



Evaluation of Environmental Policy in Encouraging Renewable Energy Investment

Mas Subagyo Eko Prasetyo¹; Mas Rara Tri Retno Herryani²

¹ Faculty of Law, National, National University, Indonesia

² Faculty of Law, Kadiri University, Indonesia

<http://dx.doi.org/10.18415/ijmmu.v11i6.5840>

Abstract

Climate change is a major challenge of the 21st century caused by increasing greenhouse gas emissions due to human activities. An effective solution is to switch from fossil fuels to renewable energy such as solar, wind, water and biomass energy. Renewable energy not only reduces carbon emissions, but also offers many additional benefits, including sustainability and resilience to climate change. As developed countries begin to reduce CO₂ emissions through environmentally friendly technologies and energy efficiency, developing countries face a dilemma between economic growth and reducing CO₂ emissions. Indonesia has large renewable energy potential, but the level of utilization is still low. To achieve net zero emissions (NZE) by 2060, Indonesia needs to expand the use of renewable energy. Policies such as RAN GRK and RAN API are needed to assess and improve the effectiveness of emissions reduction and climate adaptation efforts. Investments in renewable energy are driven by environmental awareness, political support, technological advances, and the need for energy diversification. However, obstacles remain, including political uncertainty, high start-up costs, and dependence on government subsidies. Although the Indonesian government has taken various steps to attract foreign investment and support renewable energy, regulatory and investor protection challenges still need to be addressed. Stable policies, research and development support, and democratic transparency can increase investment and development of renewable energy in Indonesia.

Keywords: *Environmental Policy; Renewable Energy; Investment*

Introduction

Climate change is one of the greatest challenges facing humanity in the 21st century. Global warming caused by increased greenhouse gas emissions due to human activities causes extreme weather changes, rising sea levels and ecosystem damage. One of the most effective steps to combat climate change is to reduce dependence on fossil fuels and switch to renewable energy.

Renewable energy, including sources such as solar power, wind, hydropower, and biomass energy, not only provides a solution to reducing carbon emissions, but also offers many important additional benefits. In this context, the importance of renewable energy as the key to creating a cleaner, more sustainable and climate-resilient future becomes increasingly clear.

Currently, most developed countries are carrying out the process of reducing CO emissions² as a response to environmental damage that occurred in the past. These countries recognize the importance of taking drastic steps to reduce greenhouse gas emissions and mitigate the increasingly severe impacts of climate change. They strive to implement environmentally friendly technologies, increase energy efficiency, and use renewable energy sources.

This is done not only to meet international climate goals, but also to ensure environmental sustainability for future generations. However, on the other hand, many developing countries have difficulty achieving rapid economic growth. In their efforts to improve human welfare and reduce poverty, these countries often rely on industries and technologies that produce high levels of carbon emissions. The main causes of carbon dioxide emissions in these countries are the expansion of infrastructure, increased industrial production, and increased energy consumption. This situation creates a big dilemma, because we need to build a strong economy but are also under pressure to reduce CO emissions².

This pressure is increasing because the global goal of achieving carbon neutrality is the responsibility of developed and developing countries. International agreements such as the Paris Agreement require all countries to contribute to global efforts to reduce carbon emissions. However, the reality on the ground shows that developing countries often lack the resources and technology needed to make the transition to a low-carbon economy. Achieving this goal requires financial, technical and capacity support from the international community. On the other hand, developing countries that have not even reached the industrialization stage are the groups most affected by adverse climate change.¹

Indonesia has large renewable energy potential reaching 3,686 GW consisting of solar, hydro, bioenergy, wind energy, geothermal and marine energy. However, the use of renewable energy in Indonesia is still very low, namely 11,612 MW (as of June 2022), or around 0.3% of the total existing potential.²

In the context of Indonesia's greenhouse gas emissions reduction target to achieve NZE by 2060 or sooner, the expansion of renewable energy needs to be promoted on a larger scale. The Directorate General of New, Renewable Energy and Energy Conservation (EBTKE) estimates that to achieve NZE in 2060, electricity production from EBT requires solar power plants (PLTS), amounting to 421 GW and wind power plants (PLTB), amounting to 94 GW, PLTA 72 GW, bioenergy power plants (PLTB) reached 60 GW, PLTN 31 GW, PLTP (geothermal) 22 GW, and PLT Laut Arus reached 8 GW. Meanwhile, storage technology will consist of pumped storage of 4.2 GW, and BESS of 56 GW.³

In terms of infrastructure, Indonesia is trying to strengthen its existing network (grid). The national network is a key element in achieving Net Zero Emissions (NZE) in the power generation sector, especially in the inter-island network integration plan. This integration aims to increase the efficiency of energy distribution and maximize the use of renewable energy sources in various regions.

