PATH DEPENDENCE AND ENERGY TRANSITION POLICY: THE CASE OF DOMESTIC MARKET OBLIGATION (DMO) FOR COAL IN INDONESIA

A Thesis

Submitted to the Master's Study Program of Public Policy Specializing in Climate Change in partial fulfillment of the requirements for the degree of

Master of Public Policy (M.P.P.)

by:

Nahda Salsabila Alif

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UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

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ABSTRACT

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This study examines the persistence of Indonesia's coal Domestic Market Obligation (DMO) policy through the lens of path dependence theory, arguing that it has become a structural barrier to the country's energy transition. Originally introduced in 2009 to stabilize domestic coal supply and electricity prices, the DMO policy has evolved into a deeply entrenched institutional arrangement that systematically reinforces coal dependence. Applying James Mahoney's (2000) typology of path dependence—utilitarian, functional, power-based, and legitimation mechanisms—this study traces the historical trajectory of the DMO across three phases (2009–2015, 2015–2020, 2020–2025). It reveals how short-term policy efficiency, system compatibility, elite interests, and popular narratives have coalesced to maintain the DMO, despite Indonesia's international climate commitments and the rising urgency of decarbonization. Through qualitative content analysis of regulatory texts, institutional reports, and public narratives, the study demonstrates how the DMO distorts market signals and crowds out investment in renewable energy. It legitimizes fossil fuel dominance under the guise of national energy sovereignty. The findings underscore that overcoming the DMO's path-dependent effects requires not only technical policy reform but also a comprehensive restructuring of Indonesia's energy governance, including redistributive power shifts, reformed fiscal incentives, and narrative reframing. The study concludes by proposing alternative policy pathways to dismantle the DMO regime and support a just and sustainable energy transition aligned with Indonesia's net-zero emission targets.

Keywords: *Path-dependence, Domestic Market Obligation (DMO), Energy Transition, emergence*

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ABBREVIATION DIRECTORY

ADB : *Asian Development Bank*
APBI : *Asosiasi Pertambangan Batubara Indonesia (Indonesian Coal Mining Association)*
APBN : *Anggaran Pendapatan dan Belanja Negara (State Budget)*
DMO : *Domestic Market Obligation*
DPR : *Dewan Perwakilan Rakyat (House of Representatives)*
EBT : *Energi Baru dan Terbarukan (New and Renewable Energy)*
ESDM : *Kementerian Energi dan Sumber Daya Mineral*
MEMR *: Ministry of Energy and Mineral Resources*
ESS : *Energy Storage System*
HGBT : *Harga Gas Bumi Tertentu (Special Gas Pricing)*
IAEA : *International Atomic Energy Agency*
IEA : *International Energy Agency*
IESR : *Institute for Essential Services Reform*
IISD : *International Institute for Sustainable Development*
IRENA : *International Renewable Energy Agency*
JETP : *Just Energy Transition Partnership*
KESDM: *Kementerian Energi dan Sumber Daya Mineral*
MW : *Megawatt*
NDC : *Nationally Determined Contribution*
NRE : *New and Renewable Energy*
PAD : *Pendapatan Asli Daerah (Local Revenue)*
PLN : *Perusahaan Listrik Negara (State Electricity Company)*
PLTU : *Pembangkit Listrik Tenaga Uap (Coal-fired Steam Power Plant)*
PPA : *Power Purchase Agreement*
RPS : *Renewable Portfolio Standard*
RUEN : *Rencana Umum Energi Nasional (National Energy General Plan)*
RUPTL : *Rencana Usaha Penyediaan Tenaga Listrik (Electricity Supply Business Plan)*
SEI : *Stockholm Environment Institute*
USD : *United States Dollar*

CHAPTER I
INTRODUCTION

As one of the world's largest coal producers, Indonesia relies heavily on this non-renewable resource for its energy needs. Coal currently dominates the national energy mix, contributing approximately 65%, with 78 coal-fired power plants (PLTUs) operating nationwide. To ensure energy security, the Ministry of Energy and Mineral Resources (ESDM) has set a coal quota for electricity generation at 144.1 million tons, with an allocation of 122.5 million tons. State-owned electricity company PLN remains the primary domestic consumer, requiring up to 128 million tons annually until at least 2025 (Ministry of Energy and Mineral Resources [MEMR], 2022). Given the strategic importance of coal, strict oversight of mining operations is essential to balance economic benefits with sustainability concerns (Atteridge, Thazin, & Nugroho, 2018)

Historically, the Indonesian government has introduced various policies to regulate coal mining and distribution. Article 33, Paragraph (3) of the 1945 Constitution mandates state control over natural resources to ensure public welfare. Early regulations, such as Law No. 11 of 1967, established the legal framework for mining activities but lacked provisions on domestic coal allocation, pricing, and export limitations. As a result, Indonesia’s coal industry became highly dependent on global markets, making domestic energy supply management more challenging. The government introduced the Domestic Market Obligation (DMO) policy Ministerial Decree of Energy and Mineral Resources No. 34 of 2009 to address this issue, which requires coal producers to allocate a portion of their production to the domestic market at government-mandated prices. This policy aims to enhance energy security while ensuring stable and affordable electricity prices (MEMR, 2009).

Since its introduction in 2009, the DMO policy has become a cornerstone of Indonesia’s energy regulations. Ministerial Regulation ESDM 139.K/HK.02/MEM.B/2021 mandates that mining companies fulfill a DMO quota of 25% of their total production for both general and non-general electricity sectors.

This measure is designed to stabilize the domestic coal supply and protect PLN and national industries from volatile international market fluctuations. However, the policy has undergone multiple revisions and adjustments due to shifting global energy market dynamics and conflicting domestic stakeholder interests (MEMR, 2022).

Between 2009 and 2018, the DMO policy primarily focused on capping domestic coal prices to reduce PLN's production costs and maintain affordable electricity tariffs. However, this created a disparity between domestic supply obligations and coal producers' preference for the more profitable export market. A major policy shift occurred in 2018 when the government set a fixed price of USD 70 per ton for coal with a specific calorific value. This decision sparked controversy as it was seen as limiting profitability for producers. In response, the government introduced a compensated fund mechanism in 2022 to balance industry interests and national energy needs. However, this mechanism has struggled to resolve structural imbalances, particularly in terms of financing, which remains heavily dependent on contributions from the coal sector (IESR, 2021).

