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An Analysis of the Gap Between Targets and Achievements in the Implementation of Renewable Energy Policy in Indonesia

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ABSTRACT

Indonesia has set a target for the New and Renewable Energy (NRE) mix of 23% as part of the national energy transition strategy, but its realization is still far below the target. This study aims to analyze the gap between the targets and achievements of the NRE mix in Indonesia using the Implementation Gap Theory from Pressman and Wildavsky. This study uses a qualitative approach with a descriptive method. The results of the study show that the gap between NRE achievements and targets due to the failure of policy implementation is structural and systemic, which is reflected in the disparity in fiscal incentives that still favor fossil energy, limited administrative capacity, policy design that is insufficiently operational, and a high administrative burden in the implementation process. The gap in the NRE mix is the result of accumulated implementation failures at various points in the policy chain, so strengthening implementation capacity and the alignment of policy incentives is the key to narrowing the gap between NRE targets and achievements in Indonesia.

KEYWORDS *Policy implementation; Renewable energy; Implementation gap; Energy mix*

INTRODUCTION

Energy is one of the strategic sectors in supporting national development in Indonesia (Aditya et al., 2025; Dutu, 2016; Fahmi, 2025; Maulidia et al., 2019; Santika et al., 2020). The availability of sufficient, well-managed, and easily accessible energy has become one of the important requirements for economic growth, community welfare, and social and political stability in this country (Dinh et al., 2025; Imran et al., 2026; Olaoye et al., 2025; Satrianto et al., 2025; Shanta & Adedokun, 2025). In today's modern development, not only in Indonesia but also globally, energy has become one of the important instruments in determining the direction of a country's long-term policy and development.

In recent decades, energy systems in the global order have faced a high dependence on fossil energy. The limited and non-renewable nature of fossil energy can threaten energy security for a nation. In addition, the implications resulting from the massive use of fossil energy have given rise to another important problem, namely a significant increase in greenhouse gas (GHG) emissions. In recent times, there has been global warming that has increased the average temperature of the earth's surface by 1.1°C (Indonesia Research Institute for Decarbonization, 2015). Understanding the urgency of this climate change implication, in the G20 global agenda, stakeholders consisting of the Government of the Republic of Indonesia, world leaders, and business leaders who have a strategic role in the agenda, are committed to supporting the realization of Net Zero Emissions (NZE). The term NZE itself conceptually appeared in 2015 in the COP21 (Conference of the Parties 21) agenda, which formulated the Paris Agreement, with the key points of agreement being to keep the global average temperature below 2°C above pre-industrial levels, and to continue to increase efforts to contain the rate of temperature rise at 1.5°C above pre-industrial levels, with commitments

from all countries in efforts to reduce emissions and collaborate in mitigating risks from climate change.

In Indonesia, the Paris Agreement has been internalized into regulations in the form of legal products, namely Law Number 16 of 2016 concerning the Ratification of the Paris Agreement, which has been ratified since October 25, 2016 (Suwatno, 2022). Through the ratification, several main materials and priorities are contained, one of which is about the Nationally Determined Contribution (NDC) in implementing the commitments of the Paris Agreement. Indonesia's NDC covers mitigation and adaptation aspects, by setting commitments and achieving targets on a regular basis. Indonesia's NDC is targeted to reduce GHG emissions by 29% with its own efforts and will become 41% if there is support from international cooperation, from the business as usual (BAU) scenario in 2030. This target will be achieved through five sectors, one of which is the energy sector. By making energy transitions, such as increasing the new and renewable energy mix and reducing dependence on fossil energy, the energy sector is targeted to contribute 11% to reducing GHG emissions. The plan launched has its own challenges where the fact is that Indonesia is one of the countries in the Asia Pacific region with the largest energy consumption, which is in 5th position in 2018 (Lahope, 2024). Based on the Performance Report of the Directorate General of NRE to the Ministry of Energy and Mineral Resources (ESDM) in 2024, the contribution of fossil energy in the primary energy mix reached 85.3%.

