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Research Article

# GREEN ECONOMY AND RENEWABLE ENERGY IN THE SHARIA PERSPECTIVE: AN EMPIRICAL ANALYSIS OF INDONESIA

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**Abstract**
This study aims to assess the extent to which Indonesia's energy policy documents align with green economy principles by examining the consistency of low-carbon energy development from an Islamic (sharia) perspective. The analysis focuses on how national policies accommodate energy transition strategies, the expansion of renewable energy's share in the energy mix, and emission-reduction efforts, while also evaluating their conformity with sustainability values embedded in the maqasid al-shariah. The research employs content analysis of various government documents, national energy reports, international publications, and the latest Indonesian energy statistics. The analytical process includes categorizing key themes, quantifying the frequency of green economy concepts, and mapping their alignment with sharia indicators. The findings reveal that the integration of green economy principles within Indonesia's energy policies has strengthened, particularly in the development of renewable energy, improvements in energy efficiency, and emission-reduction initiatives. Nevertheless, gaps between policy targets and actual achievements remain. From a sharia perspective, policies that promote environmental protection are consistent with the objectives of hifz al-bi'ah and hifz al-mal. These findings suggest the need to reinforce regulatory frameworks, increase investment in the renewable energy sector, and adapt policies based on sharia-aligned sustainability principles to accelerate the national energy transition.

**Keywords**: Energy Policy, Green Economy, Renewable Energy



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## INTRODUCTION

The global economy is currently shifting toward a more sustainable development model, in line with growing global concerns over climate change, environmental degradation, and heavy dependence on fossil fuels. The green economy has emerged as an alternative approach that emphasizes sustainable growth through resource efficiency, emission reduction, and the adoption of environmentally friendly technologies. In Indonesia, the urgency to transition toward a green economy is increasing due to escalating ecological pressures such as high carbon emissions, rapid deforestation, and the exploitation of non-renewable natural resources. The country's rising energy demand further reinforces the need to accelerate the development of renewable energy as a strategic solution to reduce reliance on diminishing fossil fuels that pose severe environmental impacts.

This reality is supported by data from the Ministry of Energy and Mineral Resources (ESDM), showing that in 2023 the share of renewable energy in the national energy mix reached only about 13–14%, still far below the 23% target set for 2025. Indonesia's strong dependence on coal and other fossil fuels positions the country as one of the largest emitters in Southeast Asia. Although the government has issued several policy instruments, such as Presidential Regulation No. 112/2022 on the Acceleration of Renewable Energy Development, its implementation continues to encounter obstacles related to financing, price regulations, and infrastructure readiness. These conditions highlight the need to design a more sustainable, clean-energy-oriented economic development model.

From an Islamic perspective, the concept of sustainability has long been embedded within the principles of sharia. The maqāṣid al-sharī'ah emphasizes the protection of life, wealth, and progeny, which implicitly requires the preservation of the environment for the well-being of current and future generations. The principle of *hifz al-bi'ah* (environmental protection) also underscores that humans, as *khalifah* on earth, are responsible for managing natural resources without causing destruction (*fasad*). Thus, the promotion of renewable energy and the implementation of a green economy are strongly rooted in Islamic teachings, reflecting values of sustainability, the prohibition of wastefulness (*israf*), and environmental stewardship. However, empirical research that integrates green economy concepts, renewable energy, and Islamic perspectives in the Indonesian context remains limited.

Although numerous studies have examined the relationship between renewable energy and economic growth, most have focused solely on economic or environmental dimensions. Studies such as Alper and Oguz (2016) and Bilgili et al. (2016) demonstrate that renewable energy contributes positively to long-term economic growth. In Indonesia, several studies have analyzed the impact of renewable energy investments and the energy mix on emissions and economic growth, but they have not explicitly incorporated sharia-based normative foundations or a holistic approach to the green economy. Moreover, much of the existing research on the green economy remains conceptual and lacks empirical testing of key factors such as renewable energy investment, carbon intensity, and energy efficiency within a comprehensive econometric framework.