To overcome the challenges of climate change, Indonesia has introduced RAN GRK and RAN API as an environmental policy framework. Evaluating the implementation of these two steps is an important step in assessing the effectiveness of this policy. The RAN GRK evaluation includes a review of efforts to reduce greenhouse gas emissions, including the extent to which targets have been achieved and the obstacles faced. Meanwhile, the RAN API assessment includes an assessment of adaptation

¹ Noviani Evitasari and Ahmad Komarulzaman, "Pengaruh Pendanaan Iklim Terhadap Penurunan Emisi Karbon Melalui Energi Terbarukan Di Indonesia," *Jurnal Ekonomi dan Pembangunan Indonesia* 23, no. 2 (2023): 183–194.

² Rachmatika Dewi Ajeng Andri Akbar Andayani, Henriette Imelda, and Kevin Setiadi, "Indonesia Just Energy Transition Partnership (JETP)," *Indonesia Research Institute for Decarbonization*, December 2022, <https://www.undp.org/indonesia/projects/indonesia-just-energy-transition-partnership-jetp>.

³ Ibid.

measures taken to reduce vulnerability to climate change, such as strengthening food security and disaster management.⁴

Several steps need to be taken to increase the effectiveness of environmental policy implementation in Indonesia. First, in order to implement policies more efficiently, it is necessary to strengthen inter-institutional cooperation and establish clear coordination mechanisms. Increasing the capacity of human resources involved in implementing environmental policies also needs to be done through appropriate training and education. In addition, appropriate allocation of financial resources is also important to support the effective implementation of environmental policies. We also need to consider strengthening technology and infrastructure in line with environmental policies. Implementing environmental policies requires synergy between government, the private sector and society.

Methods

The research method used in this research is a research method with a normative juridical approach with descriptive-analytical research specifications. The use of a normative juridical approach in this research is because legal writing is carried out through searching for library materials (secondary data).⁵ Normative juridical research is to analyze the relationship between legal rules and legal theory that exist in international trade practice with the problem under study, namely: "The Role of Environmental Law in Sustainable Natural Resource Management and Its Implications for Economic Stability".

Discussion

Investment in the renewable energy sector is driven by a variety of factors, including awareness of the need to protect the environment, support for government policies, technological advances, uncertainty in the supply of fossil fuels, and the need to diversify the promoted energy portfolio. As conventional energy's negative impacts on the environment, such as climate change and air pollution, become increasingly known, investors are increasingly pushing for a shift to clean, sustainable and renewable energy. In addition, government measures that provide tax incentives, feed-in tariffs, and targets for the use of renewable energy ensure market security and economic incentives for investors.

Advances in renewable energy technology, such as increasing efficiency and reducing production costs, also make investment increasingly attractive. Technological innovations such as increasing the efficiency of solar panels and wind turbines and the development of more efficient energy storage batteries have significantly reduced the costs of producing renewable energy. This makes renewable energy more competitive than traditional energy sources.

Fossil fuel price fluctuations and supply uncertainty are also factors that support more stable renewable energy investments. Fossil fuel prices have fluctuated greatly in recent years, making long-term predictions difficult. On the other hand, renewable energy sources such as solar and wind power have more stable production costs and are reliable in the long term.

Diversifying the energy portfolio is also important to minimize risks associated with fluctuations in the price and availability of energy resources. Investing in renewable energy allows countries and companies to diversify their energy portfolio, reducing dependence on one type of energy and increasing overall energy supply security.

However, there are still several obstacles to investing in renewable energy. Political uncertainty is one of the biggest obstacles for investors. Changes in government policy and uncertainty about renewable

⁴ Asti Amelia Novita, "Environmental Governance and Climate Change Adaptation in Indonesia," *Jurnal Ilmiah Administrasi Publik (JIAP)* 7, no. 1 (2021): 46–55.