The volatility of global coal prices has further complicated the implementation of the DMO policy. In early 2021, soaring coal prices prompted many mining companies to prioritize exports over domestic obligations. Additionally, extreme and unpredictable weather conditions disrupted production, leading to lower coal stockpiles than usual. These challenges have undermined the effectiveness of the compensated fund mechanism in reducing electricity subsidy burdens or accelerating renewable energy investments. Transparency and accountability issues in fund distribution also persist, creating further inefficiencies in policy execution (MEMR, 2022). Despite numerous challenges, the government remains committed to maintaining the DMO policy to safeguard national energy stability and sustain the domestic electricity industry. This commitment is evident in the continued provision of fossil fuel subsidies, including the extension of subsidies for natural gas under the HGBT policy, as outlined in the MEMR decree 255.K/MG.01/MEM.M/2024. While these subsidies are set to remain in place at

least until 31 December 2024, the DMO coal market cap is expected to persist indefinitely (IESR, 2024).

The persistence of the DMO policy has significant implications for Indonesia's energy transition efforts, particularly within the Just Energy Transition Partnership (JETP) framework. By keeping domestic coal prices lower than global market rates, the policy indirectly prolongs Indonesia's dependence on coal-fired power plants, delaying investments in renewable energy. This creates a paradox where Indonesia commits to reducing carbon emissions under JETP while simultaneously maintaining incentives for cheap coal consumption (Pristiandaru, 2024). DMO policies hinder the country's energy transition. By capping coal prices at $70 per ton and requiring coal miners to allocate 25% of production domestically, the government subsidizes coal power, making it cheaper than renewables. This creates a competitive disadvantage for renewable energy, as PLN benefits from lower costs while independent renewable producers don't receive similar support. The policies lock the country into coal dependence by discouraging investment in clean energy (Bridle et al., 2019).

To understand why the DMO policy persists despite pressures for an energy transition, path dependency theory provides valuable insights. This theory explains how policies become entrenched due to lock-in mechanisms, including utilitarian, functional, power, and legitimation explanations. In the case of Indonesia's DMO, these mechanisms manifest through vested political interests, financial constraints on energy transition, and entrenched regulations within the national electricity system. Therefore, this study examines how the DMO policy shapes Indonesia's energy transition roadmap and explores strategic policy approaches to overcoming existing structural barriers (Mahoney, 2000).

This study applies these four mechanisms, namely utilitarian, funtional, power, and legitimation, to trace how the DMO evolved from an economically rational policy into a politically entrenched institution that now hinders Indonesia's low-carbon transition. Rather than focusing solely on policy design or bureaucratic behavior, the analysis reveals how utilitarian logic, system embeddedness, elite

interest alignment, and legitimizing narratives interact to produce a robust path-dependent outcome.

	Utilitarian Explanation	Functional Explanation	Power Explanation	Legitimation Explanation
Mechanism of Reproduction	Institution/Policy is reproduced through the rational cost-benefit assessments of actors	Institution/Policy reproduced because it serves a function for an overall system	Institution/Policy is reproduced because it is supported by an elite group of actors	Institution/Policy is reproduced because actors believe it is morally just or appropriate
Potential Consequence of Path Dependency	Institution/Policy may be less efficient than previously available alternatives	Institution/Policy may be less functional than previously available alternatives	Institution/Policy may empower an elite group that was previously subordinate	Institution/Policy may be less consistent with the values of actors than previously available alternatives
Mechanism of Change	Increased competitive pressures; learning processes	Exogenous shock that transforms system needs	Weakening of elites and strengthening of subordinate groups	Changes in the values or subjective beliefs of actors

Figure 1 Typology of Path-dependent Explanation

This critical orientation is visually represented in the conceptual diagram, wherein the study concentrates on the lower segment (*marked in light-brown*) that maps the potential outcomes of path-dependent mechanisms. This theory provides a set of analytical indicators to evaluate and understand the dynamics of the Coal Domestic Market Obligation (DMO) policy in Indonesia, as well as how the policy creates structural barriers to a just and sustainable energy transition process. This framework is designed to analyze the evolution of the DMO policy in three-time stages: The Emergence of DMO as an Economic Instrument for Energy Stability (2009-2015), DMO Becomes a Climate Change Issue (After Indonesia Signed the Paris Agreement, 2015-2020), and DMO as Structural Barriers to Energy Transition (2020-2025).

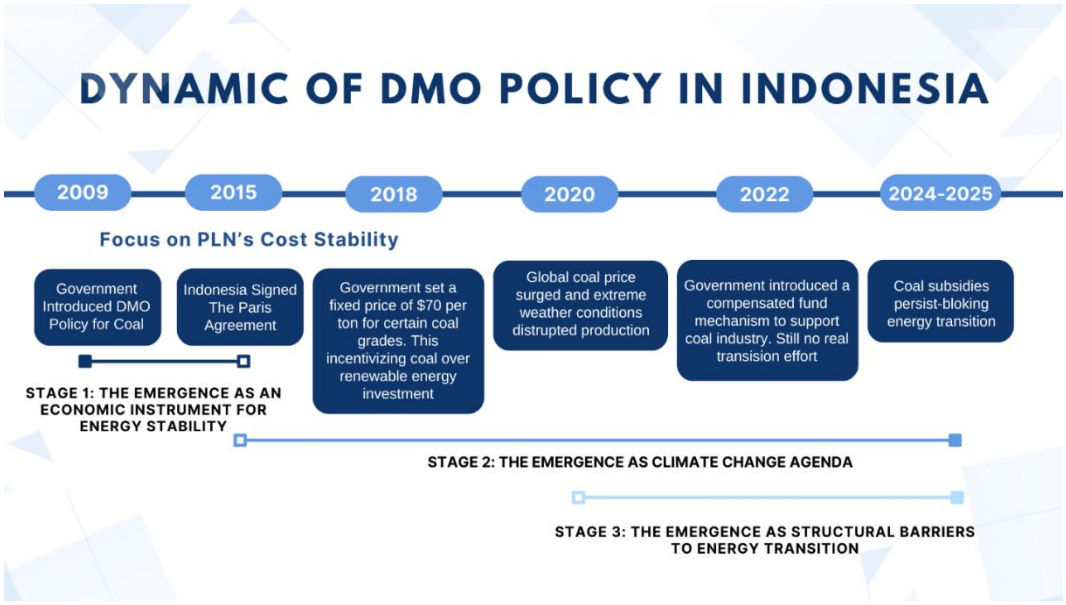

Figure 2 Dynamics of the Stage of DMO Policy in Indonesia (processed by the author)

Based on the complexity that has been described in the background, especially regarding how the Domestic Market Obligation (DMO) policy has transformed from merely an economic instrument into a structure that is deeply rooted in national energy policy, there is an urgent need to formulate the main focus of this research. The formulation of the problem proposed is not only intended to frame the research objectives, but also aims to explore in depth how a policy can survive and reproduce amidst global dynamics, energy transition pressures, and expectations of change towards sustainable development. Therefore, this study seeks to examine how path dependence influences the evolution of the coal Domestic Market Obligation (DMO) policy in Indonesia. To comprehensively address this main problem, the study poses three key research questions that serve as the foundation for both theoretical exploration and empirical analysis:

1. How does the DMO policy evolve from an economic instrument into an obstacle to energy transition within the framework of path dependence?
2. How do the consequences of path dependence in DMO policies, in terms of policy efficiency, system function, actor representation, and social legitimacy, form structural barriers to energy transition?
3. What alternative policy pathways are possible to overcome the effects of path dependence in DMO policies and promote a just energy transition?

