

THE EVOLUTION OF RENEWABLE ELECTRICITY POLICY IN INDONESIA (1967-2024): A PRESIDENTIAL ERA ASSESSMENT THROUGH DANIELS' PLANNING FRAMEWORK

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:

Muazu Yahaya Abubakar

02222320004

UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

DEPOK

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ABSTRACT

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Indonesia's transition to renewable electricity has unfolded unevenly across successive presidential administrations, shaped by shifts in political priorities, institutional constraints, and energy security imperatives. This study examines the evolution of renewable electricity policy in Indonesia from 1967 to 2024, employing Daniels' five-era environmental planning framework to structure a comparative review across the Suharto, Reformasi, Yudhoyono, Jokowi, and early Prabowo periods. Using a qualitative, document-based methodology, the analysis synthesizes official policy documents, regulatory instruments, international commitments, and academic literature to trace patterns of continuity and disruption in governance, market structures, and state utility control. The findings reveal entrenched path dependencies rooted in centralized fossil fuel development, institutional dominance of PLN, and fragmented regulatory reforms, which persisted despite successive policy attempts to stimulate renewable investment. While the Yudhoyono and Jokowi eras marked the formal integration of climate targets and renewable energy commitments, structural and political barriers ranging from subsidized coal, incoherent regulations, and inconsistent inter-ministerial coordination continued to undermine implementation. Prabowo's early presidency signals ambitious rhetorical shifts but remains constrained by legacy institutions and overcapacity in coal-fired generation. The study contributes a structured, era-based understanding of Indonesia's renewable electricity policymaking and offers forward-looking insights for improving institutional coherence, investment governance, and long-term energy planning. This thesis contributes to environmental planning scholarship by extending Daniels' framework to a Global South context and offering insights for sustainable electricity transition in emerging economies.

Keywords: Indonesia, renewable electricity, energy policy, Daniels' five-era framework, policy continuity, institutional legacies, environmental policy planning, energy transition.

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Figure 1.2. Indonesia Electricity generation mix by source, 2000 – 2021.

LIST OF ABBREVIATIONS

ADB	: <i>Asian Development Bank</i>
BAKOREN	: <i>National Energy Coordination Agency (Badan Koordinasi Energi Nasional)</i>
BAPPENAS	: <i>Ministry of National Development Planning (Badan Perencanaan Pembangunan Nasional)</i>
BAU	: <i>Business As Usual</i>
BPP	: <i>Basic Supply Cost (Biaya Pokok Penyediaan)</i>
PBU-PLN	: <i>Board of General Administration of the State Electricity Company</i>
CFPP	: <i>Coal Fired Power Plant</i>
COP	: <i>Conference of the Parties</i>
COVID-19	: <i>Coronavirus Disease</i>
DEN	: <i>National Energy Council (Dewan Energi Nasional)</i>
FiT	: <i>Feed-in Tariff</i>
GDP	: <i>Gross domestic product</i>
GHG	: <i>Greenhouse Gas</i>
GoI	: <i>Government of Indonesia</i>
IESR	: <i>Institute for Essential Services Reform</i>
IMF	: <i>International Monetary Fund</i>
IPP	: <i>Independent Power Producer</i>
JETP	: <i>Just Energy Transition Partnership</i>
JICA	: <i>Japan International Cooperation Agency</i>
KEN	: <i>National Energy Policy (Kebijakan Energi Nasional)</i>
KUBE	: <i>General Policy on Energy (Kebijakan Umum Bidang Energi)</i>
MEMR	: <i>Ministry of Energy and Mineral Resources (Kementerian Energi dan Sumber Daya Mineral)</i>
MoF	: <i>Ministry of Finance</i>
NDC	: <i>Nationally Determined Contributions</i>
NGO	: <i>Non-Governmental Organization</i>
NRE	: <i>New Renewable Energy</i>
NZE	: <i>Net Zero Emissions</i>
PGN	: <i>Perusahaan Gas Negara</i>
PKUK	: <i>Authorized Holder of an Electricity Business License under the 1985 Electricity Law (Pemegang Kuasa Usaha Ketenagalistrikan)</i>
PLN	: <i>The State-owned electricity company (PT Perusahaan Listrik Negara)</i>

PPA	: <i>Power Purchase Agreement</i>
PPU	: <i>Private Power Utilities</i>
PR	: <i>Presidential Regulation</i>
PwC	: <i>PwC Indonesia, or the PwC global network of firms, as the context requires</i>
RE	: <i>Renewable Energy</i>
RPJMN	: <i>The National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional)</i>
RUU EBET	: <i>New and Renewable Energy Bill</i>
RUEN	: <i>National General Energy Plan (Rencana Umum Energi Nasional)</i>
RUKD	: <i>Regional Electricity General Plan (Rencana Umum Ketenagalistrikan Daerah)</i>
RUKN	: <i>National Electricity General Plan (Rencana Umum Ketenagalistrikan Nasional)</i>
RUPTL	: <i>Electricity Supply Business Plan (Rencana Usaha Penyediaan Tenaga Listrik)</i>
SHP	: <i>Small Hydro Power</i>
SOE	: <i>State-Owned Enterprise</i>

CHAPTER I

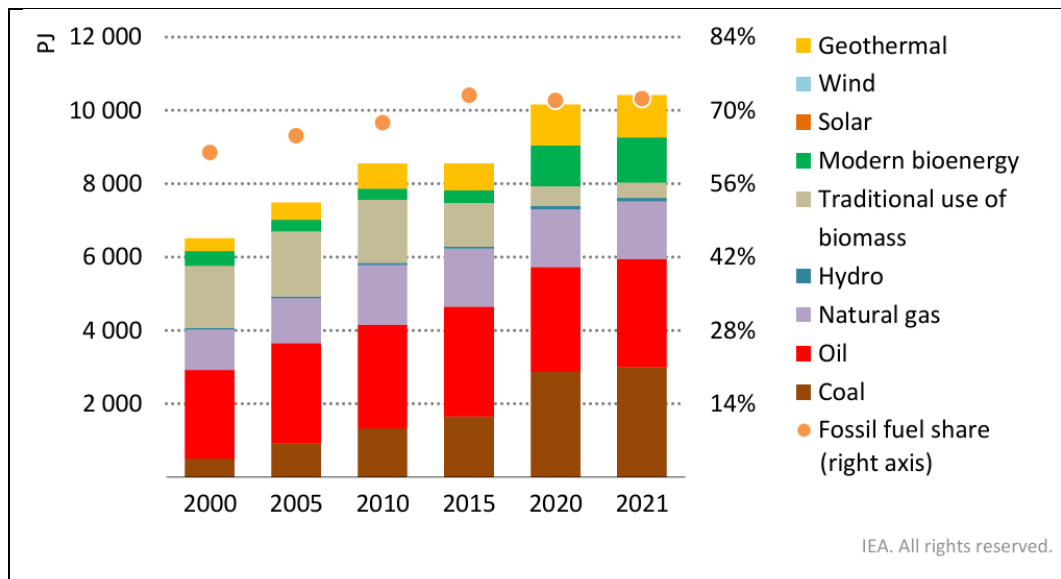
INTRODUCTION

1.1 Background of the Study

Indonesia faces significant difficulties in ensuring an effective national energy system due to its vast population and geographic complexity as an archipelagic nation with thousands of inhabited islands. Since gaining independence in 1949, the country has consistently struggled to achieve reliable electricity supply. Despite recurring power shortages, energy consumption has continued to rise, driven by demographic expansion and robust economic growth, especially over the past twenty years (Purra, 2011).

Over the past few years, the global shift toward renewable energy has intensified, and Indonesia has been part of this movement. From 2010 to 2020, the country’s electricity consumption expanded by approximately 75%, averaging around 7.5% growth per year (Prahastono et al., 2023). Indonesia’s 2021 Third Biennial Update Report (BUR) identifies the energy sector as the second-largest source of greenhouse gas (GHG) emissions, contributing 35% of the national total. The electricity sector continues to depend predominantly on fossil fuels, which supplied 81% of power generation in 2021, with coal alone providing 62%. In contrast, renewable energy sources represented only 19% of the primary energy mix that year, underscoring the persistent dominance of fossil fuels in the country’s energy profile (Climate Transparency, 2024).

Figure 1.1 Total energy supply by source in Indonesia, 2000 - 2021 (IEA, 2022)

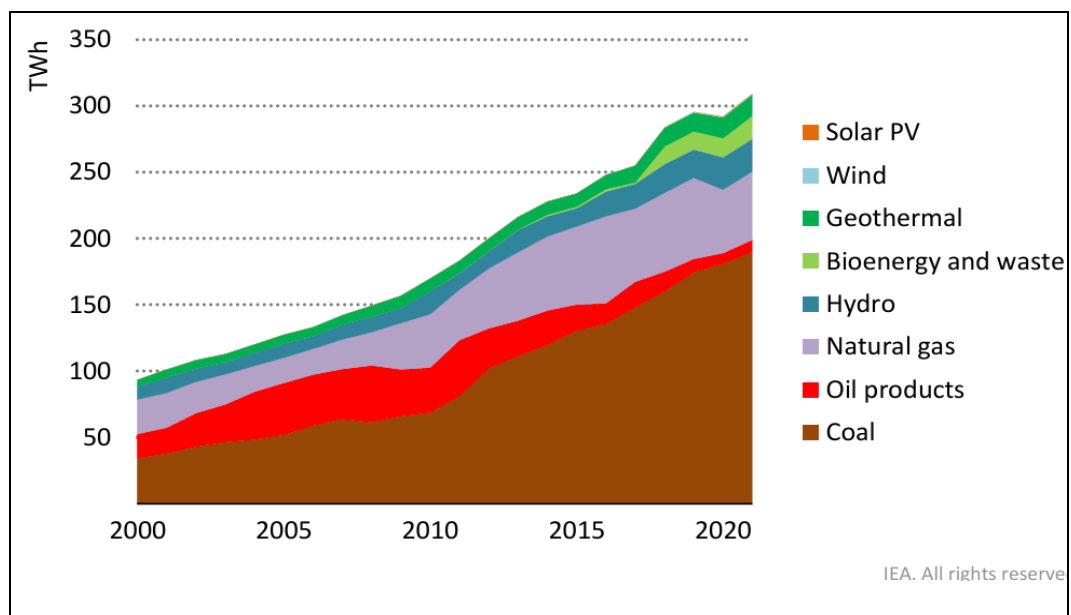


In addition, the dominance of fossil fuel as the main energy source for electricity generation in Indonesia will still continue at least until 2028 (ADB, 2020c). Based on the

National Electricity Supply Business Plan (RUPTL) 2019-2028, 54.6 percent of the national electricity mix in 2025 is targeted to come from coal combustion. Although this figure marks a decline from coal's 62.7% share in 2019, it still exceeds the 54.4% target for 2028 outlined in the 2018-2027 RUPTL. Such reliance on coal indicates that Indonesia's power generation mix remains misaligned with its pledge to cut greenhouse gas emissions by 29% (834 million tons of CO₂) by 2030 (Maulia & Siregar, 2020).