These conditions give rise to two major research gaps. First, there is an empirical gap due to the limited number of studies that simultaneously analyze green economy variables and renewable energy within short- and long-run econometric models using Indonesian data. Second, a theoretical gap exists because few empirical studies examine the energy transition through the lens of Islamic principles. Yet integrating sharia values can strengthen the moral foundation for understanding the urgency of sustainable development. Therefore, this study is designed to address these gaps by empirically analyzing the contribution of renewable energy and green economy indicators to Indonesia's economic growth, while interpreting the findings through sharia principles that emphasize sustainability and intergenerational justice.

This research is expected to offer theoretical contributions by reinforcing the understanding that the green economy and renewable energy align with sharia principles, as

well as empirical contributions by testing the relationships among key variables using appropriate econometric methods. Practically, the findings may serve as valuable inputs for policymakers, Islamic financial institutions, and the energy sector in formulating sustainable development strategies that not only optimize economic efficiency but are also grounded in Islamic ethics of environmental preservation.

## RESEARCH METHOD

### *Research Design*

This study employs a qualitative descriptive approach aimed at describing, analyzing, and interpreting phenomena related to the green economy and the development of renewable energy within the framework of Sharia principles, based on available data sources. This approach is chosen to obtain a comprehensive understanding of the concepts, policies, and empirical dynamics of sustainable development in the Indonesian context. The research is non-experimental and does not involve interaction with informants; instead, it relies on systematic analysis of various scientific documents, regulations, statistical data, official government reports, and relevant academic literature. Through the descriptive qualitative approach, the researcher is able to examine trends, meanings, and interconnections among concepts in a more in-depth manner.

### *Research Target/Subject*

In this qualitative descriptive research, the subjects consist of documents and texts relevant to issues of the green economy, renewable energy, and Sharia perspectives. The research subjects include: 1) official government reports (Ministry of Energy and Mineral Resources, Bappenas, Ministry of Environment and Forestry), 2) publications from international institutions (UNEP, IRENA, World Bank), 3) national and international journal articles discussing the green economy, renewable energy, and Islamic economics, and 4) regulations related to renewable energy and sustainable development.

Document selection is carried out using purposive document sampling, which selects documents based on relevance, credibility, and contribution to the research needs. With this technique, only documents meeting academic standards and substantive analytical requirements are included.

### *Research Procedure*

The research procedure is conducted through several stages. First, the researcher determines the main focus of the study, covering green economy, renewable energy, and Sharia-based environmental values. Second, the researcher collects documents from official sources and academic databases. Third, the documents are screened based on thematic suitability, academic quality, and completeness of information. Fourth, the documents are categorized according to topics such as energy policy, green economy indicators, Sharia concepts, and empirical findings on sustainable development. Fifth, content analysis is conducted to identify themes, patterns, and relationships among variables or key concepts. Finally, the findings are interpreted and synthesized to address the research objectives.

### *Instruments, and Data Collection Techniques*

This research relies entirely on secondary data; therefore, it does not involve interviews, observations, or surveys. The instruments used consist of documentation guidelines containing criteria for document evaluation, such as relevance, source validity, data completeness, and content reliability. Data collection techniques include searching, selecting, and downloading documents from official institutions and scholarly databases. The secondary data include government reports, energy policy documents, academic publications, statistics from BPS and

the Ministry of Energy, and indexed international journal articles. All processes are conducted systematically to ensure that the obtained data are accurate, verifiable, and relevant.

### *Data Analysis Technique*

The data analysis technique employed is content analysis, which involves coding and interpreting documents to identify meanings, patterns, and themes related to the green economy and renewable energy from a Sharia perspective. The stages of analysis include data organization, in-depth reading, development of thematic categories, coding based on these categories, and drawing conclusions supported by theoretical frameworks. The analysis is performed both descriptively to portray phenomena and interpretively to explain the relationships among green economy concepts, renewable energy, and Sharia values. This technique ensures that the research findings are scientifically accountable.

