. Therefore, environmental issues should be viewed as the foundation for the fulfillment of human rights as a whole, including in the environmental field (Angga, 2024). According to Husein (1993), there are two main human perspectives on the environment. The first perspective is immanent, in which human life is still simple and the environment exists alongside it, giving rise to the development of mythical or mystical customs in society (Husein, 1993). The second perspective is transcendent, which positions humans as having determined and mastered technology through the development of science, causing a shift in values related to human interaction with the environment (Husein, 1993).

This transcendent view causes environmental damage. It leads humans, who aim to fulfill their needs and pursue technological growth, to shift from preserving natural values to exploiting them. For example, coal-fired power plants not only fail to uphold ecological justice but also contribute to climate change. They also violate the right to a healthy environment. Coal mining causes environmental harm, increases carbon emissions, and affects nearby communities. These issues show why revisions and reviews are needed to ensure everyone has the right to a healthy environment grounded in ecological justice. To ensure this right and uphold ecological justice, Indonesia must enact a law that incorporates climate justice principles, such as a Climate Justice Bill. Climate justice helps protect basic human rights, like the right to life and a healthy environment. The rising number of climate disasters, which have harmed and displaced millions, underscores the urgency of this issue. This is not just about the environment; it is also a violation of citizens' constitutional rights (WALHI, 2023).

The Climate Justice Bill aims to protect the right to a healthy environment and uphold ecological justice (WALHI, 2023). First, Social Justice-Based Mitigation ensures emission reductions do not harm community welfare or ecosystems. Second, Community Resilience Adaptation requires strategies to strengthen the adaptive capacity of communities, especially vulnerable groups, by leveraging local knowledge and needs. Third, Loss and Damage Recovery Mechanisms mandate the calculation and compensation of climate change-related losses and damages. Fourth, Strong Law Enforcement ensures communities have access to justice to demand legal accountability for increased greenhouse gas emissions and to support vulnerable communities. These four key points must be fully integrated into the Climate Justice Bill to secure the right to a decent, healthy environment in line with ecological justice.

4. Conclutions

The energy transition in Indonesia faces significant obstacles due to the country's reliance on coal as its primary energy source. This is caused by inconsistencies in energy regulations that have allowed coal to remain the backbone of the national energy sector. However, Indonesia's position as a party to the Paris Agreement requires concrete steps to reduce carbon emissions, one of which is intensifying the development of renewable and clean energy. The energy transition from fossil fuels to renewable energy requires a robust legal framework to ensure fairness throughout the transition. In Indonesia, the energy transition has been mandated through Government Regulation on National Energy Policy, RUEN Presidential Regulation, and Presidential Regulation 112/2022, which contain a

vision for renewable energy development. However, in reality, the Indonesian government continues to maintain coal-fired power plants until 2050 and even opens the door to technologies such as CCS/CCUS, which could prolong coal's dominance and delay the transition to renewables.

On the other hand, the ecological impact of coal use, particularly through air and water pollution that threatens public health, certainly requires an ecologically fair legal framework. The removal of the B3 waste category from fly ash and bottom ash has demonstrated the legal framework's lack of commitment to protecting the environment and affected communities. Constitutionally, Article 18H paragraph (1) of the 1945 Constitution obligates the state to protect the right to a good and healthy environment. Therefore, a Climate Justice Bill is needed that not only emphasizes mitigation and adaptation to climate change, but also provides guarantees for the fair distribution of burdens and benefits, including a loss and damage mechanism for affected communities. Thus, the urgency to introduce the EBET Bill and the Climate Justice Bill will serve as an important foundation for transforming energy transition law in Indonesia, as well as an answer to the regulatory paradox in realizing an energy transition that is fair, sustainable, and in favor of future generations.

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The authors declare no conflict of interest.

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