The next section outlines the research methodology, including the data sources, document analysis techniques, and interpretive approach used in this study. This is followed by the main analysis is structured across three time periods (2009–2015, 2015–2020, and 2020–2025), each examined through the dimensions of policy efficiency, system functionality, actor representation, and social legitimacy. The final section presents the conclusion and policy recommendations aimed at addressing the effects of path dependence and supporting a more just and sustainable energy transition in Indonesia.

CHAPTER II
METHODOLOGY

This research adopts a descriptive qualitative approach grounded in policy analysis frameworks that emphasize historical institutionalism and actor-network dynamics. This method is suitable for capturing the complex policy dynamics of Indonesia's coal Domestic Market Obligation (DMO) policy, which is shaped by historical trajectories, institutional arrangements, and shifting policy priorities. Rather than testing hypotheses, this study aims to interpret how the DMO policy is sustained, negotiated, and understood within the broader national energy policy landscape. As such, it positions policy not as a neutral outcome, but as a contested arena of ideas, interests, and legitimacy.

In line with Creswell (2014), qualitative research enables the interpretation of meanings constructed through social interaction. Qualitative research in policy analysis enables the exploration of how policy meanings and interpretations emerge through institutional contexts and discursive practices (Yanow, 2007). The descriptive approach, as noted by Sandelowski (2000), allows for systematic, factual narratives without manipulating variables. This makes it possible to present a nuanced picture of the formulation and evolution of DMO policy, highlighting the roles of key actors and competing narratives that shape policy direction.

Data were collected through a literature study and desk research, both of which are appropriate for analyzing policy documents and public discourse. Four main data sources were used. First, legal documents such as Law No. 4/2009 and Ministerial Regulations No. 34/2009 and 139.K/2021 establish the policy's legal foundation. Second, institutional reports from KESDM, PLN, IEA, IRENA, the World Bank, ADB, IESR, and IISD offer both official and independent insights. Third, national and international media, such as Kompas, Tempo, The Jakarta Post, Reuters, and Nikkei Asia, capture actor responses and public narratives. Fourth, academic literature on path dependence, fossil fuel policy, and energy transition provides the theoretical lens.

The analysis employed interpretive thematic content analysis to identify and categorize emerging themes, including: (i) justifications for DMO continuation, (ii) actor roles and interests, (iii) resistance to fossil fuel reform, and (iv) tensions between DMO and energy transition agendas. This inductive method traces how past policy choices constrain present options, making it particularly relevant for understanding the path dependence embedded in Indonesia's energy policy.

CHAPTER III

RESULT AND DISCUSSION

A. Phase 1 (2009–2015): DMO as an Economic Instrument for Energy Stability

The Domestic Market Obligation (DMO) policy, introduced in 2009, marked the institutionalization of coal dependence in Indonesia's national energy system. Developed amid global energy price volatility and the post-2005 energy crisis, DMO required coal producers to supply a portion of their output to the domestic market at fixed, below-market prices. This aimed to ensure electricity affordability, supply stability, and insulation from global price fluctuations (ESDM, 2009). The policy quickly became embedded in Indonesia's energy strategy, laying the groundwork for policy lock-in through four reinforcing mechanisms of path dependence: utilitarian efficiency, system functionality, actor power, and social legitimacy (Mahoney, 2000).

1. Policy Efficiency (Utilitarian Explanation)

   Policy efficiency in the initial context of DMO implementation must be viewed not only from a microeconomic perspective but also within the framework of political economy and public policy balance (Rodrik, 2008). During the 2009–2015 period, DMO efficiency manifested as the achievement of short-term goals that were key for the government: maintaining the affordability of national electricity prices, encouraging inflation stability, and providing predictability in energy supply for PLN and the industrial sector (Bridle et al., 2019; IESR, 2021).

   Technically, DMO offers a crucial cost containment mechanism amidst global coal price fluctuations. For example, in 2018, the government capped the domestic coal price for PLN at USD 70/ton, while the international market price reached USD 100–120/ton, enabling PLN to save approximately USD 1.6 billion (IESR, 2019). By setting domestic coal prices significantly below export prices, PLN and domestic industries

secure coal at lower costs, enabling electricity tariff stability without requiring additional subsidy intervention from the State Budget (APBN) (Burke et al., 2019). This creates an illusion of fiscal and technocratic efficiency, especially when macroeconomic stability became a priority after the 2008 global financial crisis (Widodo, 2022).

However, this efficiency is deceptive and temporary. In the medium to long term, the DMO policy produces a new form of hidden energy subsidy that does not appear on the country's fiscal balance sheet but significantly influences resource allocation and economic incentives in the energy sector (Nugroho, 2021). Coal producers incur relative losses because they must sell part of their production at lower prices without any formal compensation from the state (Akhmad et al., 2020). This distorts energy prices and creates market signals that do not accurately reflect the scarcity or social value of natural resources (Bridle et al., 2019).

In public economic theory, policies such as DMOs can be classified as a form of second-best policy (Rodrik, 2008), where theoretically suboptimal policies are still implemented due to institutional limitations, fiscal constraints, and political structures. Yet, when such policies persist for too long without critical evaluation, they risk creating policy traps that entrench dependence on suboptimal solutions (Mahoney, 2000). In the case of DMOs, the apparent initial efficiency has established a basis for pseudo-rationality that is difficult to challenge by the logic of a more long-term energy transition (Nugroho, 2021).

Thus, although the DMO policy was initially deemed efficient by the government and domestic market players, the efficiency narrative was, in fact, partial and obscured various harmful long-term consequences. In the context of path dependence, this situation became an early indication of utilitarian lock-in, where short-term benefits were leveraged to justify the continuation of policies that ultimately stifled innovation and reform in the national energy sector (Mahoney, 2000).