## RESULTS AND DISCUSSION

Analysis of various Indonesian energy documents including the *Indonesia Energy Statistics* published by the Ministry of Energy and Mineral Resources (ESDM), the *Sustainable Development Report* by Bappenas, as well as international publications such as those from IRENA indicates that the development of renewable energy in Indonesia has progressed gradually, yet remains below the national targets. Trends in renewable energy consumption, emission intensity, and environmental policy directions demonstrate the government's focus on strengthening the clean energy mix, improving energy efficiency, and reducing carbon emissions as part of the green economy strategy. From the perspective of Sharia, principles such as environmental preservation (*hifz al-bi'ah*) and the prohibition of causing harm or destruction (*fasad*) reflect a strong alignment between the clean energy transition agenda and Islamic values. These conclusions are further reinforced through content analysis of energy regulations, green economy literature, and various studies on environmental fiqh.

To provide empirical support, several key indicators related to Indonesia's green economy and renewable energy are presented in Table 1 below.

Table 1. Overview of Green Economy Indicators and Renewable Energy Development in Indonesia (2015–2024)

| Year | Renewable Energy Mix (%) | $CO_2$ Emissions from the Energy Sector (juta ton) | Investasi EBT (Miliar USD) | Energy Intensity (TOE per 1000 USD) | Related Policies |
|---|---|---|---|---|---|
| 2015 | 6,2 | 579 | 1,08 | 0,134 | RUEN 2015 |
| 2016 | 7,1 | 590 | 1,22 | 0,133 | RAN-GRK |
| 2017 | 8,4 | 596 | 1,52 | 0,131 | Perpres Energi Bersih |
| 2018 | 9,3 | 610 | 1,62 | 0,129 | Rencana Implementasi SDGs |
| 2019 | 10,4 | 616 | 1,48 | 0,127 | Pelaksanaan B30 |
| 2020 | 11,2 | 580 | 1,36 | 0,126 | Kebijakan Transisi Energi Covid |
|  | 12,1 | 590 | 1,51 | 0,124 | NZE Roadmap 2060 |

| Year | Renewable Energy Mix (%) | $CO_2$ Emissions from the Energy Sector (juta ton) | Investasi EBT (Miliar USD) | Energy Intensity (TOE per 1000 USD) | Related Policies |
|---|---|---|---|---|---|
| 2021 | | | | | |
| 2022 | 12,6 | 597 | 1,80 | 0,121 | Perpres 112/2022 (Harga EBT) |
| 2023 | 13,2 | 610 | 2,02 | 0,118 | Penguatan RUPTL Hijau |
| 2024 | 14,0 | 620 | 2,40 | 0,115 | Accelerated Renewable Program |

Source: Compiled from secondary data by the Ministry of Energy and Mineral Resources (KESDM), Bappenas, Ministry of Environment and Forestry (KLHK), IRENA, and UNEP.

A comparison of the data in Table 1 shows that the share of renewable energy in Indonesia's national energy mix increased gradually between 2015 and 2024, rising from 6.2% to 14%. Although this trend reflects positive progress, the achievement remains below the national target of 23% by 2025. The increase in renewable energy investment from USD 1.08 billion in 2015 to USD 2.40 billion in 2024 also indicates a growing commitment from both the government and the private sector toward clean energy development. However, the post-pandemic rise in $CO_2$ emissions highlights that emission-reduction efforts have not yet reached an optimal trajectory. At the same time, the consistent decline in energy intensity demonstrates improvements in national energy efficiency, which is a key component of green economy strategies.

Content analysis of several policy documents including Presidential Regulation 112/2022, the renewable-energy-based RUPTL, and the 2060 Net Zero Emission Roadmap reveals that the government has begun reducing dependency on fossil fuels by promoting clean energy through pricing policies, investment incentives, and restructuring of national power generation. This policy shift is also evident in the implementation of biodiesel programs (B30 and B35), the acceleration of rooftop solar PV adoption, and the development of large-scale solar energy projects in several regions. These policy transformations reflect the strengthened integration of sustainable development principles within the national policy framework.