Despite Indonesia possesses substantial renewable energy resources, their development has been hindered by persistent fossil fuel subsidies (Yuliani, 2016). According to the International Energy Agency (2015), the country's potential includes approximately 75,000 MW of hydropower, 4.80 kWh/m²/day of solar radiation, and 32,654 MW of biomass capacity. Moreover, Indonesia holds around 28,000 MW of geothermal resources, representing about 40% of global reserves (Guild, 2019).

Figure 1.2 Indonesia Electricity generation mix by source, 2000 - 2021 (IEA, 2022)



Indonesia's renewable electricity policies have undergone significant transformations shaped by the political contexts of successive administrations and external influences (Paryono et al., 2020). Under Suharto, whose New Order regime was marked by authoritarian centralization and strong state control, foundational governance structures for energy planning were established by Presidential Decree No. 46/1980, which created the National Energy Coordination Agency (BAKOREN) to coordinate cross-sectoral policy (Trichandi, 2018; Down to Earth, 2008). In 1981, BAKOREN introduced the General Energy Policy (Kebijakan Umum Bidang Energi/KUBE) to optimize the use of national

energy resources. The policy underwent subsequent revisions in 1987, 1991, and 1998 (Maulidia et al., 2019).

However, this era prioritized fossil fuel exploitation over renewables. Indonesia's national oil and gas corporation, Pertamina, led by General Ibnu Sutowo, operated with exceptional autonomy, channeling oil revenues into industrial projects such as Krakatau Steel and Batam Island's refinery complex (Joshua, 2016). While these initiatives bolstered economic growth, they entrenched Indonesia's reliance on fossil fuels, a legacy that persists today (Purra, 2011).

Following Suharto's regime, Indonesia faced compounding energy challenges. Rising oil imports, averaging 3.6% annually between 2009 and 2019 (49.1 million tons total), exposed vulnerabilities in energy security (Erdiwansyah et al., 2021). This dependency highlighted the need for renewable diversification, yet progress remained sluggish. Policy implementation faced hurdles such as inconsistent funding, weak governmental incentives for renewable investments, and disruptions like the COVID-19 pandemic, which delayed infrastructure projects (Adrian et al., 2023).

Despite commitments to sustainability, Indonesia's renewable transition lags behind targets. Government Regulation No. 79 of 2014, which sets the framework for the National Energy Policy, outlines a target of achieving 23% renewable energy in the primary energy mix by 2025 as part of Indonesia's climate strategy. However, structural barriers, including economic prioritization of short-term gains, technical limitations, and political resistance, have stifled meaningful progress. For instance, renewable policies often lack enforceable incentives for private investors, resulting in superficial implementation (Adrian et al., 2023). Compounding this issue, energy sector emissions are projected to rise sharply despite mitigation efforts focused disproportionately on forestry (Ordonez, Jakob, Steckel, & Fünfgeld, 2021).

The International Energy Agency (IEA) emphasizes that Indonesia's transition to net-zero emissions depends largely on expanding renewable energy technologies and upgrading energy infrastructure (IEA, 2022). Ordonez et al. (2021) highlight that renewable energy targets are often viewed by stakeholders as symbolic, while frequent regulatory changes and limited institutional influence from environmental ministries have hindered real progress. Energy sector policy continues to prioritize infrastructure development and coal-based economic interests, with little political incentive to shift toward more sustainable pathways.

1.2 Research Problem

Indonesia's energy policy has undergone significant evolution from its origins in the 1899 colonial-era mining law to a petroleum-dominated approach, and eventually toward a framework that increasingly emphasizes conservation, diversification, and the development of clean and renewable energy. While implementation has often lagged behind policy ambitions, the shift toward sustainability has been evident since the late 1980s (Maulidia et al., 2019).

Indonesia's transition to renewable electricity has stagnated over the past two decades, despite incremental policy reforms and international climate commitments. The 2014 National Energy Policy (KEN) established a target of 23% renewable energy in the national energy mix by 2025, yet by 2023, renewables accounted for only 13% (Institute for Essential Services Reform [IESR], 2024). This gap highlights systemic governance challenges rooted in historical policy legacies, institutional inertia, and conflicting priorities across presidential administrations. For instance, while the Jokowi administration (2014-2024) introduced landmark reforms such as Presidential Regulation No. 112/2022 to phase out coal and accelerate renewable deployment, implementation has been undermined by persistent fossil fuel subsidies and the dominance of the state-owned utility, PLN, which controls 85% of electricity distribution (Assegaf Hamzah & Partners 2022; Halstead et al. 2014).

Despite various policy efforts, Indonesia's transition from fossil fuels to renewable energy remains slow, in part due to its continued dependence on fossil fuels and a legacy of energy policy that historically prioritized oil and coal under resource-based development planning (Maulidia et al., 2019). Subsequent administrations, including that of Susilo Bambang Yudhoyono (2004-2014), introduced renewable-oriented policies, yet these efforts were hampered by weak regulatory enforcement, political compromises, and inconsistent incentive structures (Sinaga, 2020). Decentralization reforms post-1998 further fragmented energy planning, generating coordination gaps between national ministries and regional governments (Usman, 2001). These historical legacies have contributed to the disjuncture between ambitious targets and actual progress, revealing the deep structural roots of Indonesia's renewable energy dilemma (Purra, 2011).

The scholarly literature on Indonesia's renewable electricity transition remains fragmented and thematically narrow. Several studies have explored the technical potential of renewable energy resources (Langer et al. 2021; Erdiwansyah et al. 2021; Resosudarmo et al. 2023; Rospriandana et al. 2023), regulatory and institutional challenges (Purra 2011;

Yuliani 2016; Maulia & Siregar 2020; Ordonez et al. 2021), and the investment environment (Maulidia et al. 2019; Halimatussadiyah et al. 2024; Thomas et al. 2025), yet few adopt a longitudinal approach or engage with analytical frameworks that explain how policies evolve across presidential administrations. Although certain studies address policy instruments or sectoral reforms, they often present isolated snapshots rather than tracing the trajectory of institutional and political development over time. For example, Chen, Tan, and Quah (2022) emphasize that policy research tends to isolate governance and decentralization challenges, while calling for integration with broader interdisciplinary perspectives. Similarly, Supriyanto (2024) examines the politics of Indonesia's renewable energy policy, identifying technical and administrative barriers such as limited exploration capacity and weak control and lack of prioritization of renewable energy law formulation, but does not examine their roots in long-term institutional dynamics. Purra (2011) offers a descriptive historical narrative of Indonesia's electricity governance as de-centered, fragmented, and contested, yet does not embed this analysis in an evolutionary policy model.

More critically, Paryono et al. (2020) highlight how Indonesia's electricity sector reforms were significantly shaped by external actors, particularly the International Monetary Fund (IMF), whose liberalization prescriptions under the 1997 Letter of Intent initiated a shift from public monopolies to private-led infrastructure development. However, this market-driven liberalization has often failed to deliver systemic resilience, resulting instead in an overreliance on Independent Power Producers (IPPs), long-term Power Purchase Agreements (PPAs), and growing fiscal risks to PLN. These institutional legacies, combined with weak inter-agency coordination and the entrenched influence of state-owned monopolies, continue to constrain policy coherence and innovation. Collectively, these limitations underscore a significant gap in the literature: the need for integrative, historically grounded studies that move beyond static policy critiques to examine how Indonesia's renewable electricity policies have evolved and where it continues to struggle in the context of both domestic institutional inertia and international influence.

This study adopts a qualitative document analysis approach, focusing exclusively on secondary data sources such as government documents, policy reports, and relevant literature to trace the evolution of Indonesia's renewable electricity policies from 1967 to 2024. The methodological framework adopts Thomas L. Daniels' Five-Era Environmental Planning Model (Daniels, 2009) as a temporal and analytical structure for categorizing and

interpreting policy developments across five presidential administrations. His model enables a systematic examination of patterns of continuity, disruption, and the persistence of institutional legacies within the Indonesian context, facilitating a nuanced understanding of how policy trajectories have unfolded over time.

This study addresses these limitations through a review of policy evolution over time, spanning five presidential eras from Suharto (1967-1998) to Prabowo Subianto (2024-present). Anchored in Daniels' (2009) five-era framework, it explores how political ideologies, development paradigms, and institutional legacies shaped Indonesia's renewable electricity policies. For example, Suharto's fossil-fuel developmentalism, Yudhoyono's climate diplomacy, and Jokowi's infrastructure-driven growth represent distinct eras with different policy approaches. The study also interrogates persistent structural constraints such as PLN's fossil-centric business model, overlapping bureaucratic mandates, and policy fragmentation challenges that continue to inhibit renewable electricity adoption despite Indonesia's commitments to its Nationally Determined Contributions (NDCs). Methodologically, the research utilizes secondary data, including government policy documents, regulations, legal documents, scholarly articles, government roadmaps, and think tank reports to uncover underexplored patterns and contradictions in Indonesia's energy transition. In doing so, it fills a critical gap in the literature by offering a structured, theoretically informed historical assessment that aligns Indonesia's renewable ambitions with the realities of its evolving political economy.

1.3 Research Significance

Indonesia's renewable electricity sector is emblematic of the broader struggle many developing countries face in balancing economic growth, energy access, and climate responsibility. Despite being endowed with vast renewable energy potential, including solar, geothermal, hydro, and biomass, Indonesia remains heavily reliant on fossil fuels, with coal accounting for more than half of national electricity generation (Erdiwansyah et al., 2022). Recognizing this dependency, the Indonesian government has committed to ambitious targets such as achieving a 23% share of renewables in the primary energy mix by 2025 and net-zero emissions by 2060. However, the path to this energy transition has been hampered by inconsistent policy implementation, institutional inertia, and entrenched interests (IESR, 2024).