2. System Functionality (Functional Explanation)

System functionality in the context of DMO policy refers to how this policy is not only present as a stand-alone policy, but has been deeply integrated into the technical, institutional, and logistical structure of the Indonesian electricity system. In the period 2009–2015, the DMO policy played a central role in supporting the national energy architecture that had been designed to maximize the use of coal as the main energy source (Bridle et al., 2019).

Technically, most of the power plants in Indonesia built during this period were Steam Power Plants (PLTU) that used coal as fuel. By 2015, the total installed capacity of coal-fired PLTU had reached approximately 21,090 MW, with an estimated 70 individual PLTU operating across the country up from around 31 units in 2009. These plants produced between 54 and 98 terawatt-hours (TWh) of electricity annually during the 2009–2015 period (IAEA, 2018; PLN, 2015). This was driven by the acceleration program for the development of energy infrastructure, such as Fast Track Program I (2006) and Fast Track Program II (2010), which planned to build tens of thousands of megawatts of new electricity capacity (Burke et al., 2019). In this scheme, coal was chosen because it was considered the most economical and fastest option to meet the increasing national electricity needs (IESR, 2021). The DMO policy then became a functional part of this strategy by ensuring the availability of coal for PLN and private partners at predictable and stable prices.

On the institutional side, the institutional structure of the national energy sector at that time also facilitated the continuation and strengthening of the role of DMO. PLN, as the sole major buyer of electricity, has a direct interest in maintaining a cheap domestic coal supply (Adiatma et al., 2018). Figure 3 (Adiatma et al., 2018) illustrates that PLN's coal consumption per unit of electricity produced has been increasing since 2010, indicating a rising reliance on coal for power generation. This further reinforces PLN's incentive to keep domestic coal prices low in order to manage production

costs. This dependency creates institutional interdependence between the DMO policy, PLN, and coal-based power generation schemes, which then becomes very difficult to unravel (Nugroho, 2021). Even when there is discourse on the importance of developing renewable energy, the structure of the system that has been built, including price regulations, power purchase agreement schemes, and network and distribution systems, is not conducive to accommodating intermittent power plants such as solar and wind (Bridle et al., 2019; IESR, 2021).

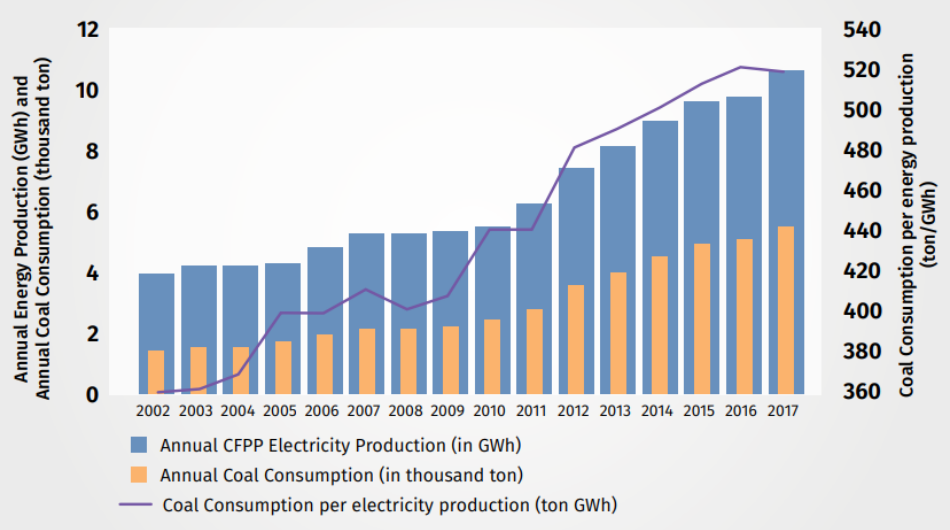

Figure 3 PLN Coal Consumption per Unit of Electricity Produced

Mahoney (2000) stated that in functional path dependence, the continuity of an institution or policy is justified by its vital role in maintaining the stability and continuity of the larger system. In the case of DMO, this policy ensures the continuity of the operation of PLTU, which is the main pillar of the national electricity system. This system then forms structural resistance to change because any attempt to replace or reform DMO must face very high transition costs, both in fiscal, technical, and socio-political terms (Nugroho, 2021).

In addition, the absence of capacity redundancy, namely, a ready-to-use alternative energy capacity reserve - further strengthens the functional role of DMO. PLN's dependence on coal means that a failure in domestic coal supply can trigger a national energy supply crisis. Therefore, DMO is not

only seen as a "reasonable" policy, but also as a systemic need that is non-negotiable in the short term (Bridle et al., 2019).

Thus, in the context of path dependence, DMO policies exhibit functional lock-in characteristics: systemic dependence on policies that play an important functional role in the sustainability of an institutionalized energy system. This situation explains why, despite the emergence of external pressures for energy transition, DMO policies persist because changes to them have direct implications for the stability of the established national energy system.

3. Actor Representation (Power Explanation)

In the path dependence framework, the power dimension plays a key role in explaining why the Domestic Market Obligation (DMO) policy persisted and was even strengthened in the 2009–2015 period. Actor representation refers to how certain groups with political, economic, and institutional power gain and maintain their influence in designing and maintaining the direction of national energy policy (Hall, 1993). In the Indonesian context, the coal sector is not only an economic entity but also a very strategic political entity (Indrawan & Purba, 2018).

The political-economic structure of the Indonesian coal sector is closely related to the political elite and state bureaucracy. Many key actors, such as politically connected business elites, coal conglomerates, and media owners with coal interests, hold strategic positions in political parties, government institutions, or control national mass media. This creates a network of interests that support each other between the mining business sector and policymakers. Pierson (2000) describes this phenomenon as a form of power reinforcement, where dominant actors use institutional and political resources to maintain policies that benefit their interests.

The DMO policy, although technically seen as limiting mining companies' profits with low domestic selling prices, does not completely harm these actors. In fact, in many cases, they receive indirect compensation through

new land concessions, flexible export quota arrangements after domestic obligations are met (MEMR, 2018), and access to favorable fiscal policies such as deferred royalty payments (Firman et al, 2019). For example, Adaro Energy saw higher coal exports in 2019 due to an incentive scheme under MEMR Regulation No. 1395 K/30/MEM/2018, which rewarded firms meeting DMO targets with extra export quotas (Adaro Energy, 2019), while PT Bumi Resources reported deferred royalty payments in its 2018 annual report (PT Bumi Resources Tbk., 2018). Concession extensions have also reportedly favored companies such as Kideco Jaya Agung, under Indika Energy, through preferential licensing and regulatory flexibility (Indika Energy, 2019).