The country's dependence on fossil energy needs will make changes in this sector have great implications for the policy order and economic growth. Thus, an effective and targeted energy transition will be key in encouraging cleaner and more sustainable energy sources. The energy transition itself has become Indonesia's strategic agenda in dealing with the climate crisis and fulfilling global commitments to reducing carbon emissions. The Government of Indonesia through the National Energy General Plan (RUEN) has set a target for the New and Renewable Energy (NRE) mix of 23% by 2025 and 31% by 2050. This target is intended to reduce dependence on fossil energy, especially coal, which still dominates the national energy mix. This is also in line with the government's intention to significantly reduce GHG emissions where based on future projections, energy needs will continue to grow even greater.

Unfortunately, until 2024, a significant gap between achievement and targets was still consistent. Over the last five-year period, especially from 2020 to 2024, Indonesia's NRE mix achievement has increased, but the rate of increase has been relatively slow. In 2024, the contribution of NRE is only 14.7%, which means it is below the target of 19.5%. Until the end of the 2025 target period, the national NRE mix is still in the range of 15%, far below the 23% target that has been set. This achievement is far from the target, especially if it is projected to meet the target in 2025, making the Ministry of Energy and Mineral Resources further reduce the target to 17% in 2026. This gap between the target and the realization shows that there is a fundamental problem in the implementation of the NRE policy.

Failure to achieve the NRE mix target is often explained because of technical limitations, high investment costs, limited infrastructure, or dependence on fossil energy which is still dominant. While these factors are relevant, they have not been able to fully answer the question of why policies that have been normatively designed well are unable to achieve the expected results. The gap that occurs raises fundamental questions about the effectiveness of energy policy in Indonesia. Through the framework of the Implementation Gap Theory from Pressman

& Wildavsky (1973), which emphasizes that the longer the bureaucratic chain and the more actors involved, the more likely the policy is to fail to be implemented, this study views the gap between the targets and achievements of Indonesia's NRE mix not just as a technical or economic failure, but as a problem of implementing public policies that are structural and systemic. Therefore, an in-depth and comprehensive analysis is needed to understand the implementation factors that cause the gap.

METHOD

This study used qualitative research with descriptive methods in the design of policy studies. This approach was used to comprehensively understand the process, dynamics, and context of public policy implementation, supported through literature studies and secondary data. Secondary data collected included national policy documents (RUEN, Ministerial Regulation, Presidential Regulation, PLN RUPTL), national energy statistics, reports of national institutions and energy research, as well as scientific journal articles relevant to the energy transition.

The main analytical framework of this study was the Implementation Gap Theory developed by Pressman and Wildavsky, consisting of five main dimensions of analysis:

1) Clarity and consistency of policy objectives
2) Number and diversity of actors in policy implementation
3) Coordination mechanism carried out between organizations
4) Availability of resources and incentives
5) Administrative and technical capacity of the implementer

This theory was drawn from their work Implementation: How Great Expectations in Washington Are Dashed in Oakland, which emphasized that the longer and more complex the implementation chain, the greater the gap between policy objectives and the results achieved.

RESULT AND DISCUSSION

Development of New Renewable Energy Realization in Indonesia

In fully understanding the implementation of the NRE mix policy in Indonesia, the analysis process must consider the historical context of the national energy policy. Indonesia's energy policy since its inception has been predominantly built in a framework that makes fossil energy resources the driving force of economic development. This orientation can be observed since the early days of national development, where energy was used as the main production factor in encouraging industrialization, economic growth, and fiscal stability of the country. National energy policies are also explicitly directed to support economic growth through the exploitation of fossil energy resources during the New Order period, especially petroleum and natural gas. The state plays a dominant role as the manager and controller of the energy sector through state-owned enterprises (SOEs). At this moment, the issue of environmental sustainability and diversification of energy sources has not been the main focus in energy policy formulation.

Energy is understood as an economic instrument, not as an instrument of environmental policy. After the reform, there have been changes in the governance of the energy sector in line with the process of decentralization and economic liberalization. However, these changes do not necessarily change the orientation of national energy policy from fossil energy sources.