While there is a growing body of technical studies on Indonesia's renewable energy potential (Langer et al. 2021; Maulia & Siregar 2020) and sectoral analyses of barriers to adoption (Paryono et al. 2020; Halimatussadiah et al. 2024), few studies have explored the

historical and political evolution of policy frameworks across presidential eras. As Setyowati and Quist (2022) note, Indonesia's energy planning remains highly contested, shaped by overlapping authorities, political patronage, and fluctuating development priorities. This research offers a novel contribution by adopting a longitudinal, theoretically grounded approach to assess how renewable electricity policies have evolved from Suharto's centralized developmentalism to Jokowi's infrastructure-driven pragmatism and Prabowo's emerging energy agenda.

Using Thomas L. Daniels' five-era environmental planning framework, the thesis interrogates how historical legacies continue to influence contemporary policy outcomes. The application of this framework enables a structured and comparative assessment of continuity, disruption, and institutional lock-in, which are often overlooked in short-term policy analyses or cross-national studies. By illuminating Indonesia's renewable electricity policymaking through this historical perspective, the study not only fills a critical gap in the literature but also generates practical insights for policymakers, investors, and civil society actors seeking to design more consistent and effective governance structures.

1.4 Research Objectives and Questions

This study seeks to analyze the historical evolution of renewable electricity policy in Indonesia by examining how successive presidential administrations have formulated, reformed, or disrupted energy strategies over the period 1967-2024. Through a review of policy evolution over time grounded in Thomas L. Daniels' environmental planning framework, the research aims to identify the underlying institutional challenges, policy legacies, and political-economic drivers that have influenced renewable electricity adoption.

Research Questions

1. How have Indonesia's presidential administrations from Suharto to Prabowo shaped the evolution of renewable electricity policy within the broader context of national development and environmental planning?
2. What institutional legacies and structural factors have persisted across presidential eras, and to what extent have they enabled or constrained the development of renewable electricity in Indonesia?
3. What patterns of continuity and disruption can be identified in Indonesia's renewable electricity policy over time?
4. How can insights from Indonesia's past renewable electricity policymaking inform future strategies for achieving national climate and energy commitments?

CHAPTER II

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Historical Evolution of Renewable Electricity Policy in Indonesia

2.1.1 Pre-Independence Energy Practices

Energy development in the Dutch East Indies was primarily driven by colonial economic interests, especially the electrification of tea plantations in West Java. From the late 19th century, private Dutch firms operating under long leasehold agreements established hundreds of small hydropower plants (SHPs) to power tea-processing machinery via mechanical systems. One of the earliest such facilities was the Malabar micro-hydropower plant, where a Swiss-built turbine installed in 1885 generated between 10 and 40 horsepower (HP), using direct mechanical transmission to operate factory equipment (Widmer et al., 2001).

By the 1920s, improvements in turbine and generator technology enabled electricity transmission, and SHPs equipped with Pelton and Francis turbines were installed at capacities between 100 kW and 1 MW to supply localized electrification at tea estates and nearby settlements, including utility-scale plants like the Pakar and Centrale Bengkok stations in Bandung (Rospriandana et al., 2023). The Japanese occupation of Indonesia during the Second World War from 1942 to 1945 disrupted these early systems as plantations were repurposed for food crops, and many SHP units were dismantled or abandoned (Widmer et al., 2001).

After independence in 1945, most SHPs were nationalized under the National Estate Center (PPN) and later transferred to PT Perkebunan Nusantara (PTPN). However, economic instability and underinvestment resulted in degraded infrastructure and reduced performance of these legacy systems. The early generation of SHP projects faced prolonged stagnation, partly due to limited availability of spare parts and insufficient technical capacity for operation and maintenance of aging Dutch-era installations (Rospriandana et al., 2023).

2.1.2 Early Post-Independence Energy Development (1945-1967)

Following independence in 1945, Indonesia's electricity infrastructure was severely underdeveloped, with only 157.5 MW of installed capacity, primarily concentrated in Java and Sumatra. In response, President Soekarno established the Electricity and Gas Bureau under the Department of Public Works and Energy. This agency was restructured into the General Board of State Electricity (BPU-PLN) in 1961 and dissolved in 1965,

giving rise to two state-owned enterprises: Perusahaan Listrik Negara (PLN) for electricity and Perusahaan Gas Negara (PGN) for gas, thereby institutionalizing centralized energy governance in line with Article 33 of the 1945 Constitution (JICA et al., 2011).

During this period, some rural areas particularly tea plantations in West Java, continued to rely on small hydropower plants (SHPs) constructed during the colonial era. These facilities met the modest energy demands of tea processing but gradually fell into disrepair, with many being dismantled or replaced by diesel generators as maintenance declined. By 1995, only 18 of the original 44 SHP sites at tea estates were still operational, most of them using outdated and unrepaired colonial-era equipment. Despite the persistent availability of low-cost diesel, many estates opted to connect to the national grid or install gensets. Nonetheless, SHPs remained a viable long-term option due to their renewable nature and local suitability (Widmer et al., 2001).

The global oil boom of the 1970s further shifted Indonesia's energy priorities. As an oil-producing nation, Indonesia experienced a surge in energy export revenue from approximately 20% of central government income in 1970 to around 60% by the early 1980s, leading to reduced policy attention and investment in renewable energy development (Rospriandana et al., 2023). Overall, this section outlines a centralized energy governance structure, the decline of colonial-era small hydropower systems, and a policy shift toward fossil fuels driven by the 1970s oil boom.

2.2 Theoretical Framework: Thomas L. Daniels' Five-Era Environmental Planning Model

2.2.1 Conceptual Overview of the Five-Era Environmental Planning Model

Developed by Thomas L. Daniels (2009), the Five-Era Environmental Planning Model provides a structured analytical framework for examining the historical evolution of environmental planning in the United States. Daniels identifies five distinct eras, each defined by dominant environmental concerns, institutional responses, and planning paradigms:

- The Progressive Era (1890-1920): Rooted in urban reform, this phase emphasized aesthetic enhancement and public health through parks, playgrounds, and early conservation movements (Daniels, 2009).
- Regional Ecological Planning (1920-1969): Emphasized a balance between natural systems and development, integrating ecological science and watershed-based planning into land-use decisions (Daniels, 2009).

- Modern Environmental Regulation (1970-1981): Marked by the rise of federal environmental legislation, such as the Clean Air Act and NEPA, which institutionalized command-and-control regulation (Daniels, 2009).
- Backlash and Market-Based Planning (1982-2008): Defined by political resistance to regulation and a pivot toward financial incentives and decentralized governance (Daniels, 2009).
- Sustainability and the Global Environment (1992-present): Reflects a comprehensive shift toward sustainable development, blending regulatory tools and market-based mechanisms to address global issues like climate change and urban sustainability (Daniels, 2009).

Rather than viewing planning as a linear or technical function, Daniels situates it within broader political and institutional dynamics. Each era is conceptualized as a response to the shortcomings of the previous one, forming a cumulative trajectory toward more integrative and sustainability-oriented planning frameworks. This historical typology allows researchers to examine critical junctures, path dependencies, and institutional transformations over time (Daniels, 2009).

Though originally developed for the U.S. context, Daniels’ five-era environmental planning model is adaptable to other political systems and development trajectories. Indonesia’s post-independence energy policy regime has traversed comparable phases, ranging from state-centered resource extraction under Suharto to increasingly formal commitments to renewable energy and sustainability in recent administrations. This thesis applies Daniels’ framework to analyze Indonesia’s renewable electricity policy evolution across five presidential eras. Table 1 below presents a comparative mapping of Daniels’ planning eras and the corresponding characteristics of Indonesia’s presidential periods (1967-2024).

Table 2.1 Comparative Mapping of Daniels’ Five-Era Environmental Planning Model and Indonesian Presidential Eras (1967-2024)

Daniels’ Environmental Planning Era	Time Frame (U.S. context)	Key Themes (Daniels, 2009)	Mapped Indonesian Presidential Era (Indicative Periods)

Getting on the Green Path	1890-1920	Park creation, City Beautiful movement, conservation of forests and open space.	Suharto Era (1967-1998)
Regional Ecological Planning and Natural Science	1920-1969	Bioregional planning, zoning, conservation science, regionalism.	Reformasi Era (1998-2004)
The Birth of Modern Environmental Planning	1970-1981	Command-and-control regulation (e.g., NEPA, Clean Air Act); creation of environmental bureaucracies.	Yudhoyono Era (2004-2014)
Backlash or a Bridge to Sustainability?	1982-2008	Retrenchment of regulation; rise of market tools (e.g., tradable permits, deregulation).	Jokowi Era (2014-2024)
Planning for Sustainability and the Global Environment	1992-present	Holistic sustainability, global climate goals, urban resilience, cross-sector integration.	Prabowo Era and Beyond (2024)

2.2.2 Relevance and Application to the Indonesian Context

While Thomas L. Daniels' Five-Era Environmental Planning Model was developed to trace the evolution of environmental planning in the United States, its conceptual structure emphasizing the role of institutional legacies, governance paradigms, and planning philosophies offers valuable analytical insight when adapted to Indonesia's policy history. The eras Daniels identified do not map perfectly onto Indonesia's temporal or political chronology, but they provide a flexible framework for interpreting Indonesia's renewable electricity policy evolution in terms of continuity, disruption, and paradigm shifts.

**1. Progressive Era (1890-1920) → Suharto Administration (1967-1998):
Centralized Developmentalism and Institutional Foundations**

The Suharto era reflects the defining characteristics of Daniels' Progressive Era, which emphasized land conservation, sanitary reform, and aesthetic urban planning driven by centralized, technocratic elites with limited concern for ecological systems (Daniels, 2009). Similarly, in Indonesia, energy policy under Suharto was dominated by a highly centralized, state-driven model that prioritized national industrialization through fossil fuel extraction, particularly oil and coal, while sidelining environmental considerations. This developmentalist approach was institutionalized through key governance bodies such as BAKOREN, established by Presidential Decree No. 46/1980, which coordinated national energy planning with minimal public participation or ecological oversight (Joshua, 2016; Maulidia et al., 2019).

**2. Regional Ecological Era (1920-1969) → Reformasi (1998-2004):
Decentralization and Institutional Fragmentation**

Indonesia's Reformasi period parallels Daniels' second era of environmental planning, which introduced ecological science into land-use planning and emphasized fitting human development into natural systems through regional planning models (Daniels, 2009). In Indonesia, the post-Suharto transition was marked by the enactment of Laws No. 22/1999 and No. 25/1999, which decentralized authority over energy and environmental governance to regional government in an effort to dismantle the centralist planning model of the New Order era (Usman, 2001). Civil society and environmental NGOs gained visibility, echoing Daniels' observation that such actors began influencing planning discourse during this era (Daniels, 2009).