Moreover, industry associations such as the Indonesian Coal Mining Association (APBI) function as active advocacy platforms in shaping public opinion and influencing policy direction. APBI plays a role not only in technical communication with the government but also in shaping the political narrative that coal is a "national strategic asset" (Hartono, 2017). This narrative is deeply rooted in public discourse and is used as a political justification by many parties, including business elites, government ministries such as the MEMR, state owned enterprises like PLN, and legislators, to maintain the existence of PLTU and the DMO policy.

At the policy level, the influence of dominant actors is reflected in their resistance to proposals to reform the DMO, either through quota elimination or domestic coal price liberalization. These actors have a high incentive to maintain the status quo because the continuation of the DMO policy directly supports their market structure and bargaining position in the national energy system. Thus, in the path dependence framework, the DMO policy is not only maintained because of technical benefits or economic efficiency, but also because of the existence of organized political-economic forces that have great influence over state institutions. This is a form of power lock-in, where power relations and institutional configurations hinder policy change

despite external pressures and rational arguments for a cleaner and more sustainable energy transition.

4. Social Legitimacy (Legitimation Explanation)

Social legitimacy is an important dimension in path dependence theory because it concerns how a policy gains and maintains public support and moral or normative perceptions that justify its continuation. In the case of the Domestic Market Obligation (DMO) policy in the 2009–2015 period, social legitimacy played a central role in creating political and social conditions conducive to the continuation of this policy without significant challenges.

During this period, the DMO policy was positioned by the state as an instrument to maintain "energy sovereignty" and reduce dependence on the fluctuating global market (Winarno, 2012). The government actively framed the DMO as a policy that sided with the interests of the people, especially in ensuring stable and affordable electricity rates for households and national industries. This narrative was reinforced by various speeches by high-ranking state officials, media campaigns, and policy reports that emphasized that coal is an abundant national resource and must be utilized as much as possible for the welfare of the Indonesian people (The Jakarta Post, 2011).

This legitimation strategy shows how the state uses populist rhetoric to build public support for DMO. In the context of Indonesia, where high economic inequality persists and cheap electricity is seen as a social right, the government strategically framed coal as essential to national energy security. For instance, during the 2014–2015 period, the Ministry of Energy and Mineral Resources (MEMR) emphasized that coal supply for domestic use, including for PLN (state-owned electricity company), was crucial to avoid electricity tariff hikes and ensure affordability for low-income households (MEMR, 2014). This framing gained traction especially after public electricity tariff increases in 2013 sparked widespread criticism.

Criticism of the environmental impacts of coal was often considered a "foreign agenda" or "anti-national" that was contrary to the spirit of national development (Human Rights Watch, 2013).

Another factor that strengthened the social legitimacy of DMO was the lack of public awareness of climate change and energy transition issues. In that decade, climate change had not yet become a central theme in public debate or national media. The absence of significant pressure from civil society, academics, or the media made space for criticism of DMO policies very limited. This reflects a condition that Mahoney (2000) calls legitimation-based lock-in, namely when the sustainability of a policy is based not on its effectiveness alone, but on the perception that the policy is in accordance with dominant social values and collective narratives about what is considered the common interest.

In addition, in the post-reform political landscape of Indonesia, the social legitimacy of public policies is also heavily influenced by electoral logic. Energy subsidy programs, including policies that allow electricity prices to remain low, are often political commodities used by the government to maintain electoral support. Therefore, maintaining DMO is not only seen as an economic policy, but also as a political strategy to maintain stability and public support for the government in power.

Thus, during the 2009–2015 period, DMO not only survived for reasons of technical efficiency or institutional support, but also because it gained strong social legitimacy from populist narratives, energy nationalism, and the absence of alternative discourses in the public sphere. In the path dependence framework, this condition indicates the formation of normative legitimacy that strengthens resistance to policy changes, even though in the long term, the policy contributes to dependence on fossil fuels and hinders the transition to clean energy.

In this stage, the DMO policy had become a deeply entrenched component of Indonesia’s energy governance. The combination of short-term economic

benefits, structural dependence within the electricity system, political dominance of coal interests, and high public support formed a stable path-dependent policy regime. While external pressures for reform began to emerge, particularly regarding climate commitments, the institutional and discursive foundations of DMO made change increasingly difficult without deliberate and comprehensive structural interventions.

B. Phase 2 (2015–2020): DMO as a Climate Change Issue

The period 2015–2020 marked a turning point in Indonesia's energy and environmental policy landscape, coinciding with its commitment to the Paris Agreement and the submission of its Nationally Determined Contribution (NDC), which targeted a 29% emissions reduction independently and 41% with international support by 2030 (Ministry of Environment and Forestry, 2016). Amid these climate goals, expectations arose for a stronger push toward renewable energy. Yet, the Domestic Market Obligation (DMO) for coal remained in place without significant reform, despite growing international pressure for decarbonization (IESR, 2023).

During this period, the DMO policy shifted from being primarily an economic instrument to a contradiction within the energy transition agenda. The government faced a persistent dilemma between stabilizing electricity tariffs and meeting climate commitments (PLN, 2019). While terms like "energy transition" and "decarbonization" appeared in planning documents, they did not translate into structural policy change. In path dependence terms, the prolonged maintenance of DMO without reform only increased the political, institutional, and economic costs of change.

1. Policy Efficiency (Utilitarian Explanation)

   Under a utilitarian lens, the DMO's goal during this period was to maintain low electricity prices and shield consumers from global market volatility. In 2018, the domestic coal price for PLN was capped at USD 70 per ton (Ministry of Energy and Mineral Resources, 2018). While this helped

stabilize tariffs and provided fiscal room for PLN, the long-term consequences undermined broader efficiency goals.

The fixed low price distorted market signals, incentivizing coal producers to favor exports and leading the government to introduce compensation schemes, adding new fiscal burdens without addressing distributional imbalances. These schemes made the policy ecosystem reliant on repeated state interventions, reducing its sustainability. Moreover, the DMO implicitly subsidized coal, undercutting the competitiveness of renewable energy and discouraging investment in the clean energy sector. The absence of parallel fiscal incentives for renewables locked the country into a carbon-intensive energy model (Sovacool, 2011).

The policy also imposed opportunity costs by redirecting investment away from green technologies and delaying job creation in emerging clean energy sectors. In fiscal terms, growing subsidies and compensation demands constrained spending on strategic sectors such as education and climate adaptation (World Bank, 2023). In short, the DMO's perceived efficiency became increasingly difficult to justify. Though it provided short-term benefits, it created structural inefficiencies that hindered Indonesia's energy transition. From a path dependence perspective, this represents utilitarian lock-in: efficiency narratives are used to defend a policy that no longer delivers optimal outcomes.