Dependency remains a dominant character in Indonesia's energy mix structure. Coal, which is relatively cheap and abundant, has actually strengthened its position as the backbone of national energy supply, especially for the electricity sector. This historical condition is important to note because it forms a path dependency in Indonesia's energy policy. Structural dependence on fossil energy creates strong economic and political interests, both at the national and regional levels. This interest then influences the way NRE policies are formulated and implemented. In this context, NRE policy in realizing the energy transition must deal with the old energy policy structure that has been firmly entrenched.

Along with increasing global attention to the issue of climate change and sustainable development, Indonesia's energy policy paradigm is beginning to shift. Energy is no longer viewed solely from the perspective of energy security and economic growth, but also from the perspective of environmental sustainability and global responsibility in reducing greenhouse gas emissions. The energy transition is a strategic agenda that needs to be considered more seriously. According to Serrano and Zveri (2020), the energy transition is a process of changing the energy system towards the use of renewable energy, which is influenced by factors such as household income and government policies related to the environment. Meanwhile, according to Araujo (2014), the energy transition is a process of transformation of fossil-based energy supply into more efficient, sustainable and low-carbon energy.

This paradigm shift is reflected in various national policy documents that have begun to include the concepts of clean energy and renewable energy as part of a long-term development strategy. The determination of the NRE mix target is the clearest manifestation of the paradigm change, namely the issuance of Government Regulation Number 79 of 2014 concerning the National Energy Policy, as well as Presidential Regulation Number 22 of 2017 concerning the National Energy General Plan (RUEN). The two regulations stipulate a target for the proportion of NRE in 2025 to reach at least 23% of the total primary energy mix and 31% in 2050. The progressively moving NRE mix target is intended as a policy instrument to encourage structural transformation of the national energy system. The setting of the target of 23% NRE is based on the assumption that Indonesia has a huge renewable energy potential. Based on data from the Indonesian Energy Outlook, Indonesia's total technical potential for renewable energy is estimated to reach more than 3,600 GW, consisting of solar power of around 3,295 GW, hydropower of 95 GW, geothermal, 57 GW of bioenergy, and wind of around 60 GW (BPPT, 2022). This potential goes beyond national energy needs and is used as a basis for argument that the NRE mix target can be realized.

Currently, the primary energy mix in Indonesia is still dominated by fossil energy, where the use of coal energy is still the largest with a proportion of 40.6% and NRE is the smallest with 14.7%.

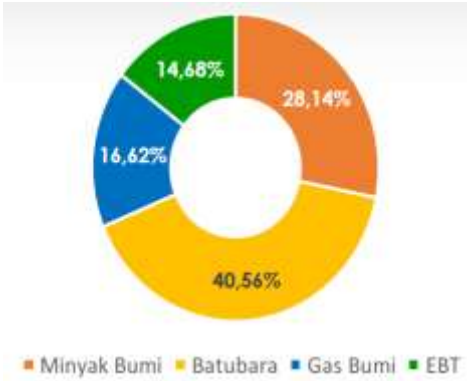

Figure 1. Primary Energy Mix in 2024
Source: Ministry of Energy and Mineral Resources (2024)

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Figure 2. Realization of New and Renewable Energy Mix 2017-2024

Source: Performance Report of the Directorate General of EBTKE, 2024

The achievement is only around 15% in 2024 compared to the target of 23% in 2025, causing a difference of 8% to be very large considering the time left with only one year left. It makes sense when the Ministry of Energy and Mineral Resources then lowers the NRE achievement target in 2026 to 15-17%. From a public policy perspective, this difference is not a small deviation, but an indication of structural failures in policy implementation (Pressman & Wildavsky, 1973).

When viewed from the composition of energy sources, the realization of the NRE mix in Indonesia shows inequality, where bioenergy is the largest contributor with a contribution of around 55% of the NRE composition. Furthermore, the second and third largest contributions come from hydropower and geothermal, which is around 30% (Ministry of Energy and Mineral Resources, 2024). On the other hand, the contribution from solar and wind power cumulatively is below 5% of the total national NRE mix. The existence of significant gaps in the composition shows that the increase in the NRE mix tends to be more produced from policies that are relatively easy to implement, more stable and established, such as biodiesel and geothermal. Meanwhile, energy sources that require adjustment of the energy system such as solar and wind energy are still running very slowly. In fact, according to IRENA, these two energy sources

have the greatest potential to accelerate the energy transition in developing countries (IRENA, 2021).