3. Modern Environmental Regulation (1970-1981) → Yudhoyono Era (2004-2014): Regulatory Institutionalization and Climate Mainstreaming

The Yudhoyono administration aligns with Daniels' third era of environmental planning, which marked a shift toward legally mandated environmental regulation, including pollution control, impact assessments, and stronger federal oversight (Daniels, 2009). Reflecting this regulatory shift, at the 2009 G-20 Summit, President Susilo Bambang Yudhoyono committed Indonesia to reduce greenhouse gas emissions by 26% below business-as-usual levels by 2020, or up to 41% with international support, representing a significant step in integrating climate mitigation into national policy (Sinaga, 2020). As Daniels (2009) observes, although this era produced a strong legal infrastructure for pollution control, environmental degradation and urban sprawl continued, suggesting that implementation often fell short of regulatory ambition. In Indonesia, this was evident in

ongoing coordination failures between MEMR and PLN, tariff instability, land acquisition delays, and limited investor confidence (Bridle et al., 2018; Yuliani, 2016).

4. Market-Based/Backlash Era (1982-2008) → Jokowi Administration (2014-2024): Market Instruments Amid Governance Inertia

Jokowi's administration corresponds with Daniels' fourth planning era, characterized by market-based environmental reform and a political backlash against earlier regulation, emphasizing tools like economic incentives, growth management, and private-sector participation (Daniels, 2009). In Indonesia, this period saw a concerted effort to attract private investment through Independent Power Producers (IPPs), policy instruments such as feed-in-tariff (FIT), and green financing initiatives (Maulia & Siregar, 2020). Echoing Daniels' warning that market mechanisms require strong institutional design, Indonesia's reliance on slow and opaque Perusahaan Listrik Negara (PLN) and shifting tariff regimes generated policy instability (Guild, 2019). Repeated reversals on National Energy Policy (RUEN) targets and limited decentralization support left subnational governments and private actors facing continued uncertainty (Climate Transparency, 2024).

5. Sustainability Era (2008-present) → Prabowo Era (2024-Beyond): Sustainability Rhetoric and Structural Challenges

Looking forward, the Prabowo administration may signal Indonesia's transition into what Daniels (2009) characterizes as the fifth era of environmental planning, which emphasizes integrated sustainability, long-term resilience, climate adaptation, and cross-sectoral coordination. Central to this era is the acceleration of renewable electricity deployment, which underpins Indonesia's coal phase-out strategy, its 2060 net-zero emissions target, and the broader agenda of green economic growth articulated in President Prabowo Subianto's national vision for 2045. With plans to add 75 GW of renewable capacity by 2040, mobilizing private investment has emerged as a critical policy priority. Key planning instruments, including the New and Renewable Energy Bill (RUU EBET), the National Energy Policy (KEN), and PLN's Electricity Supply Business Plan (RUPTL), are expected to guide this transformation and reinforce institutional support for the energy transition (Thomas et al., 2025).

2.2.3 Conceptual Value of the Model

Daniels' model serves as a conceptual map for understanding continuity, disruption, and policy inertia in Indonesia's renewable electricity planning. The framework helps reveal how successive administrations inherit and reconfigure previous structures, rather than initiating wholly new paradigms. This is particularly important in Indonesia,

where long-standing institutions such as PLN, legacy regulations, and bureaucratic silos resist reform despite shifting political agendas (Setyowati & Quist, 2022).

In this thesis, the Five-Era Model functions both descriptively and analytically. It structures the comparative evaluation of Indonesia's energy policies across presidential periods while providing interpretive tools to understand why renewable electricity development remains uneven. By embedding this framework within the broader literature on institutional reform, energy transition geographies, and governance challenges, the study contributes to an integrated and historically grounded analysis of Indonesia's renewable energy policymaking.

2.3 Literature Review: Themes and Approaches in Indonesia's Renewable Energy Policy Research

Scholarship on Indonesia's renewable electricity policy reveals a fragmented but evolving body of work that spans historical, institutional, and market-based dimensions. One major strand traces the development of renewable infrastructure, particularly small hydropower (SHP), from colonial-era utility to a nationalized asset integrated into rural electrification (Rospriandana et al., 2023). Despite efforts to expand SHP and other renewables through Independent Power Producer (IPP) programs since the 1980s, progress has been constrained by regulatory uncertainty, weak coordination, and low policy coherence.

Institutional governance is another critical theme. Studies consistently highlight the dominance of Perusahaan Listrik Negara (PLN) and the persistence of centralization despite post-Reformasi decentralization efforts. While decentralization offered formal authority to subnational actors, the resulting regulatory overlap and fragmented jurisdictional mandates undermined implementation (Purra 2011; Chen, Tan, & Quah 2022). Guild (2019) emphasizes how frequent regulatory changes, weak governance, and the entrenched interests of state-owned actors like PLN created a fragmented policy environment, undermining investor confidence and slowing renewable energy development.

Electricity market liberalization has received significant scholarly attention, particularly in the context of post-1997 IMF reforms. While liberalization facilitated the entry of IPPs, PLN's de facto monopoly and the single-buyer model remained intact, discouraging genuine market competition (Paryono et al., 2020; Purra, 2011). Fossil fuel subsidies, opaque procurement, and shifting regulations further destabilized investor confidence, hindering renewable energy integration (Adrian et al., 2023).

The effectiveness of feed-in tariffs (FiTs), designed to attract renewable investment, has also been critically examined. Halstead, Mikunda, and Cameron (2014) argue that Indonesia's FiT schemes have been undermined by poor transparency, non-bankable contract structures, and administrative delays. Subsequent reforms failed to resolve these core issues, leaving the instrument largely ineffective in catalyzing large-scale renewable deployment. Ambarita and Kawai (2018) and Yuliani (2016) reinforce these findings, citing the lack of standardized Power Purchase Agreements and inconsistent application as key obstacles.

Technical and systemic barriers compound institutional challenges. Grid inadequacies, technological lock-in, and high transmission losses persist, especially in remote regions (Langer, Quist, & Blok 2021; Erdiwansyah et al. 2021). Political economy analyses point to entrenched fossil fuel interests and subsidy regimes as key barriers to reform (Guild 2019; Bridle et al. 2018; Supriyanto 2024) indicating that transition challenges are not solely technical but also deeply institutional and political.

While empirical insights are abundant, the literature remains largely descriptive, focused on discrete policies or short time frames. Longitudinal, theory-driven studies are rare, and few employ structured frameworks to trace policy evolution across administrations. Although Daniels' (2009) Five-Era Environmental Planning Model is influential in environmental policy literature, its application offers a systematic framework for assessing how institutional legacies, political transitions, and governance disruptions have influenced the trajectory of renewable electricity policy.

In sum, existing studies highlights regulatory fragmentation, centralized control, and limited policy continuity as core barriers to renewable electricity development. Yet the absence of integrative, historically grounded analyses leaves critical gaps in understanding long-term policy dynamics. Addressing these gaps requires a conceptual framework that connects Indonesia's energy governance past to its current institutional constraints an approach this thesis undertakes.

CHAPTER III

METHODOLOGY

This study employs a qualitative, document-based methodology to analyze the evolution of renewable electricity policy in Indonesia from 1967 to 2024. The analysis is structured using Daniels' (2009) five-era environmental planning framework, which conceptualizes policy development as progressing through five distinct eras, each defined by dominant approaches to environmental governance, ranging from early conservationism to sustainability-oriented planning (Daniels, 2009). Though originally rooted in U.S. environmental history, the model offers conceptual flexibility for cross-contextual adaptation. By applying this framework to Indonesia's renewable electricity policy evolution, this thesis aims to reveal how institutional legacies, policy discontinuities, and shifting governance logics have shaped the country's energy transition from 1967 to the present.

The research design is qualitative and interpretive. It examines national-level policy documents, laws, regulations, government plans, and secondary literature across five presidential periods: Suharto (1967-1998), the transitional period of Habibie-Wahid-Megawati (1998-2004), Yudhoyono (2004-2014), Jokowi (2014-2024), and Prabowo Subianto (2024-present). These presidential terms are analytically meaningful, as each is marked by shifts in political regime, economic development priorities, or international climate positioning. Following Daniels' periodization logic, the analysis treats presidential transitions as critical junctures that allow for comparative assessment of institutional change, policy innovation, and strategic continuity.

Additional data sources for this study include key energy legislation in Indonesia, such as Presidential Decree No. 46/1980 on energy conservation, Law No. 15/1985 on Electricity, the Electricity Law No. 30 of 2009 (which replaced the annulled 2002 Electricity Law), and Law No. 30/2007 on Energy. Relevant regulatory frameworks comprise Presidential Regulation No. 5/2006, No. 79/2014 (National Energy Policy/KEN), and No. 112/2022 on renewable energy pricing and procurement. Institutional blueprints analyzed include the General National Energy Plan (RUEN), Regional Energy General Plans (RUED), General Plan for Developing the National Electricity Supply System (RUKN), General Plan of Local Electricity (RUKD), and PLN's Electricity Supply Business Plans (RUPTL). Complementary sources consist of peer-reviewed studies, policy analyses from the Institute for Essential Services Reform (IESR), and reports from credible

NGOs or media outlets documenting implementation challenges and institutional dynamics.

The analytical method involves content and document analysis. All data are thematically coded using Daniels' conceptual dimensions, for example, centralization versus decentralization, policy disruption and continuity, regulation versus market-based incentives, or planning for growth versus sustainability. These thematic anchors allow for identifying dominant regulatory paradigms within each era. Building on comparative policy analysis, the study evaluates each administration's strategic documents and regulatory actions against stated renewable targets, actual energy mix outcomes, and implementation consistency.

Segmenting the analysis by presidential administration strengthens both historical coherence and theoretical alignment. As noted by Chen, Tan, and Quah (2022), Indonesia's renewable energy policies have developed cumulatively through overlapping frameworks rather than through distinct or transformative breaks. The five-era model helps to organize this institutional layering, highlighting whether successive administrations intensified, diluted, or redirected earlier policy efforts.

This research contributes methodologically to Indonesian energy studies by providing a rare application of a structured historical-environmental planning framework. Whereas most existing analyses focus on short-term implementation gaps or regulatory effectiveness (Paryono et al. 2020; Supriyanto 2024; Purra 2011; Maulia & Siregar 2020; Guild 2019), this study addresses the underexplored question of how long-term policy trajectories evolve in response to institutional, political, and global environmental pressures. By applying Daniels' model in the Indonesian context, the thesis demonstrates how policy analysis rooted in environmental planning theory can generate new insights into sectoral transitions in Indonesia.