⁵ Muhaimin, *Metode Penelitian Hukum* (Mataram: Mataram University Press, 2020).

energy regulations can create uncertainty for investors and reduce investment interest. In addition, high initial costs are also an obstacle, although long-term operational costs tend to be lower. This can be an obstacle for investors looking for a quick return on investment. Dependence on government subsidies can also hinder the growth of the renewable energy sector.

Subsidies may provide an initial boost to the renewable energy industry, but over-reliance on subsidies could make the sector more vulnerable to policy changes and subsidy reductions, potentially destabilizing the market. Apart from that, from an investor's perspective, high acquisition costs, technological risks and long-term profitability, long payback periods, dependence on strict regulations and infrastructure, and uncertainty regarding public acceptance influence investment decisions in the Energy sector. New Renewable (EBT). These characteristics play an important role in investing in renewable energy and have a direct impact on investors' expected risks and returns.⁶

High acquisition costs are often the main obstacle to EBT investment. Although the long-term operational costs of renewable energy tend to be lower than fossil energy, initial infrastructure and technology spending remains a major challenge. Risks related to technological feasibility are also a concern. Although EBT technology continues to develop, it is often still considered new and not yet fully proven in the long term, giving rise to concerns about the durability and efficiency of the technology in the future.

The length of time for investment returns is also a factor that influences investor interest. Investments in the EBT sector often take longer to generate profits than other sectors, which may make them less attractive to investors looking for quick profits. Apart from that, dependence on existing regulations and infrastructure is also an important factor.

Government support policies are very important to ensure market stability and encourage investment, but existing infrastructure must be able to support the integration of renewable energy sources. Uncertainty regarding public acceptance of renewable energy is also a challenge. Even though awareness and support for environmentally friendly energy is increasing, resistance and uncertainty still occur in several sectors of society. This may be caused by a lack of understanding of the benefits of EBT, aesthetic issues, and the impact of EBT projects, such as the construction of wind and solar power plants, on the local environment.

The ultimate goal of a sustainable New Renewable Energy (EBT) strategy is to reduce the capital costs of EBT technology through government subsidies, while creating fair competition between fossil fuel-based technology and EBT technology. This means reducing economic barriers to renewable energy technologies and allowing environmentally friendly energy to compete directly with conventional energy on the market.⁷

This strategy aims to make investing in EBT more attractive for investors by reducing high acquisition costs through government subsidies, tax benefits and other financial support. In this way, renewable energy technologies can achieve the economies of scale necessary to reduce production costs and increase efficiency. Government subsidies not only help reduce capital costs, but also provide a strong signal to the market regarding long-term commitment to green energy, thereby increasing investor confidence.

Additionally, creating fair competition between fossil fuel-based technologies and renewable technologies is critical to ensuring a smooth transition to a cleaner and more sustainable energy system. This can be achieved by reducing or eliminating fossil fuel subsidies, adopting policies that support

⁶ Nurcan Kilinc-Ata and Ilya A. Dolmatov, "Which Factors Influence the Decisions of Renewable Energy Investors? Empirical Evidence from OECD and BRICS Countries," *Environmental Science and Pollution Research* 30, no. 1 (2023): 1720–1736, <https://doi.org/10.1007/s11356-022-22274-8>.

⁷ Friedemann Polzin et al., "Public Policy Influence on Renewable Energy Investments-A Panel Data Study across OECD Countries," *Energy Policy* 80 (2015): 98–111.

carbon pricing, and introducing regulations that encourage energy efficiency and emissions reductions. In this way, the external costs of fossil fuel use, such as pollution and climate change, are reflected in energy prices, making renewable energy more competitive. As a result, policymakers must consider the issues that affect EBT investors.

Policymakers have undertaken a thorough assessment of risk regulations and management processes, taking into account the views and experiences of renewable energy (RE) project developers.⁸ By doing this, you will gain deep insight into trends in the renewable energy industry, including the challenges developers face from both a technical and managerial perspective. Through dialogue and consultation with experts and practitioners in the field, policymakers can better understand how existing regulatory and management processes can be improved to support sustainable growth in the renewable energy sector. Therefore, this assessment not only considers policy aspects, but also the practical realities faced by renewable energy industry players.