In the transportation sector, the achievement of NRE utilization is almost entirely dependent on biofuels, while the electrification of motor vehicles is still very limited, despite the onslaught of various brands from China starting to dominate the electric vehicle market. In the electricity sector, the contribution of national electricity production in 2022 is only around 14-15% (IEA, 2022). In the industrial sector, the use of renewable energy is still not the main source with a relatively small contribution. The gap in each sector shows that Indonesia's NRE mix target is not ideally translated into sectoral policies. Varying levels of adoption, depending on ease of implementation and short-term economic importance, reflect the failure of cross-sectoral coordination in translating national policy objectives into operational actions (Pressman & Wildavsky, 1973).

Implementation Gap in Objective Dimensions and Policy Design

Within the framework of Implementation Gap Theory, policies have a purpose and design that are fundamental elements in determining whether public policy can be effectively translated into implementable actions (Pressman & Wildavsky, 1973). Based on the analysis of NRE policies in Indonesia, a gap occurs between realization and targets not only in the implementation phase, but also has emerged since the formulation stage of design and policy objectives. The objectives of the new NRE policy are formed in national aggregate targets and are macro, but are not accompanied by clear operational objectives for implementers. The absence of binding explicit targets for each sector (electricity, transportation, industry, and households) on the achievement of the NRE mix target creates ambiguity in policy objectives. Only in the electricity sector does it have an implicit target of 23-30% of NRE in electricity generation based on the 2021-2030 RUPTL. As a result, policy objectives cannot serve as concrete guides at the implementation stage.

In addition to gaps in policy objectives, the NRE mix policy design also has a number of structural weaknesses. This includes policy instruments, institutional arrangements, and coordination mechanisms in achieving policy objectives (Howlett & Ramesh, 2015). The design of the NRE policy has not been fully adapted to the complexity of renewable energy policies. The main indicator of weakness in policy design is the mismatch between the targets possessed by the policy and the available economic instruments. With various regulations and regulations created to encourage the development of NRE, the economic incentives offered are still quite limited. Economic support for fossil energy subsidies is much greater than fiscal assistance for renewable energy. In 2022, subsidies and compensation for fossil energy reached more than IDR 500 trillion, inversely proportional to direct incentives aimed at NRE development (Ministry of Finance, 2023). This condition shows that NRE must compete in unbalanced conditions. In addition, Indonesia is estimated to need NRE investment of USD 20-25 billion per year. Meanwhile, the realization of NRE investment is only in the range of USD 1.5–2.5 billion per year (IEA, 2022). This inequality shows that policy targets are set without a realistic financing foundation.

Various policies in support of NRE have indeed been widely issued, such as mandatory biofuel programs, tariff regulations, and NRE electricity procurement schemes. However, these policies are not designed in a single integrated implementation framework and are systematically directed to achieve the NRE mix target. As a result, policy implementation runs

separately and does not reinforce each other. Weaknesses in policy design are also seen in monitoring and evaluation standards. The NRE mix target is set with specific time parameters, but the monitoring system for achievement has not been able to be adaptive and provide policy feedback quickly and effectively. NRE achievement data is generally only reported annually, so that gaps from new targets are identified after the policy gap widens (Ministry of Energy and Mineral Resources, 2023). This slow feedback creates time constraints in providing corrections to policies. On the other hand, energy system transformation essentially requires long-term infrastructure investments, technological changes, and institutional adaptations that cannot be completed in a short period of time. However, the NRE mix target is set in a relatively short time frame without a realistic transition strategy (IEA, 2022).