CHAPTER IV

RENEWABLE ELECTRICITY POLICY TRAJECTORIES ACROSS PRESIDENTIAL ADMINISTRATIONS

4.1 Suharto/New Order Era (1967-1998)

4.1.1 Centralized Development

Centralized development during the Suharto/New Order Era (1967-1998) was characterized by a governance structure that heavily relied on centralized decision-making processes, which were instrumental in shaping Indonesia's energy policies and infrastructure (Purra, 2011). Early electricity governance in Indonesia was initially guided by the 1890 Dutch Ordinance titled "Installation and Utilization of Conductors for Electrical Lighting and Transferring Power via Electricity in Indonesia." This ordinance remained in effect until its repeal in 1985, when Law No. 15/1985 on Electricity (the "1985 Electricity Law") was enacted, marking the beginning of the modern electricity sector. The law established a centralized structure, granting the state-owned utility PLN exclusive authority over transmission, distribution, and electricity sales, while allowing only limited private generation for self-use or sale to PLN (PwC Indonesia, 2023).

Historically, the generation, transmission, and distribution of electricity have been dominated by PLN, which maintains a strong reliance on fossil-fuel-based generation. PLN's monopoly originates from Article 33 of Indonesia's 1945 Constitution, which mandates state control over essential resources, including electricity (Setyowati, 2020). Over the decades, PLN strengthened its dominant position, expanding operations significantly under optimistic growth projections. This expansion prioritized coal-fired power plants (CFPPs), which became the backbone of the electricity system due to perceptions of reliability and affordability (Resosudarmo et al., 2023).

PLN's entrenched dominance has constrained private sector involvement. Despite policy attempts since the 1990s such as introducing Power Purchase Agreements (PPAs), Indonesia has struggled to attract independent power producers, conceding minimal market space to private actors (Setyowati, 2020). PLN's reluctance to move away from coal has further created structural barriers to energy transition, contributing to policy inertia at the national level (Setyowati & Quist, 2022).

During the New Order, President Suharto's centralized regime emphasized bureaucratic control and corporatization of state institutions. While limited economic liberalization occurred through selective privatization and foreign investment, the energy sector remained firmly under government control. Strategic enterprises, particularly

Pertamina in oil and gas and PT PLN in electricity, were dominated by Suharto's political network. This concentration of control contributed to the absence of a comprehensive national energy policy, even after the 1990s reforms. Instead, governance remained highly top-down, perpetuating structural inefficiencies and reliance on fossil fuels (Purra, 2011).

An institutional assessment by the Asian Development Bank (ADB) highlights persistent governance weaknesses in the sector. The dual role of the Ministry of Energy and Mineral Resources (MEMR) as both policy maker and regulator creates inherent conflicts of interest. This lack of regulatory independence has resulted in suboptimal decisions, undermining transparency and efficiency in the electricity market (ADB, 2020b).

Thematic Assessment: Centralized development during the Suharto era entrenched state dominance over Indonesia's electricity sector through top-down governance, with PLN granted monopoly control under the 1985 Electricity Law. This centralization, rooted in constitutional principles and authoritarian institutional logic, prioritized fossil-fuel expansion while limiting private sector participation. Despite limited liberalization attempts in the 1990s, no coherent national energy policy emerged, and the sector remained controlled by political elites. The legacy of this centralized model continues to impede regulatory independence and sectoral efficiency (Purra 2011; ADB 2020b; Setyowati 2020; Setyowati & Quist 2022; PwC Indonesia 2023; Resosudarmo et al. 2023).

4.1.2 Introduction of Fossil-Fuel Dominance and Path Dependency

Indonesia's energy policy has historically prioritized oil and gas, a legacy rooted in the Dutch colonial era when these resources formed the backbone of the economy. This reliance persisted even after Indonesia became a net oil importer in 2004, as the government continued to extend strong support to the oil and gas sector. In contrast, investment in the power sector remained comparatively limited (Maulidia et al., 2019).

During the 1980s, the government introduced measures to diversify energy sources by promoting coal production through foreign investment. To attract investors, Indonesia signed production-sharing contracts on terms favorable to private companies. These efforts were not solely aimed at energy diversification but also intended to position Indonesia as a dominant player in the global coal market and increase state revenues. To make coal competitive against subsidized oil, domestic coal consumption was also supported through significant subsidies (Maulidia et al., 2019).

Coal mining has since become a critical component of Indonesia's economy, contributing substantially to government revenues and exerting considerable influence on national and local politics. Beyond its economic role, coal benefits from entrenched political interests

that shape energy policy. These vested interests reinforce coal's political legitimacy as a tool for revenue generation and regional development (Ordóñez et al., 2021).

Coal's role is further amplified by its dual importance: domestically, it supplies around 60% of Indonesia's energy demand, while internationally, Indonesia is the world's largest coal exporter as of December 2021. This status grants the resource strategic significance, strengthening Indonesia's geopolitical leverage with major coal-importing nations such as China and India. Despite commitments to scale up renewable energy, the country plans to add 27 GW of coal-fired capacity under the RUPTL, potentially increasing coal's share of the electricity mix to between 60% and 65% (ADB, 2020c). This means that there are additional political roadblocks for its phaseout, compared to neighboring countries like Vietnam. Scaling up renewable energies in Indonesia would disrupt the place of the coal industry, challenging both their domestic legitimacy and export markets (Chen, Tan, and Quah 2022).

Thematic Assessment: Indonesia's continued prioritization of fossil fuels, especially coal, has entrenched a deep path dependency shaped by economic reliance, political influence, and strategic export interests. Despite efforts to diversify energy sources since the 1980s, heavy subsidies, vested interests, and coal's dual domestic and geopolitical role have reinforced its dominance. The resulting policy environment creates significant institutional and political roadblocks to renewable energy adoption, with coal remaining central to both national energy planning and international positioning (Maulidia et al. 2019; ADB 2020c; Ordóñez et al. 2021; Chen, Tan, & Quah 2022).

4.2 Reformasi Era (1998-2004)

4.2.1 Decentralization

Since President Suharto's resignation in May 1998, Indonesia has undergone a profound democratization process marked by free elections, press freedom, and nationwide calls for reformasi. This political transition also spurred strong regional demands for decentralization, reducing the dominance of the central government and delegating authority to subnational levels (Usman, 2001). After decades of centralized environmental governance under Suharto's regime (1965-1998), the enactment of decentralization laws represented a significant structural shift in governance (Setyowati & Quist, 2022).

The decentralization framework was formalized through Law No. 22/1999 on Local Government and Law No. 25/1999 on Fiscal Balance Between the Central Government and the Regions. These laws were built upon five guiding principles: democracy, community participation and empowerment, equity and justice, recognition of

regional diversity and potential, and the strengthening of local legislatures. Together, these principles supported the reformasi agenda aimed at dismantling corruption, collusion, and nepotism (KKN) within government institutions (Usman, 2001).

Under this framework, regional governments assumed greater responsibility for natural resource management, particularly in the mining and energy sectors. Each region could adapt energy governance to local socio-economic conditions and resource availability (GOI, 2007). In 2001, this framework evolved further with the introduction of the Fiscal Decentralization Policy under Laws No. 22/1999 and No. 25/1999, later revised as Law No. 32/2004 and Law No. 33/2004. These reforms, introduced in the aftermath of the 1997 Asian financial crisis, redefined the relationship between central and local governments (Swastyardi, 2008).

In the energy sector, decentralization granted district governments authority to issue permits for small-scale mining (less than 15,000 hectares) and licenses related to renewable energy projects. The Electricity Law No. 30/2009 further delineated provincial governments' authority to issue concessions and licenses for electricity generation across districts, as well as set electricity tariffs for Independent Power Producers (IPPs) under their jurisdiction, subject to local legislative approval. However, the initial wave of decentralization resulted in widespread corruption and environmental degradation. Consequently, Law No. 23/2014 was enacted to re-centralize key aspects of energy governance, shifting substantial authority from districts to provincial and national levels (Setyowati & Quist, 2022).

Parallel to these changes, the government attempted to liberalize the electricity sector through the Electricity Law No. 2/2002, which encouraged private sector participation. This effort, however, faced strong opposition from multiple stakeholders, leading to the Supreme Court's annulment of the law for contravening the Constitution (Setyowati & Quist, 2022). The decentralized political structure continues to complicate the transition to clean energy, creating coordination challenges and conflicts among actors managing renewable energy incentives (IESR, 2018).

Thematic Assessment: The post-Suharto decentralization reforms significantly altered Indonesia's energy governance by shifting authority to local governments, introducing both institutional opportunities and coordination challenges. While intended to democratize and localize energy management, decentralization led to regulatory fragmentation, increased corruption risks, and weak implementation capacity. These outcomes ultimately constrained renewable energy progress and necessitated the recentralization of key powers (Usman 2001; GOI 2007; Swastyardi 2008; IESR 2018; Setyowati & Quist 2022).

Table 4.1 Institutions in the Indonesian renewables and power sectors. Adapted from (IESR, 2018)

	New and Renewable Energy	Electricity
Policy Making	DEN, BAPPENAS, MOF, MOEF, CMEA, MOI, MOPWH	DEN, BAPPENAS, MOF, MOEF, CMEA, MOI, MOT, MSOE
Licensing	Local government	DGE, Local government
Regulator	DGE, DGNREEC	DGE
Operation	Local companies, cooperatives, communities	State-owned utility (PLN), captive power, cooperatives, communities
DEN: National Energy Council, BAPPENAS: Ministry of National Development Planning, MOF: Ministry of Finance, MOEF: Ministry of Environment and Forestry, CMEA: Coordinating Ministry of Economic Affairs, MOI: Ministry of Industry, MOPW: Ministry of Public Works and Housing, MOT: Ministry of Trade, MSOE: Ministry of State-Owned Enterprises, DGE: Directorate General of Electricity, DGNREEC: Directorate General of New and Renewable Energy and Energy Conservation.		

4.2.2 PLN's Role in the Market Structure

Persistent structural inefficiencies characterize Indonesia's electricity sector, primarily driven by low tariffs and substantial subsidies to Perusahaan Listrik Negara (PLN). These measures have entrenched a market environment that discourages both domestic and foreign investment. Artificially depressed tariffs, combined with government absorption of production costs, render most large-scale power projects economically nonviable, particularly for multinational firms, thereby limiting private participation in addressing chronic electricity shortages. This pricing distortion reflects broader socio-economic realities; Indonesia's relatively low per capita income constrains the government's ability to raise tariffs without triggering political backlash or adverse social outcomes (Purra, 2011).