2. System Functionality (Functional Explanation)

Indonesia's energy system remained centered around coal, particularly PLTUs, due to their perceived reliability and affordability (MEMR, 2021). Infrastructure development during the previous two decades had prioritized coal, reinforced by programs such as RUPTL and take-or-pay contracts between PLN and IPPs (PLN, 2021). Despite the adoption of energy transition targets, the national electricity system lacked flexibility to accommodate intermittent renewable sources like solar and wind (IEA, 2022). The grid was built for constant baseload power, and investment in

energy storage and smart infrastructure was limited. This created a systemic rigidity that reinforced coal dependence.

Institutionally, PLN faced operational and fiscal constraints that made renewable investments risky. With coal remaining artificially cheap due to the DMO, PLN had little incentive to shift strategies. Thus, DMO became a buffer within the electricity system, helping maintain operational continuity while obstructing deeper reform (Ardiansyah et al., 2015). Functionally, DMO's persistence wasn't due to its superior performance, but rather its embeddedness in a system structurally reliant on coal. This reliance emerged because DMO maintained coal's artificially low price, enabling PLN to provide stable electricity at low cost while avoiding investment in riskier or costlier alternatives like renewables. As PLN faced budgetary and political pressures to ensure cheap and reliable supply, the DMO acted as a policy buffer, offering short-term continuity at the cost of long-term transformation. Thus, the rigidity in system planning and lack of renewable support mechanisms entrenched DMO further into Indonesia's energy governance.

3. Actor Representation (Power Explanation)

During this period, coal industry actors consolidated their influence over energy policymaking. Through patron-client ties with national and local elites, coal companies shaped DMO-related decisions to align with their interests (IESR, 2020; Fuchs, 2007).

Many political figures, such as former Energy and Mineral Resources Minister Ignasius Jonan or influential party members in the DPR Energy Commission, held stakes in mining firms or maintained close affiliations. Companies such as Adaro Energy and Bumi Resources were known to have close ties with policymakers. These actors used their positions and media platforms to frame coal as crucial for economic development and national sovereignty, while portraying renewables as foreign interests.

For example, in 2017, the government upheld the DMO quota despite oversupply concerns, following strong lobbying from the Indonesian Coal Mining Association (APBI). Similarly, reports from IESR (2020) noted that policy adjustments proposed to reduce PLN's dependence on coal were delayed due to pushback from coal associations arguing it would destabilize national energy security. Energy policymaking processes remained exclusive, favoring industry associations over civil society or academic voices. Policy tools such as quota flexibility and fine waivers benefited coal companies directly.

This concentration of influence reflects policy capture, where public policy is shaped disproportionately by private interests (Page, 2006). Under the path dependence framework, this is a clear example of power-based lock-in: dominant actors maintain policies that serve their interests, stifling transition efforts unless disrupted by significant external change.

4. Social Legitimacy (Legitimation Explanation)

DMO's social legitimacy was cultivated through narratives that resonated with the public. The policy was framed as ensuring "cheap energy for all" and defending "national energy sovereignty" (Winarno, 2012). In a country with uneven electricity access, this populist messaging was persuasive.

Despite increased civil society advocacy, public understanding of DMO's long-term costs remained limited. The government and coal industry actors dominated public discourse, positioning coal as a patriotic necessity and casting alternative energy voices as foreign-influenced (Baumgartner & Jones, 2009). The legitimacy derived was more performative than participatory, not based on informed public consensus but rather shaped by strategic framing and limited access to critical information (Suchman, 1995). Public discourse lacked transparency around coal's environmental costs, subsidy burdens, or the economic potential of renewables.

Symbolically, coal became intertwined with national pride. This discursive dominance created a legitimacy-based lock-in, where the continuation of the

DMO policy was justified not by its actual performance, but through powerful nationalist narratives portraying coal as a clean, affordable, and strategic energy source. These narratives framed coal as the "engine of national development," reinforcing public and political support for DMO despite growing evidence of its inefficiencies and environmental harm (Satrio, 2023)

Between 2015 and 2020, the DMO policy persisted as a central feature of Indonesia's energy governance despite new climate commitments under the Paris Agreement. The policy offered short-term benefits such as tariff stability and energy access, but at the cost of resource inefficiency, market distortion, and delayed renewable investment. The electricity system's structural dependence on coal, combined with political capture by coal interests and the symbolic power of nationalist energy narratives, created a multifaceted lock-in.

As a result, DMO evolved from a temporary economic intervention into a major structural barrier to energy transition, embedding Indonesia deeper into a carbon-intensive path. Reforming this policy will require not only technical solutions but a holistic deconstruction strategy involving economic, institutional, political, and discursive transformations to align with decarbonization targets and sustainable development goals.

C. Stage 3 (2020–2025): DMO as a Structural Barrier to Energy Transition

Between 2020 and 2025, the Domestic Market Obligation (DMO) policy became more deeply entrenched in Indonesia's energy governance. While the government pledged net-zero emissions and launched the Just Energy Transition Partnership (JETP), actual reforms lagged. Policies such as the DMO were not only retained but reinforced through fixed domestic pricing and a policy discourse emphasizing affordability and reliability (MoEF, 2021; IESR, 2023). This disconnects between international commitments and national energy practices reflects the intensification of path dependence. DMO is no longer a stand-alone policy but a structural regime maintained by intertwined

institutional, political, and normative forces. This section analyzes how DMO has become a structural impediment to energy transition through the lens of policy efficiency, system functionality, actor representation, and social legitimacy (Bridle & Geddes, 2022; Sovacool et al., 2021).

1. Policy Efficiency (Utilitarian Explanation)

In the 2020–2025 period, the Domestic Market Obligation (DMO) policy increasingly shows profound inefficiencies when viewed from an economic, fiscal, and environmental perspective. The determination of a domestic coal price of USD 70 per ton for power plants, which has been in effect since 2018, was initially intended to dampen the impact of rising global energy prices and maintain people's purchasing power. However, this policy indirectly creates distortions in the energy market and becomes a long-term burden for energy transition efforts.

First, from an energy economic perspective, implicit subsidies through government-controlled coal prices cause relative price distortions between energy sources. Electricity from Steam Power Plants (PLTU) becomes artificially cheaper than electricity from New and Renewable Energy (EBT), making investment in low-carbon technology commercially unattractive. As a result, the market mechanism that should encourage innovation and energy efficiency is instead held back by inequalities in the incentive structure.