Setting a premium for the perceived risk resulting from policies is one of the most important factors influencing investment decisions in new and renewable energy (EBT). Political risks can include regulatory changes, uncertainty regarding government incentives, and fluctuations in political support for green energy projects. Investors are likely to be more cautious and may demand higher yields to offset this uncertainty. Therefore, stability and clarity of government policy are very important to create an investment environment that supports the development of EBT.⁹ An important part of investor decision making in the developing renewable energy (EBT) sector is explored through conceptual analysis based on previous research on renewable energy investment. This study develops a comprehensive theoretical framework for understanding investment dynamics in the renewable energy sector. This framework includes various factors such as political risks, potential benefits, technology costs, and economic incentives that influence investment decisions. By utilizing this theoretical framework, investors can make a more structured and detailed assessment of the opportunities and challenges in EBT investment, so they can make more appropriate strategic decisions.

The research and development (R&D) budget needs to be increased to increase investment in new and renewable energy (EBT).¹⁰ Renewable energy policy and climate policy are one of the main solutions to increase NRE investment. Therefore, policymakers need to establish clear and appropriate long-term EBT policies to help investors consider climate change issues and finance low-carbon technologies.¹¹ With stable policies and adequate support for research and development, we can create an environment that supports innovation and the development of new technologies, thereby encouraging further investment in the renewable energy sector.

In countries where people's democratic rights are better protected, there is a positive relationship between economic growth and the ability to develop new and renewable energy (EBT). In contrast, this relationship tends to be negative.¹² In countries with low levels of democracy. This is because democratic countries tend to have policies and legal systems that are more transparent and accountable and support environmental protection and long-term investment. Additionally, in more democratic societies, citizens tend to be more involved in decision making, and the resulting policies better reflect the public interest, including environmental sustainability. However, in less democratic countries, political instability and inconsistent policies often discourage investment in the RE sector and hinder sustainable economic growth.

⁸ Anna Bergek, Ingrid Mignon, and Gunnel Sundberg, "Who Invests in Renewable Electricity Production? Empirical Evidence and Suggestions for Further Research," *Energy Policy* 56 (May 1, 2013): 568–581.

⁹ Kilinc-Ata and Dolmatov, "Which Factors Influence the Decisions of Renewable Energy Investors? Empirical Evidence from OECD and BRICS Countries."

¹⁰ Cansu Kul, Ling Zhang, and Yasir Ahmed Solangi, "Assessing the Renewable Energy Investment Risk Factors for Sustainable Development in Turkey," *Journal of Cleaner Production* 276 (2020).

¹¹ Lingyun He et al., "Green Credit, Renewable Energy Investment and Green Economy Development: Empirical Analysis Based on 150 Listed Companies of China," *Journal of Cleaner Production* 208 (2019): 363–372, <https://doi.org/10.1016/j.jclepro.2018.10.119>.

¹² Chaoyi Chen, Mahmet Pinar, and Thanasis Stengos, "Determinants of Renewable Energy Consumption: Importance of Democratic Institutions," *Renewable Energy* 179 (2021): 75–83.

In Indonesia itself, the leader of the country, in this case the president, has shown a strong desire to encourage foreign investment by carrying out a series of legal reforms. This step was realized through the publication of two Legal Policy Packages (PKH), namely PKH Volume I and PKH Volume II, as well as a series of Economic Policy Packages (PKE), starting from PKE I to PKE XVI.¹³ PKH and PKE are initiatives that aim to create a more attractive investment environment for foreign investors. The Indonesian government aims to improve regulations, strengthen legal protection for investors and simplify business processes through various legal instruments. These steps are expected to open up new opportunities for foreign investment, increase economic growth and create new jobs for the Indonesian people.

The President has taken a number of legal and regulatory steps to encourage foreign investment in Indonesia. Of the two policy packages issued, namely PKH Volume I and PKH Volume II, as well as a number of PKE, the government has issued 347 Government Regulations (PP) and 533 Presidential Regulations (Perpres), as well as a number of derivative regulations, such as:¹⁴ Ministerial Regulations, Director General Regulations, Investment Board Commissioner Regulations, and so on. But the government didn't stop there. The president drafted amendments to 79 laws at the start of his second term. This step will be carried out through a process called omnibus legislation on the Job Creation Law.¹⁵ The omnibus law aims to simplify regulations and create a more favorable investment environment by combining many laws into one legislative package.