At the core of this structure lies PLN's institutional dominance. Any analysis of Indonesia's energy governance must account for PLN's pervasive control over generation, transmission and distribution, functions historically concentrated under its mandate. This monopoly is constitutionally grounded in Article 33 of the 1945 Constitution, which

designates electricity as a vital sector under state control. Accordingly, PLN operates under a dual obligation: ensuring affordability for consumers and maintaining service provision, a balance sustained through significant state transfers compensating for revenue deficits. This configuration has severely limited private sector engagement. Despite policy efforts since the 1990s, such as introducing power purchase agreements (PPAs), private participation remains marginal. Currently, PLN and its subsidiaries generate approximately 77 percent of national electricity output, with the remainder supplied by private power utilities (PPUs) and independent power producers (IPPs) (Setyowati, 2020).

Thematic Assessment: The continued dominance of PLN within Indonesia's electricity market has created a structurally inefficient system, characterized by heavy subsidization, suppressed tariffs, and limited private sector space. While designed to ensure affordability, this monopoly-based structure deters investment, reinforces fossil fuel dependency, and constrains market liberalization despite repeated reform efforts (Purra 2011; Setyowati 2020).

4.2.3 Energy Policy Reforms and Shifts

The advancement of renewable energy in Indonesia has been persistently constrained, primarily by extensive fossil fuel subsidies that distort market mechanisms and impede fair competition. These subsidies, introduced in 1969 as a mechanism to redistribute oil export revenues to the public, dominated central government expenditures for decades and remained in place until 2014. Even after Indonesia became a net oil importer in 2004, comprehensive policy measures to alleviate the fiscal burden associated with fossil fuel imports were delayed. Significant reforms only began in 2016, targeting transportation sector subsidies, followed by a phased reduction of electricity subsidies in 2017 (Maulidia et al., 2019).

Concurrently, institutional restructuring unfolded within the energy sector. Although a degree of administrative coherence emerged with the transformation of the Ministry of Mining into the Department of Energy in 1978, the present Ministry of Energy and Mineral Resources (DEMUR) was not formally institutionalized until 2000. Since its establishment, DEMUR has acted as the central authority responsible for developing and implementing policies governing oil, gas, coal, and electricity, thus providing greater administrative stability and a more streamlined governance framework (Purra, 2011).

Despite these developments, governance reforms in the sector remain incomplete. While broader political and institutional transformations have been significant, their impact on specific industry sectors particularly the power sector has been relatively muted. Two structural challenges persist, frequently cited as barriers to sustainable investment. First,

the heavy subsidization of electricity generation through a uniform pricing mechanism creates an economically unviable market for independent power producers (IPPs). Second, governance challenges, including regulatory unpredictability and strong protectionism favoring domestic firms, exacerbate investor uncertainty. These factors collectively create an environment in which sunk costs often exceed potential long-term returns, deterring foreign participation (Purra, 2011).

Budgetary pressures have been a principal driver of subsidy reform, although concerns over energy security and climate change mitigation have also exerted influence. Ensuring stable access to affordable energy is critical for Indonesia's continued economic development. However, sustaining subsidies indefinitely is neither fiscally viable nor aligned with long-term energy security, given the country's finite natural resources and its status as a net oil importer since 2004. Consequently, diversification of energy sources and improved energy efficiency have become strategic priorities. Fossil fuel subsidies undermine these objectives by reducing the profitability of renewable investments and promoting inefficient energy consumption. The 2004 Policy on Renewable Energy Development and Energy Conservation explicitly recognized the negative implications of subsidies for energy efficiency, recommending their reduction as part of short-term measures to promote renewable energy and conservation (Beaton & Lontoh, 2010).

Climate change mitigation considerations have also shaped the subsidy reform agenda. The 2007 National Action Plan for Addressing Climate Change identified gradual subsidy elimination as a key policy instrument for achieving energy diversification and enhancing the competitiveness of renewable alternatives. The plan emphasized the necessity of fostering economic growth grounded in low-carbon energy pathways by expanding the use of new and renewable energy resources while phasing out fossil fuel subsidies in stages (Beaton & Lontoh, 2010).

Indonesia's longstanding reliance on oil production and fossil fuel subsidies has also contributed to entrenched corruption, often described as the 'oil and gas mafia.' This network has been implicated in practices such as embezzlement of ministry funds, extortion, tax evasion, and smuggling. The implementation of subsidy reforms and the subsequent rise in fuel prices became a flashpoint for public discontent with systemic corruption under Suharto's regime. Protests demanding Suharto's resignation persisted for three months and culminated in the occupation of Parliament, leading to his resignation and the transfer of power to Vice President B.J. Habibie in May 1998. The Asian financial crisis and the conditionalities associated with the International Monetary Fund's stabilization

package further accelerated the adoption of fossil fuel subsidy reforms during this period (Chelminski, 2018).

Thematic Assessment: Despite institutional restructuring and external reform pressures, energy policy during the Reformasi era remained constrained by entrenched fossil fuel subsidies, political resistance, and protectionist industrial culture. While budgetary and environmental concerns prompted partial subsidy reforms, the persistence of market distortions, regulatory unpredictability, and legacy actors like the “oil and gas mafia” undermined renewable energy development and long-term investment viability (Beaton & Lontoh 2010; Purra 2011; Chelminski 2018; Maulidia et al. 2019).

4.3 Yudhoyono Era (2004-2014)

4.3.1 Climate Agenda, International Engagement and Renewable Commitments

The 1998 political reform was the turning point for the Indonesian political system. Following 32 years of authoritarian rule under Suharto, the country embraced a democratic system characterized by political liberalization. The first democratic elections were held in 1999, introducing a multiparty framework. Amendments to the 1945 Constitution institutionalized freedoms such as press, assembly, and association (Article 28), creating an open political climate that enabled civil society actors to advocate for issues including environmental security. By 2004, with domestic political and economic conditions stabilizing, Indonesia resumed active engagement in environmental diplomacy, which had been sidelined during the preceding political crisis. Under President Megawati Soekarno Putri, Indonesia ratified the Kyoto Protocol in June 2004. Her successor, President Susilo Bambang Yudhoyono (SBY), reinforced this trajectory by initiating a series of policies, institutional reforms, and international commitments (Sinaga, 2020).

Indonesia’s primary renewable energy objective is to achieve a 23% share of new and renewable energy (NRE) in the national energy mix by 2025. This target is articulated in the National Energy Policy (KEN) and operationalized through the National Energy Master Plan (RUEN), which outlines specific technological benchmarks, particularly in electricity generation. RUEN serves as a reference point for subsequent planning instruments. Both KEN and RUEN function as overarching strategic frameworks guiding energy sector development. The KEN, established during the Yudhoyono administration in 2014 (Government Regulation No. 79/2014), defines energy mix targets for 2025 and 2030 under Article 9, complemented by Article 8, which specifies total primary energy supply values. Collectively, these provisions translate into explicit utilization benchmarks for

renewable energy, the most notable being the 23% share in primary energy supply by 2025 (Ordonez & Eckstein, 2020).

On the international stage, Indonesia has positioned itself as an active participant in climate governance. The country ratified the UN Framework Convention on Climate Change (UNFCCC) in 1994 and acceded to the Kyoto Protocol in 2004. At the 2009 G-20 Summit, President Yudhoyono pledged to reduce greenhouse gas (GHG) emissions by 26% below business-as-usual (BAU) levels domestically, and by up to 41% with international assistance by 2020. This pledge underscored the seriousness with which Yudhoyono approached climate policy compared to his predecessors. Since 2005, his administration translated international commitments into domestic policy frameworks, institutional arrangements, and the hosting of significant climate-related conferences. Notably, Indonesia hosted COP 13 in Bali, resulting in the Bali Action Plan and Bali Road Map. The administration's peak commitment came in September 2009 with the G-20 pledge. Although Indonesia faced no binding emission reduction obligations, its voluntary commitment was unprecedented among developing countries. Furthermore, climate change mitigation was integrated into the Mid-Term National Development Plan (2010–2014) and the "100-Day Program." The National Action Plan for GHG Emission Reduction (2011) operationalized these commitments as a guiding framework for mitigation policies (Sinaga, 2020).

Indonesia's proactive diplomacy enhanced its global environmental reputation, with SBY receiving international accolades such as the "Global Home Tree" award in 2010, the UNEP "Champion of the Earth for Policy Leadership" award in 2014, and leadership positions including Chair of the Global Green Growth Institute. However, these global achievements contrasted with domestic policy inconsistencies. While pledging climate leadership internationally, the government pursued projects such as two coal-fired power plants through a US\$1.5 billion Memorandum of Understanding (MoU) with China. This contradiction reflects the energy trilemma of balancing energy security, affordability, and climate mitigation. Despite abundant fossil resources, such as oil, natural gas, and coal, Indonesia became a net oil importer in 2006 due to long-term export commitments. A similar trajectory threatens natural gas. Concurrently, persistent electricity access challenges drive continued reliance on coal, the most readily available domestic energy resource. Given Indonesia's status as the world's fourth most populous country, dependence on coal-based energy is projected to persist in the foreseeable future (Sinaga, 2020).

Thematic Assessment: The Yudhoyono era marked a turning point in Indonesia's global environmental engagement, with bold climate commitments, institutional reforms, and the

launch of key policy frameworks such as KEN and RUEN. However, this international leadership was undermined by domestic contradictions, including coal expansion and policy incoherence, driven by structural tensions between energy access, economic priorities, and climate mitigation (Sinaga 2020; Ordóñez & Eckstein 2020).

4.4 Jokowi Era (2014-2024)

4.4.1 Policy Commitments to Renewables

Indonesia has ratified the Paris Agreement under Law 16/2016 on Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change, in which Indonesia commits to a Nationally Determined Contribution of 29% reduction in greenhouse gas emissions on its own by 2030, or 41% reduction with international cooperation (ADB, 2020a).

On January 25, 2017, Indonesia's Minister of Energy and Mineral Resources, Ignasius Jonan, reaffirmed the country's commitment to increasing the share of new and renewable energy to 23% by 2025, in line with its pledge to reduce greenhouse gas (GHG) emissions under the Paris Agreement of 2015. This commitment formed part of Indonesia's Nationally Determined Contribution (NDC), which aims to cut emissions by 26% below the business-as-usual (BAU) scenario by 2020, and by up to 41% with international support. Given this high-level commitment and the global decline in renewable energy costs, a significant expansion of renewables might have been expected. However, since 2007, most of Indonesia's additional electricity generation has been derived from coal, while the share of renewable energy in the electricity mix has remained relatively stagnant (Bridle, 2018).