Data shows that the installed capacity of renewable energy in 2022 will only reach 14.5% of the total national capacity, far below the national target of 23% in 2025 (IESR, 2023). This incentive inequality reflects how the DMO policy not only fails to support the energy transition but also actively hinders it by extending the economic life of coal-fired power plants.

Second, from a fiscal perspective, the DMO creates a significant financial burden for the state. The government not only has to bear compensation for mining companies due to the difference between domestic and export

selling prices, but also loses potential state revenue from taxes and royalties. Meanwhile, energy subsidy spending continues to increase, reaching more than IDR 200 trillion in 2022, without being accompanied by an increase in the competitiveness of clean energy or efficiency of budget allocation.

Third, this inefficiency also has an impact on the allocation of national resources. Coal, which should be exported to obtain foreign exchange in a high price situation, is instead diverted to the domestic market at low prices. In addition to economic losses, this creates a systemic dependence on fossil fuels that strengthens the path dependence structure in the energy sector. Mining companies also lose the incentive to increase efficiency and innovation due to the guarantee of an exclusive and protected domestic market.

Fourth, from a long-term efficiency perspective, the DMO policy fails to internalize the negative externalities of coal use, such as air pollution, carbon emissions, and public health impacts. Within the framework of environmental economic theory, this inefficiency can be categorized as a market failure exacerbated by policy failure. Therefore, the evaluation of the DMO policy cannot rely solely on the logic of electricity tariff efficiency, but must consider the social and environmental costs hidden behind the policy.

Thus, when viewed utilitarianly in the Mahoney (2000) framework, the DMO is an example of a policy that initially appears rational but turns out to be inefficient when viewed in the long-term and sustainability framework of the system. The reluctance to re-evaluate this policy reflects how the logic of efficiency has been hijacked by political and economic interests embedded in the structure of national energy policy.

2. System Functionality (Functional Explanation)

The dependence of Indonesia's energy system on coal is not only reflected in the energy mix but also in the technical and institutional structures that

support the national electricity system. PLN, as the sole operator responsible for electricity generation and distribution, has a central role in determining the form and direction of national energy policy. However, PLN's current institutional and technical capacity is mostly designed to support the operation of Steam Power Plants (PLTU), not renewable energy plants.

One of the main structural obstacles is the existence of long-term contracts between PLN and private power producers (IPPs) that operate PLTUs. The Power Purchase Agreement (PPA) scheme with a "take or pay" scheme requires PLN to purchase electricity from PLTUs even though it is not needed, creating an oversupply situation in several regions. This condition hinders the flexibility of the system to absorb electricity from EBT sources that are more varied in terms of time and location.

In addition, Indonesia's electricity grid infrastructure is still centralized and has not been designed to support the integration of EBT, which is decentralized and intermittent. Reliance on conventional transmission systems, without the support of smart grids, energy storage systems (ESS), and operational digitalization, makes technical integration of renewables difficult and expensive. This challenge is exacerbated by low investment in supporting technologies such as load control systems and real-time monitoring, which are crucial in managing the variability of renewable output.

Regulations and policies also play a major role in strengthening the system structure that benefits coal. The Electricity Supply Business Plan (RUPTL) still shows a priority on PLTU in the short term, even though the renewable target has been increased in the National Energy General Plan (RUEN) document. The inconsistency between these planning documents shows a lack of policy integration across sectors and levels of government. In addition, the renewable project licensing process is considered slow, complex, and often non-transparent, which reduces the interest of private

investors and strengthens the dominance of old players in the national energy system.

From the perspective of path dependence theory, the functionality of this system creates a logic of resilience and stability that strengthens the sustainability of the DMO policy. Because the entire system has been formed to support coal, changing to a new renewable-based system will require large investments, institutional reforms, and a long time. This structural unpreparedness drives the perception that coal is still the only "practical" solution for now, even though global policy directions and climate commitments have changed. Thus, the current structure and function of Indonesia's energy system is a form of functional path dependence, where policies and institutions are maintained because they are believed to still function optimally to maintain the stability of the energy supply. In reality, this function is increasingly irrelevant in the context of the energy transition, but it persists because the costs and risks of changing are considered too great by the main actors in the system.

3. Actor Representation (Power Explanation)

One of the main pillars in maintaining the sustainability of the Domestic Market Obligation (DMO) coal policy in Indonesia is the political and economic power of dominant actors in the fossil energy sector, especially the coal industry. Within the framework of path dependence theory, the power mechanism plays an important role in maintaining the direction of policies that benefit certain groups, even though these policies are no longer relevant to long-term needs and challenges such as the energy transition and climate crisis.

Large mining companies in Indonesia not only act as economic actors, but also as political actors. The connection between mining entrepreneurs and national political elites—whether through political financing, share ownership, or bureaucratic networks—creates a strong power structure in maintaining the status quo of energy policy. The large economic interests of

coal exports and domestic market guarantee through DMOs make this industry a determining force in the formulation and implementation of national energy policies.

The involvement of local governments in maintaining the coal industry also strengthens the sustainability of DMOs. In coal-producing areas, Local Revenue (PAD), local employment, and infrastructure development are highly dependent on the presence of mining companies. This creates a structural incentive for local governments to maintain policies that support coal exploitation, even though they are contrary to the direction of national energy transition policies and international commitments to reduce emissions.

On the other hand, actors who support the development of New and Renewable Energy (NRE)—such as clean energy companies, environmental NGOs, academics, and several international institutions—still face various obstacles in strengthening their position in the energy policy system. Access to funding, regulatory certainty, and political power are still very limited. Although there has been progress in the government's commitment to the development of NRE, these actors have not succeeded in forming a coalition strong enough to challenge the political and economic dominance of the coal sector.

In addition, the dominance of the public narrative by pro-coal actors, which emphasizes issues of energy security, resource nationalism, and affordable electricity tariffs, has narrowed the space for critical discussion on the environmental and social impacts of dependence on coal. The coal industry is also active in utilizing the media and policy forums to maintain public legitimacy for its role and suppress the emergence of alternative narratives that are more in favor of the energy transition.

Thus, the representation of actors in the DMO policy shows a very real imbalance of power. The dominant pro-coal coalition not only controls economic resources but also monopolizes the political and discursive arenas

in energy policy. This situation reinforces the pattern of path dependence through power-based mechanisms, which makes policy change very expensive and risky for policymakers. To break this cycle of dependency, efforts are needed to build a stronger and more inclusive pro-transition coalition. This includes strengthening the political and economic capacity of clean energy actors, increasing transparency in the energy policy process, and protecting civil and academic space to promote alternative policy narratives based on social justice and ecological sustainability.