The security factor is a legal regulation that is closely related to the issue of guarantees provided by the government of the country receiving capital to foreign investors, so that foreign investors can invest their capital without hesitation. In connection with this, one form of the Indonesian government's efforts to provide guarantees and protection to foreign investors is by implementing Law Number 25 of 2007 concerning Capital Investment.¹⁶ Undang-undang tersebut mempunyai beberapa ketentuan untuk melindungi investor asing, antara lain ketentuan mengenai perlakuan yang sama terhadap semua investor, ketentuan mengenai nasionalisasi dan perdamaian, serta ketentuan mengenai aktivasi, transfer dan repatriasi aset devisa.

The law has several provisions to protect foreign investors, including provisions regarding equal treatment of all investors, provisions regarding nationalization and peace, as well as provisions regarding activation, transfer and repatriation of foreign exchange assets.

Indonesia's Investment Law (UU PM) plays an important role in creating a favorable investment environment for foreign investors. This law guarantees protection against various risks that investors may face, especially non-commercial risks. Article 4 paragraph (2) letter (a) of the PM Law¹⁷ reaffirms the government's commitment to treating domestic and foreign investors equally. This is also reflected in the basic investment policies developed by the government.

Furthermore, point b of the same article emphasizes ensuring legal certainty, business security and business security for investors. This guarantee covers the entire licensing process, from the beginning to the end of investment activities.¹⁸ Article 6 of the PM Law¹⁹ states that similar treatment does not apply to investors from countries that receive special privileges based on agreements with Indonesia. These privileges include customs unions, free trade areas, common markets, monetary unions and similar

¹³ Nandang Sutrisno and Sigar Aji Poerana, "Reformasi Hukum Dan Realisasi Investasi Asing Pada Era Presiden Joko Widodo," *Undang: Jurnal Hukum* 3, no. 2 (2020): 237–266.

¹⁴ *Ibid.*

¹⁵ *Undang-Undang Nomor 11 Tahun 2020 Tentang Cipta Kerja*, n.d.

¹⁶ *Undang-Undang Nomor 25 Tahun 2007 Tentang Penanaman Modal*, n.d.

¹⁷ *Ibid.*

¹⁸ Agung Sudjati Winata, "Perlindungan Investor Asing Dalam Kegiatan Penanaman Modal Asing Dan Implikasinya Terhadap Negara," *AJUDIKASI: Jurnal Ilmu Hukum* 2, no. 2 (2018): 127–136.

¹⁹ *Undang-Undang Nomor 25 Tahun 2007 Tentang Penanaman Modal*.

institutions, as well as bilateral, regional or multilateral agreements regarding certain privileges when investing.

Article 6 paragraph (2) of the Investment Law regulates special treatment for foreign investors in certain countries. This special treatment is based on bilateral international agreements made between the Indonesian Government and the governments of these countries. This agreement is generally known as the Investment Guarantee Agreement (IGA) or Investment Protection Agreement (IPA). This Investment Guarantee/Investment Protection Agreement provides special rights for foreign investors, such as:

1. National Treatment: Foreign investors have the right to receive the same treatment as domestic investors in Indonesia.
2. Protection from Nationalization, Foreign investment assets are protected from nationalization or takeover by the Indonesian government.
3. Dispute Resolution: Disputes between foreign investors and the Indonesian government can be resolved through international arbitration.

These special rights aim to attract more foreign investment to Indonesia and increase investor confidence in the Indonesian investment environment.

Conclusion

As awareness of the negative impact of conventional energy on the environment and the need to combat climate change increases, investment in the renewable energy sector is becoming increasingly important. This conclusion aims to summarize the factors that encourage and hinder investment in renewable energy and the important role of government in supporting the transition to sustainable energy. Renewable energy such as solar power, wind and hydropower provide clean, renewable and sustainable solutions to the world's energy needs. Investment in this sector not only helps reduce greenhouse gas emissions and air pollution, but also opens up new economic opportunities and creates jobs. Investment in the renewable energy sector is driven by various factors, such as:

1. The need to protect the environment, the negative impacts of conventional energy encourage a shift to clean and sustainable energy.
2. Government policy support, tax incentives, feed-in tariffs, and targets for the use of renewable energy ensure market security and economic incentives for investors.
3. Technological advances, increased efficiency and reduced costs of renewable energy production make it more attractive.
4. Uncertain supply of fossil fuels, prices of fossil fuels fluctuate, while renewable energy has more stable production costs.
5. Energy portfolio diversification, Minimizing risks associated with price fluctuations and availability of energy resources.