By December 2022, Indonesia had achieved approximately 83.8 GW of installed power generation capacity, encompassing facilities operated by PLN, Independent Power Producers (IPPs), private power utilities (PPUs), and plants holding non-fossil fuel operating licenses (Izin Operasional Non-BBM). Electricity generation reached 333.5 GWh in December 2022, compared with 309.1 GWh in the previous year. As part of its strategy to achieve net-zero emissions by 2060, PLN plans to increase the share of renewables to 51.6% of an additional 40.6 GW capacity by 2030, reducing coal's dominance in the power mix. This transition will be supported by the Just Energy Transition Programme (JETP), which pledges USD 20 billion (approximately IDR 300 trillion) in funding. The JETP aims to reduce emissions in the electricity sector by 290 million tons and achieve a renewable energy share of 34% by 2030. To meet these goals, Indonesia must

retire at least 8.6 GW of coal-fired power plants, a process estimated to cost USD 5 billion (around IDR 74.4 trillion) (PwC, 2023).

Following the announcement of Indonesia's intended NDCs in 2009, Government Regulation No. 79/2014 outlined ambitious energy transition targets. These include increasing the renewable energy share to 23% of total energy consumption by 2025 and at least 31% by 2050; reducing oil's contribution to below 25% by 2025 and below 20% by 2050; limiting coal to a minimum of 30% by 2025 and 25% by 2050; and controlling natural gas to 22–24% by 2050 (Resosudarmo et al., 2023).

At the time of writing, Regulation 79/2014 remains the principal legal framework for energy transition targets. It identifies three main strategies: expanding renewable power generation, reducing reliance on fossil fuels, and improving energy efficiency through enhanced energy intensity. However, scholars such as Purra argue that implementing these strategies faces substantial challenges, making immediate outcomes unlikely.

In 2021, following Indonesia's net-zero emissions (NZE) pledge for 2060, the government was urged to move beyond Regulation 79/2014 and adopt a comprehensive energy transition roadmap. While multiple ministries and agencies have developed their own versions, these remain fragmented and under revision. Most propose pathways to NZE but do not yet constitute a unified national strategy. In January 2023, the National Energy Council (DEN) introduced its roadmap, outlining a structured vision for the transition.

The DEN roadmap addresses both supply- and demand-side measures. On the supply side, it prioritizes renewable energy expansion and nuclear power development. On the demand side, it promotes interventions in sectors such as transportation and household energy use. Nonetheless, achieving these targets requires significant economic capacity, given the current limited share of renewables and the lack of infrastructure for electric and hydrogen-based transportation. Furthermore, the safe deployment of nuclear power remains highly contentious, with concerns over regulatory readiness and operational capacity.

To reinforce the transition, President Joko Widodo issued Presidential Regulation No. 112/2022 in September 2022. This regulation directs the state utility PLN to prioritize renewable projects and cease new coal power plant development. It focuses on four main areas: (1) collaboration between PLN and the Ministry of Energy and Mineral Resources to accelerate coal plant retirements; (2) introduction of a more viable price ceiling for renewable procurement; (3) establishment of transparent and competitive tendering processes for renewable projects; and (4) provision of general incentives to facilitate renewable energy deployment (Resosudarmo et al., 2023).

However, the regulation does not resolve several major challenges. It fails to identify funding sources for the early retirement of CFPPs, nor does it provide PLN with the flexibility to raise electricity tariffs, an essential step for purchasing renewable electricity at viable rates. Additionally, the incentives mentioned in the regulation often refer to existing policies that are not specifically designed to support the renewable energy sector.

Finally, estimates of the financing required for Indonesia's energy transition by 2060 vary significantly. According to Resosudarmo et al. (2023), the Ministry of Finance projects a need of Rp 3,500 trillion (approximately USD 0.23 trillion), while BloombergNEF estimates a much larger figure of USD 3.5 trillion (Rp 52,500 trillion). These projections reflect the immense scale of investment necessary to achieve Indonesia's long-term energy and climate targets (pp. 159-162).

Complementing these macro-level policy targets, Bridle (2018) offers an industry-level perspective that highlights practical regulatory and institutional constraints during the Jokowi administration. During Jokowi's administration, Indonesia's progress toward realizing its renewable energy policy goals faces a range of structural and institutional challenges. According to Bridle (2018), one of the most significant barriers identified by industry stakeholders is the low power purchase price set under Regulations 12/2017 and 50/2017, which caps tariffs at 85% of the local average generation cost (BPP). This pricing structure is considered financially unviable by many developers, as it does not allow for reasonable returns on investment. In addition, frequent regulatory changes, inconsistent implementation by PLN, and delays in project approvals have contributed to investor uncertainty and elevated development risk. The regulatory framework also fails to account for the environmental benefits of renewable energy, effectively placing it at a disadvantage against subsidized coal generation, which distorts the BPP benchmark. Moreover, PLN's broad institutional mandate and its vested interest in fossil fuel infrastructure such as diesel generator operations and coal assets have led to perceived conflicts of interest that discourage the shift toward renewables. Finally, Bridle (2018) notes that stakeholders most supportive of renewable energy tend to have limited influence in policy-making, while more powerful actors are either passive, conflicted, or directly opposed to reforms that could disrupt their economic interests.

Thematic Assessment: The Jokowi era advanced Indonesia's renewable energy agenda through formal commitments like the Paris Agreement, Net Zero by 2060, and Presidential Regulation No. 112/2022. However, progress has been undermined by weak policy coordination, financially unviable pricing structures, PLN's institutional bias toward fossil

fuels, and limited influence of pro-renewables stakeholders. These systemic barriers continue to delay effective implementation despite ambitious targets and international financing pledges (ADB 2020; Bridle 2018; PwC 2023; Resosudarmo et al. 2023).

4.4.2 Barriers, Challenges, and Policy Uncertainty in Renewable Electricity Realization

Historically, regulatory agencies in the electricity sector were primarily established to mitigate the economic imbalance between consumers and monopoly service providers through oversight mechanisms. Over time, as technological advancements and political dynamics evolved, these agencies assumed a broader role in driving the modernization of electricity systems. This includes facilitating regional electricity trade, promoting renewable energy integration, and supporting the deployment of smart grid technologies (ADB, 2020b). Achieving these objectives, however, necessitates a well-defined policy framework, strong regulatory mandates, enhanced institutional coordination, and substantial financial investment amounting to billions of dollars (Maulidia, 2019).

The electricity sector in Indonesia is governed primarily by the 2009 Electricity Law (Law No. 30/2009), which is further operationalized through implementing regulations issued by the government. The enactment of the 2009 Electricity Law marked a significant shift in Indonesia's electricity governance framework. This law replaced the 1985 Electricity Law and, in response to Constitutional Court Decision 001, eliminated provisions on competition and the unbundling system within the electricity sector. It strengthened the regulatory framework and expanded the authority of regional governments, granting them a role in licensing and tariff determination. Article 3 of the law highlights electricity as a strategic and vital sector, mandating state control over supply, with operational responsibilities shared between central and regional governments under the principle of regional autonomy. This arrangement was intended to promote public welfare and prosperity. Furthermore, the law opened electricity business operations to state-owned enterprises (SOEs), region-owned enterprises, private firms, cooperatives, and nongovernmental organizations (ADB, 2020b).

To achieve renewable energy (RE) targets in the power sector, the government introduced the National Electricity Plan (RUKN 2019-2038), reinforced by Presidential Regulation (PR) 112/2022. Despite these regulatory measures, policy implementation remains constrained by the absence of a clear and credible direction for executing agencies. The state-owned utility PLN continues to face significant resource limitations, including restricted internal budgets and insufficient technical expertise for RE project development, resulting in frequent delays (Climate Transparency, 2024).

Although progress has been made in developing policies to encourage renewable energy investment, overall investment attractiveness remains low. Electricity pricing mechanisms still favor fossil fuels, undermining competitiveness for renewables. Insufficient investment further hinders achievement of RE targets. According to the Ministry of Energy and Mineral Resources (MEMR) annual performance reports, the sector has consistently failed to meet its annual RE share targets since 2018. Additionally, the lack of transparent monitoring and evaluation by implementing agencies complicates progress tracking.

In summary, while renewable energy development in Indonesia’s power sector rests on a solid legal foundation, implementation continues to face substantial institutional and resource-related obstacles. These shortcomings combined with weak coordination, limited funding, and inadequate monitoring signal an unclear execution strategy and unpreparedness among implementing bodies. Consequently, the implementation of RUKN 2019-2038 is assessed as “Medium.” This rating could improve if the government addresses these deficiencies through resource enhancement and stronger monitoring mechanisms (Climate Transparency, 2024).

Table 4.2 Yearly RE share target and realization

Year	RE share	
	Target (%)	Realization (%)
2018	11.6	8.6
2019	12.2	9.2
2020	13.4	11.2
2021	14.5	12.2
2022	15.7	12.3

Source: (Climate Transparency, 2024)

Despite the above issues, they could be addressed through policy reforms on issues such as pricing and market structure to make the market more attractive to foreign investors; yet Indonesian government policies tend to exacerbate energy transition challenges rather than address them. Policies appear to change without warning, denting investor confidence. While MEMR created a specific Directorate to address renewable energy in 2009, and despite numerous national energy and electricity roadmaps, the government has yet to formulate a consistent policy approach to develop the renewable energy sector (Chen, Tan, & Quah, 2022).

Policy uncertainty also stems from a lack of institutional synchronicity. Evidence of a misalignment between the goals of different ministries can be found in Indonesia's setting of its 2060 net-zero emissions target. During the calculation stage, the Ministry of National Development Planning calculated four different year scenarios (2045, 2050, 2060, and 2070), while the Ministry for Environment only set one for 2070. This coordination received backlash and criticism from stakeholders, which compelled a revision of the targets and the final settlement of the 2060 target (Suoneto, 2021). It has been suggested that this institutional conflict is rooted in the different goals of the ministries of trade and environment. This is by no means an exhaustive presentation or analysis of the different issues that may impact Indonesia's renewable energy policy, as it does not fully tackle the issue of climate finance. Nevertheless, it finds that key challenges can be located in the ability of Indonesia to attract investment into its renewable energy sector, underpinned by issues including the market structure and policy uncertainty (Chen, Tan, & Quah, 2022).