Implementation Gap in Actor, Coordination, and Resource Dimensions

According to the Indonesia Energy Transition Outlook (IETO) 2025 report from the Institute for Essential Services Reform (IESR), some of the things that are challenges in realizing this NRE include:

1. Weak political commitment and leadership
2. High dependence on fossil energy
3. Huge fossil energy subsidies
4. Focus on immature technology
5. Inconsistent policies
6. Limited funding and infrastructure

According to the World Resources Institute (WRI) and UNDP in the document Enhancing NDCs: A Guide to Strengthening National Climate Plans by 2020, there are five important elements in supporting the strengthening of NDCs and the energy transition, namely:

1. Mobilizing political support for key decision-makers
2. Building institutions for coordination
3. Involving the parties
4. Formulating national goals in strengthening NDCs
5. Designing a work plan

Building cooperation between stakeholders is a crucial aspect in achieving the targets that have been announced. A deep sectoral transformation plan requires strong political will, coordination, specialized analytical resources, and expertise with significant public-private sector collaboration. Improved capabilities and institutional arrangements for the planning and policy-making processes are essential, as the sector needs to plan detailed actions on multiple timescales and ensure appropriate changes can occur in the right way. The implementation of the New and Renewable Energy (NRE) mix policy in Indonesia involves a complex configuration of actors, across sectors, and across levels of government. In Implementation Gap Theory, Pressman and Wildavsky (1973) emphasized that the more actors involved in the policy implementation process, the greater the potential for implementation failure due to differences in interests, limited coordination, and fragmentation of authority.

The main actors in the NRE mix policy include the central government, local governments, state-owned enterprises (SOEs) in the energy sector, private business actors, and financing institutions. The central government plays a role as a policymaker and sets national targets through the RUEN. Meanwhile, the operational authority to implement NRE projects is spread across various technical ministries, local governments, as well as state-owned

enterprises and the private sector. This distribution of authority extends the implementation flow and multiplies the number of points in decision-making.

Until 2024, the realization of NRE projects at the regional level will vary greatly. Only a few local governments have formulated a complete and integrated Regional Energy General Plan (RUED) with national targets. This inequality reflects differences in institutional capacity and development priorities between regions. Many local governments still prioritize the fossil energy sector because it is considered to provide more short-term economic benefits and direct contribution to regional income. Likewise with the absorption of local labor and the contribution of social programs obtained. It is undeniable that the development of NRE requires high technical capacity, careful planning, and qualified institutions in managing complex projects. Unfortunately, many local governments and implementing institutions still face the reality of limited technical and administrative capacity. These limitations have the potential to slow down the licensing process, increase the risk of project implementation failure, and reduce the effectiveness of policy implementation

SOEs in the energy sector, especially in the electricity sector, play a strategic role in the implementation of the NRE mix policy. On the one hand, SOEs are expected to be the main motor of BET's development, but on the other hand, SOEs are burdened with responsibilities in maintaining national energy supply security and the financial health of the company. This dilemma encourages SOEs to take a more conservative approach to support for NRE with evidence that more than 60% of the national power generation capacity is still coal-based. This dependence creates a structural incentive for SOEs to maintain existing fossil plants, because they are considered more stable and low-risk than NRE investments. In the context of the implementation gap, the dilemma experienced by SOEs makes the function of SOEs as an agent of energy transformation weak and widens the gap between policy targets and realization.

The private sector and financing institutions have an important role to play in providing capital support for NRE projects. However, their level of involvement is heavily influenced by regulatory certainty, investment risk, and the attractiveness of policy incentives. The realization of Indonesia's NRE investment, which is still far below the ideal needs as previously explained, reflects the high risk perception of NRE projects in Indonesia. Regulatory uncertainty, frequent policy changes, and the gap in incentives provided between fossil energy and NRE have discouraged interest from private investors. Within the framework of Implementation Gap Theory, limited resources magnify the negative impact of the complexity of actors and weak coordination, making policy gaps increasingly difficult to close.

Implementation Gap in Incentive Dimensions, and Administrative Capacity

In the Implementation Gap Theory proposed by Pressman and Wildavsky (1973), the success of the implementation of public policies is not only determined by the clarity of policy objectives and design, but also by the incentive structure that encourages the behavior of implementing actors as well as the administrative capacity of the institutions that implement the policies. Without incentives that are aligned with policy objectives and adequate administrative capacity, policies will have a great risk of failure to implement even if they are normatively well formulated.