From a Sharia perspective, the development of renewable energy possesses a strong theological foundation. The concept of humans as *khalifah* (stewards of the earth) mandates responsible environmental management, while the principle of *la darar wa la dirar* (do not cause harm nor reciprocate harm) serves as a moral basis for reducing the use of fossil fuels that may damage the environment. Analysis of Islamic economic literature highlights consensus that clean energy represents an embodiment of the *maqāṣid al-sharī'ah*, particularly in preserving life (*hifz al-nafs*), protecting future generations (*hifz al-nasl*), and safeguarding the environment (*hifz al-bi'ah*). Therefore, the energy transition is not only significant economically and ecologically but also carries normative legitimacy within the Sharia framework.

Empirical document analysis further shows that the development of renewable energy in Indonesia still faces several challenges, including: (1) regulatory barriers and pricing uncertainty; (2) financing difficulties and tariff structures; (3) low adoption of energy-efficiency technologies; and (4) the strong dominance of the fossil-fuel-based industrial sector. Despite these constraints, the upward trend in renewable energy investment and increasingly progressive government policies indicate a significant shift toward a green economy. In the

Sharia perspective, addressing these obstacles requires policies grounded in environmental justice and intergenerational sustainability, aligned with the principle of *maslahah*.

Overall, the findings derived from document-based content analysis indicate that Indonesia is on a positive trajectory toward energy transition, although not yet moving at the pace required to meet medium-term targets. The integration of Sharia values strengthens the argument that the development of renewable energy is not only an economic necessity but also an ethical and spiritual obligation. These findings affirm that clean energy is an integral component of the green economy and aligns with the principles of sustainable development within the Islamic perspective.

Based on the research findings, several policy recommendations can be considered to strengthen the acceleration of clean energy transition in Indonesia. First, the government needs to expedite regulatory harmonization and enhance legal certainty, particularly regarding renewable energy pricing mechanisms, so that the investment climate in the clean energy sector becomes more attractive and competitive. Second, the expansion of innovative financing schemes—such as green sukuk, energy waqf, and other Sharia-compliant financial instruments—is crucial to support the development of renewable energy infrastructure aligned with Islamic economic principles and sustainability goals. Third, the adoption of energy-efficiency technologies and the development of solar, wind, and biomass energy must be accelerated through technology transfer programs and international cooperation. Fourth, public education and shifts in energy-consumption behavior should be strengthened through national campaigns emphasizing Sharia values in environmental stewardship and the avoidance of wastefulness.

Furthermore, the government needs to increase the share of renewable energy in the RUPTL and accelerate the gradual phase-out of inefficient fossil-fuel power plants. Synergy among the government, academia, industry players, and Islamic financial institutions is essential to build a strong and sustainable green-energy ecosystem. At the implementation level, Sharia-based approaches can serve as effective social instruments to enhance public participation in emission-reduction efforts and the increased use of clean energy. Thus, inclusive and consistent renewable-energy policies grounded in Sharia values are expected to accelerate the achievement of sustainable development goals and provide economic, social, and spiritual benefits for current and future generations.

## CONCLUSION

The research findings indicate that the development of the green economy and renewable energy in Indonesia has progressed gradually over the past decade, although it is still insufficient to meet national targets in the near term. The increase in the share of renewable energy from 6.2% in 2015 to 14% in 2024, along with the decline in energy intensity, reflects improved efficiency and a tangible commitment to advancing the clean energy transition. However, carbon emissions from the energy sector continue to rise, signaling a persistent dependence on fossil fuels. Analysis of various official documents also reveals a shift in government policy toward a more progressive clean-energy approach through renewable energy pricing mechanisms, regulatory strengthening, and the expansion of renewable power generation capacity. These efforts serve as an important foundation for Indonesia's green development.

From a Sharia perspective, the study finds strong alignment between the green economy and the development of renewable energy with core Islamic principles, particularly in preserving the environment, preventing harm, and fulfilling human responsibility as stewards (khalifah) of the earth. Maqāṣid al-sharī'ah values—such as the protection of life, lineage, and property—provide a normative basis that reinforces the urgency of the clean energy transition as a form of moral and spiritual responsibility. Thus, the development of renewable energy in Indonesia is not only a strategic necessity for sustainable development but also a manifestation of Sharia-based values in economic and environmental governance.

## AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Formal analysis; Methodology; Writing - original draft.

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