4. Social Legitimacy (Legitimation Explanation)

Social legitimacy of the Domestic Market Obligation (DMO) policy plays an important role in strengthening Indonesia's dependence on coal. In the context of path dependence theory, social legitimacy functions as a normative mechanism that strengthens the sustainability of the policy by making it part of the values, perceptions, and social norms that are widely accepted by society. This mechanism works not only through explicit public support, but also through the internalization of the policy narrative by state actors and society as something 'natural' and 'unchangeable'.

The government consistently frames the DMO as a 'pro-people' policy and a guarantor of 'national energy sovereignty'. These narratives shape the perception that coal is a symbol of energy independence, regardless of its environmental impact. In official speeches and planning documents, coal is associated with affordable electricity prices, sustainable economic development, and socio-political stability. This narrative effectively forms legitimacy in the eyes of the public, especially the lower-middle class, who are direct beneficiaries of subsidized electricity tariffs.

The narrative of energy nationalism is also used to limit criticism of DMO and weaken support for the energy transition. Coal is positioned as a national resource that must be used as much as possible for the prosperity of the people, so that criticism of it is often considered a form of subordination to the international agenda. The implications of this narrative

are profound: it creates barriers to discourse on renewable energy and weakens the position of transformative actors in the public policy arena.

However, the social legitimacy of DMO has begun to be challenged as public awareness of environmental issues and climate change increases. The emergence of civil society movements, media coverage of air pollution from coal-fired power plants, and global campaigns on decarbonization have expanded the space for criticism of fossil fuel policies. Studies by IESR and various NGOs show increasing public support for clean energy, especially among the younger generation, urbanites, and the educated middle class.

However, this criticism is still limited to certain groups and has not been able to shift the dominant legitimacy that has been institutionalized in public policy. The public still views cheap energy as a primary need and has not seen the energy transition as a right or an urgent social agenda. Lack of energy literacy, minimal community involvement in policy planning, and the dominance of government narratives are the main causes of the weak challenges to the legitimacy of DMO.

To strengthen the legitimacy of energy transition policies, a more proactive communicative and participatory approach is needed. The government must educate the public about the long-term benefits of clean energy, not only in terms of the environment but also economic opportunities, health, and energy independence. The narrative of the energy transition needs to be transformed into a narrative of people's welfare, not just international demands. Thus, the legitimacy of DMO can begin to be replaced by the legitimacy of policies that support a fair and sustainable energy transformation.

In this stage, the DMO policy had solidified as a structural barrier to Indonesia’s energy transition. Though initially introduced to ensure energy affordability and availability, the policy now distorts markets, burdens the state fiscally, and inhibits investment in renewables. The national energy system’s design, actor power dynamics, and socially embedded coal narratives form a self-

reinforcing regime. Change is inhibited not by technical limitations alone, but by political economy lock-ins, institutional rigidity, and narrative dominance. Breaking this cycle requires holistic reform: eliminating coal subsidies, enhancing renewable incentives, overhauling electricity planning and infrastructure, and empowering pro-transition coalitions. Only by addressing the intertwined technical, political, and discursive factors can Indonesia align its energy future with sustainability and justice.

CHAPTER IV
CONCLUSION

This study finds that Indonesia's Domestic Market Obligation (DMO) policy has evolved from a policy instrument aimed at stabilizing domestic coal prices into a structural barrier to energy transition. Through a qualitative approach combining content and discourse analysis and grounded in Mahoney's (2000) framework of path dependence, the study demonstrates that the persistence of the DMO policy cannot be separated from the entanglement of political-economic interests, institutional path dependency, and changing narratives of legitimacy that reinforce each other over time.

In the initial phase between 2009 and 2015, the DMO policy served its utilitarian purpose effectively by ensuring the availability of cheap coal for PLN, which in turn helped maintain electricity price stability. This success built strong social legitimacy, reinforcing the public expectation that cheap energy is a right provided by the state. In the second phase, from 2015 to 2020, even as Indonesia formalized its international climate commitments and began exploring renewable energy development, the DMO remained untouched. The dominance of coal in electricity infrastructure and the complexity of long-term purchasing contracts meant that the DMO became essential in preserving the status quo. Coal sector actors—deeply embedded in political structures—maintained significant influence in shaping national policy, illustrating the intensification of functional necessity and power consolidation. In the latest phase, from 2020 to 2025, despite Indonesia's participation in global transition initiatives such as the Just Energy Transition Partnership (JETP) and its pledge to reach Net Zero Emissions by 2060, the DMO has further solidified as a structural constraint. Its fiscal inefficiency, the unequal treatment of renewable energy, and the widening gap between transition rhetoric and coal-centered policy reality are increasingly evident. Yet the policy continues to be justified using populist narratives focused on energy affordability for the people and industry, signaling a shift toward defensive legitimacy.

These findings collectively show that the DMO has experienced a strong policy lock-in, where efforts to alter or eliminate it face high political, economic, and social resistance. This lock-in is not simply a matter of path continuity, but a deeper configuration of utility, institutional inertia, and legitimizing discourse. Therefore, the energy transition in Indonesia should not be seen merely as a technical process of adopting new technologies, but as a political-institutional project that requires courage to confront the legacy of extractive, carbon-intensive policy frameworks.

To address this, the study proposes a coordinated and incremental policy shift. A phased reduction of the DMO quota until 2035 offers a practical approach to gradually reduce coal dependency without triggering economic or supply shocks. This must be supported by fiscal adjustments, stakeholder coordination, and integration into national energy planning documents. Reforming energy subsidies is also essential; reallocating funds from coal subsidies into a centralized Energy Transition Fund can support renewable infrastructure, just transition programs, and community-based energy initiatives. The optimization of JETP depends on its full integration into Indonesia's policy architecture, accompanied by measurable outcomes, institutional strengthening, and transparent governance. Moreover, the implementation of a Renewable Portfolio Standard (RPS) mandate can serve as a market-based mechanism to foster structural demand for renewable energy, supported by incentives, penalties, and regional adaptation. Alongside these, the study calls for two scientific policy interventions. First, the formation of an Energy Transition Research Task Force comprising government bodies, research institutions, civil society, and private actors would help bridge the gap between academic knowledge and policy action. Second, the creation of a National Open Energy data system would democratize energy governance by increasing transparency, reducing information asymmetries, and enabling public participation.

In conclusion, Indonesia's energy transition will remain constrained if structural reform of legacy policies such as the DMO is not addressed. Moving beyond fossil fuel dependency requires more than policy tweaks; it demands a realignment of incentives, institutions, and narratives. By embracing long-term

thinking, redistributive justice, and inclusive governance, Indonesia has the potential to lead a transition that is not only low-carbon but also socially just and nationally resilient.

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