Policy incentives are important instruments used by governments to influence the behavior of implementing actors, including business entities, local governments, and private investors. In NRE mix policies, incentives determine whether actors will allocate

organizational time, resources, and attention to promote NRE or maintain easier use of fossil energy. Currently, NRE projects are often associated with technical complexity, tariff uncertainty, and high administrative risks. One of the strongest indicators of the incentive gap in Indonesia's energy policy is the fiscal allocation gap between fossil and renewable energy. The structure of the State Revenue and Expenditure Budget (APBN) shows that state spending is still greatly influenced by the policy of stabilizing fossil energy prices. In the State Budget Financial Memorandum report, fossil energy subsidy spending consistently has a significant allocation in state spending, with fluctuations influenced by global energy prices (Ministry of Finance of the Republic of Indonesia, 2020–2023).

Table 1. Comparison of Fiscal Allocation of Fossil Energy and Renewable Energy

Year	Fossil Energy Subsidies & Compensation (Rp trillion)	NRE Direct Budget (Rp trillion)	Fossil Ratio : EBT
2020	±137	±3,2	43 : 1
2021	±152	±4,1	37 : 1
2022	±502	±5,6	89 : 1
2023	±330	±6,8	48 : 1

Source: Sugiyono, 2019

A study from the Asian Development Bank in 2021 shows that fossil energy subsidies in developing Southeast Asian countries create fiscal lock-in, which is a condition where it is difficult for governments to shift public spending to the NRE sector due to political and social pressure to keep energy prices affordable. In the Indonesian context, this fiscal lock-in weakens the effectiveness of NRE incentives because overall economic policies still show great intention in maintaining fossil energy consumption.

In addition to fiscal, policy incentives are also shaped by stability and regulatory alignment. The OECD (2020) in its Regulatory Policy Outlook emphasizes that regulatory uncertainty is one of the main obstacles to renewable energy investment. In Indonesia, NRE policy is regulated through various sectoral regulations that have changed relatively quickly, especially related to pricing schemes and procurement mechanisms. A study by the Institute for Essential Services Reform (IESR) shows that repeated changes in NRE regulations have caused investors to consider NRE projects in Indonesia to have a higher regulatory risk than other Southeast Asian countries such as Vietnam and Thailand. As a result, although Indonesia's NRE potential is large, investment flows are relatively lagging behind.

In terms of administrative capacity, the Worldwide Governance Indicators (WGI) indicator from the World Bank shows that Indonesia is still in the middle category in terms of government effectiveness and regulatory quality. This score reflects the limited capacity of the bureaucracy in designing and implementing complex cross-sectoral policies, including NRE policies. In addition, the report of the Audit Board (BPK RI, 2021–2023) consistently highlights the lack of coordination across agencies and the unpreparedness of the administrative system in the management of large-scale infrastructure projects. This report is relevant to illustrate why many NRE projects face delays and administrative constraints.

Table 2. Indonesia's Administrative Capacity Indicator

Indicator	Indonesia Score	Category
Government Effectiveness (WGI)	±0,3	Intermediate
Regulatory Quality (WGI)	±0,2	Intermediate
Coordination Weakness Findings (BPK)	Height	Systemic

Source: Worldwide Governance Indicators; IHPS BPK RI (processed)

CONCLUSION

This study concluded that Indonesia's failure to achieve its NRE mix target stemmed not from normative policy shortcomings, but from structural and systemic failures in policy implementation. Using the Implementation Gap Theory framework of Pressman and Wildavsky, the analysis found that the 23% renewable energy target was set with a high level of ambition without a realistic implementation strategy, failing to account for institutional capacity limitations, energy system readiness, and financing needs — creating a substantial gap between policy expectations and implementation capacity from the outset. Progress in the NRE mix remained slow and non-transformational, with growth heavily dominated by bioenergy rather than emerging sources such as solar and wind energy, indicating a policy dependency path in which implementing actors gravitated toward low-risk options rather than driving structural change. Compounding this, policy objectives were formulated in an aggregate manner without clear sectoral or regional targets, while fragmented policy design, weak cross-sectoral and intergovernmental coordination, and limited financing, technical capacity, and human resources further extended the implementation chain and increased the probability of failure. Future research could build on these findings by conducting comparative studies with other emerging economies that have successfully navigated similar energy transition challenges, in order to identify transferable institutional arrangements and coordination mechanisms that may inform a more realistic and structurally sound implementation strategy for Indonesia's NRE policy.

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