However, there are still several obstacles, such as:

1. Political uncertainty, changes in government policy and uncertainty about renewable energy regulations can reduce investment interest.
2. High initial costs. Although long-term operational costs are lower, initial costs are still an obstacle.
3. Dependence on government subsidies, Subsidies can make the sector vulnerable to policy changes and subsidy reductions.
4. Community acceptance, rejection and uncertainty in several sectors of society towards renewable energy.

References

- Agung Sudjati Winata. "Perlindungan Investor Asing Dalam Kegiatan Penanaman Modal Asing Dan Implikasinya Terhadap Negara." *AJUDIKASI: Jurnal Ilmu Hukum* 2, no. 2 (2018): 127–136.
- Andayani, Rachmatika Dewi Ajeng Andri Akbar, Henriette Imelda, and Kevin Setiadi. "Indonesia Just Energy Transition Partnership (JETP)." *Indonesia Research Institute for Decarbonization*, December 2022. <https://www.undp.org/indonesia/projects/indonesia-just-energy-transition-partnership-jetp>.
- Bergek, Anna, Ingrid Mignon, and Gunnel Sundberg. "Who Invests in Renewable Electricity Production? Empirical Evidence and Suggestions for Further Research." *Energy Policy* 56 (May 1, 2013): 568–581.
- Chen, Chaoyi, Mahmet Pinar, and Thanasis Stengos. "Determinants of Renewable Energy Consumption: Importance of Democratic Institutions." *Renewable Energy* 179 (2021): 75–83.
- Evitasari, Noviani, and Ahmad Komarulzaman. "Pengaruh Pendanaan Iklim Terhadap Penurunan Emisi Karbon Melalui Energi Terbarukan Di Indonesia." *Jurnal Ekonomi dan Pembangunan Indonesia* 23, no. 2 (2023): 183–194.
- He, Lingyun, Lihong Zhang, Zhangqi Zhong, Deqing Wang, and Feng Wang. "Green Credit, Renewable Energy Investment and Green Economy Development: Empirical Analysis Based on 150 Listed Companies of China." *Journal of Cleaner Production* 208 (2019): 363–372. <https://doi.org/10.1016/j.jclepro.2018.10.119>.
- Kilinc-Ata, Nurcan, and Ilya A. Dolmatov. "Which Factors Influence the Decisions of Renewable Energy Investors? Empirical Evidence from OECD and BRICS Countries." *Environmental Science and Pollution Research* 30, no. 1 (2023): 1720–1736. <https://doi.org/10.1007/s11356-022-22274-8>.
- Kul, Cansu, Ling Zhang, and Yasir Ahmed Solangi. "Assessing the Renewable Energy Investment Risk Factors for Sustainable Development in Turkey." *Journal of Cleaner Production* 276 (2020).
- Muhaimin. *Metode Penelitian Hukum*. Mataram: Mataram University Press, (2020).
- Novita, Asti Amelia. "Environmental Governance and Climate Change Adaptation in Indonesia." *Jurnal Ilmiah Administrasi Publik (JIAP)* 7, no. 1 (2021): 46–55.
- Polzin, Friedemann, Michael Migendt, Florian A. Täube, and Paschen von Flotow. "Public Policy Influence on Renewable Energy Investments-A Panel Data Study across OECD Countries." *Energy Policy* 80 (2015): 98–111.
- Sutrisno, Nandang, and Sigar Aji Poerana. "Reformasi Hukum Dan Realisasi Investasi Asing Pada Era Presiden Joko Widodo." *Undang: Jurnal Hukum* 3, no. 2 (2020): 237–266.
- Undang-Undang Nomor 11 Tahun (2020) Tentang Cipta Kerja.*, n.d.
- Undang-Undang Nomor 25 Tahun 2007 Tentang Penanaman Modal*, n.d.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).