Thematic Assessment: Despite a solid legal foundation for renewable energy expansion, Indonesia's electricity sector under Jokowi has been hindered by fragmented institutional coordination, inconsistent policy implementation, and a pricing regime biased toward fossil fuels. Investor confidence remains low due to sudden regulatory shifts, overlapping mandates, and a lack of transparent monitoring systems. These conditions reinforce systemic uncertainty, weakening Indonesia's ability to meet its renewable energy targets (ADB 2020b; Suoneto 2021; Chen, Tan, & Quah 2022; Climate Transparency 2024).

4.5 Early Prabowo Period

4.5.1 Continuities and Early Shifts in Policy Focus

With just about a year in office as President of Indonesia, President Prabowo Subianto has articulated policy signals that suggest both continuity and early shifts in Indonesia's renewable energy agenda, an area central to this study's analysis of presidential influence on long-term climate strategy. Accelerating renewable electricity deployment is critical to achieving Indonesia's coal phase-out plan, the 2060 net-zero target, and the green growth objectives embedded in Prabowo's Together Indonesia Advances Towards a Golden Indonesia 2045 vision. This vision emphasizes rapid economic expansion, targeting 8% annual GDP growth by the third year of his term, while maintaining alignment with Indonesia's decarbonization commitments. Given that economic growth has stagnated at around 5% in recent years, substantial investment is indispensable for meeting these ambitions. Indonesia possesses an estimated 3.7 TW of renewable energy potential; yet, only 0.3% of this capacity is currently utilized within the national energy mix. At the G20

Summit in November 2024, President Prabowo announced a commitment to retire coal-fired power plants by 2040 and to add 75 GW of new renewable capacity. Achieving these targets requires at least USD 1.2 trillion in investments through 2050 for clean energy generation, storage systems, and transmission infrastructure necessitating significant mobilization of private capital (Thomas et al., 2025).

However, as Resosudarmo et al. (2023) caution, these ambitions face entrenched institutional and economic constraints. Fossil fuels particularly coal, remain central to Indonesia's energy mix and fiscal stability, perpetuating policy inertia and complicating early coal retirement. The state-owned utility PLN retains a dominant position, while enduring energy subsidies and limited private sector participation reinforce coal dependency. By 2021, coal accounted for 61% of electricity generation, compared to less than 10% for modern renewables. At that time, Indonesia operated 86 coal-fired power plants (CFPPs) with a combined installed capacity of 40.2 GW, and an additional 10 GW under construction, primarily concentrated in Java-Bali and Sumatra. This expansion has generated persistent overcapacity, projected to extend through 2029-2030.

Compounding this structural imbalance is the state's fiscal reliance on coal revenues. In 2022, government income surged due to increased tax receipts from coal exports, further embedding political and economic barriers to coal phase-out and slowing renewable energy integration (Resosudarmo et al., 2023). Overcoming these systemic barriers will require not only increased investment but also sustained political leadership and macroeconomic stability - lessons drawn from previous policy experiences where reform often faltered during periods of economic or political uncertainty (Resosudarmo et al., 2023).

Thematic Assessment: President Prabowo has articulated an ambitious energy vision aligned with Indonesia's net-zero goals, signaling early shifts such as the 2040 coal retirement pledge and a 75 GW renewable energy commitment. However, longstanding structural features such as PLN's dominance, fossil fuel subsidies, overcapacity, and fiscal dependence on coal exports remain intact and continue to hinder renewable energy progress. Without deep institutional reform and stable political-economic leadership, these early pledges risk repeating past implementation failures (Resosudarmo et al. 2023; Thomas et al. 2025).

4.6 Timeline of Key Energy and Renewable Electricity Policies in Indonesia

To provide a consolidated view of Indonesia's evolving policy landscape, the following table presents a chronological timeline of major regulations, laws, and presidential decrees related to energy and renewable electricity. This timeline helps

contextualize the development of energy policy across different political eras, highlighting key regulatory milestones that have shaped the direction of renewable electricity in the country. It also serves as a reference point for the analysis of policy continuity and disruption discussed in the following chapter.

Table 4.3 Relevant Timeline of Energy and Renewable Electricity Regulations in Indonesia

Policies/Laws/Regulations for RE	Description
Presidential Decree No. 46/1980 Creation of National Energy Coordination Agency (Badan Koordinasi Energi Nasional)	The agency was established with the mandate to develop energy-related policies and coordinate the implementation of cross-sectoral programs.
Law No. 15/1985	The new Electricity Law replaced the colonial-era legislation inherited from the Dutch. Under this law, the Indonesian National Electricity Company (PLN) was designated as the sole holder of the Electricity Power Business (PKUK) in Indonesia.
Law No.20 of 2002 (Annulled)	The New Electricity Law, enacted to replace Act No. 15 of 1985, allowed private and foreign business entities to participate in the provision of electricity.
2003/2004	Law No. 20 of 2002 was annulled, resulting in the reinstatement of Law No. 15 of 1985.
Presidential Regulation No. 5/2006 on National Energy Policy (Kebijakan Energi Nasional, KEN)	It sets a national target for the optimal energy mix in 2025 to be: (i) less than 20% from oil; (ii) more than 30% from gas; (iii) more than 33% from coal; (iv) more than 5% from biofuel; (v) more than 5% from geothermal; (vi) more than 5% from other renewable especially biomass, nuclear, micro hydro, solar and wind; and (vi) more than 2% from liquefied coal.
Law No. 30 of 2007 on Energy	explicitly emphasizes that national energy security must be attained through diversification, particularly by promoting new and renewable energy sources.

Law No. 30/2009 (New Electricity Law)	This law liberalized the electricity sector by permitting private and foreign entities to engage in electricity supply activities.
MEMR Regulation No. 31/2009	Establishes the purchasing price mechanism for electricity generated from small- and medium-scale renewable energy (RE) power plants by PT PLN (Persero).
National Energy Policy (KEN) - Government Regulation No. 79/2014	Sets national targets to increase the share of new and renewable energy (NRE) in the primary energy mix to 23% by 2025 and 31% by 2050.
General National Energy Plan (RUEN) - Presidential Regulation No. 22/2017	Developed by the National Energy Council, RUEN provides a roadmap for achieving KEN's targets. To meet these goals, Indonesia must install 45.2 GW of renewable capacity by 2025 (33.3% of 135.5 GW total installed capacity) and 167.7 GW by 2050 (37.8% of 443.1 GW).
General National Electricity Plan (RUKN) – MEMR Decree No. 143 K/20/MEM/2019	Outlines a 20-year electricity development framework and guides PLN's Electricity Supply Business Plan (RUPTL). The 2015–2034 RUKN targets a 25% share of NRE by 2025.
Regional Electricity Development Plan (RUKD)	At the subnational level, RUKD aligns with national objectives, aiming for 23% renewable energy and only 1% oil-based generation by 2025.
PLN's Electricity Supply Business Plan (RUPTL)	A rolling 10-year investment plan for Indonesia's power sector. The 2018 RUPTL aims to achieve a 23% NRE share in electricity generation by 2025, adding 15 GW of renewables to the grid.
Ministerial Regulations	MEMR Regulation No. 41/2017 - Electricity Tariff Structure. MEMR Regulation No. 49/2017 - Principles for Power Purchase Agreements. MEMR Regulation No. 50/2017 - Utilization of Renewable Energy for Power Supply.

<p>Presidential Regulation No. 112/2022 to support the targets outlined in Regulation 79/2014.</p>	<p>Introduced to accelerate renewable energy development and support targets outlined in KEN (Regulation No. 79/2014). It focuses on procurement mechanisms, pricing policies, and the early retirement of coal-fired power plants (CFPPs) to facilitate RE investments</p>
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(Sources: Compiled from Pillai, 2014; IESR, 2018; Trichandi, 2018; Paryono et al., 2019; Maulidia et al., 2019; Halimatussadiyah et al., 2024).

CHAPTER V
FINDINGS AND COMPARATIVE ANALYSIS

5.1 Identifying Patterns of Continuity and Disruption in Indonesia’s Renewable Electricity Policy Over Time

Table 5.1 Continuity and Disruption in Renewable Electricity Policy During the Suharto/New Order Era (1967-1998)

Era	Continuity	Disruption
Suharto/New Order Era (1967-1998)	<ul style="list-style-type: none"> - Strong state monopoly through PLN, legitimized by Article 33 of the 1945 Constitution and formalized by the 1985 Electricity Law. - Persistent centralized, top-down governance in energy policy and infrastructure. - Persistent dependence on fossil fuels, particularly coal and oil as the primary sources of energy - Fossil fuel subsidies embedded in economic and political systems. - Limited or no private sector participation in power distribution. 	<ul style="list-style-type: none"> - Introduction of 1985 Electricity Law allowing very limited private participation (for own use or sales to PLN). - Foreign investment encouraged in coal production (1980s), opening to international coal markets. - Production-sharing contracts for coal signed to expand coal supply. - Policy rhetoric on energy diversification initiated, though not institutionalized.

5.1.1 Suharto/New Order Era Assessment (1967-1998)

During the Suharto era, Indonesia institutionalized a highly centralized, state-dominated energy governance framework, reinforced by the constitutional monopoly granted to PLN over electricity transmission and distribution under the 1985 Electricity Law. Despite superficial liberalization in the 1990s, the structure remained resistant to private sector engagement and renewables. Fossil fuel dependence particularly coal was

institutionalized through subsidies, political patronage, and economic incentives, reinforcing a long-term path dependency. Although the regime encouraged foreign investment in coal and hinted at diversification, these moves served expansionist fossil agendas rather than transitioning toward sustainable energy. Consequently, continuity in centralized control and fossil reliance dominated this era, with only marginal policy disruptions (Purra 2011; Maulidia et al., 2019; ADB 2020c; Ordoñez et al., 2021; Chen, Tan, & Quah 2022; Setyowati 2020; Setyowati & Quist 2022; PwC Indonesia 2023; Resosudarmo et al., 2023).

Table 5.2 Continuity and Disruption in Renewable Electricity Policy During the Reform Era (1998-2004)

Era	Continuity	Disruption
<p style="text-align: center;">Reformasi Era (1998-2004)</p>	<ul style="list-style-type: none"> - PLN maintained monopoly over generation, transmission, and distribution. - Fossil fuel subsidies persisted despite Indonesia becoming a net oil importer in 2004. - Electricity tariffs remained artificially low, supported by extensive subsidies to PLN, which sustained a market structure that was economically unattractive for independent power producers (IPPs) - Policy protectionism and unpredictable legal environments remained institutional constraints. 	<ul style="list-style-type: none"> - Decentralization reforms via Laws No. 22/1999 and No. 25/1999 transferred significant governance responsibilities to local governments, including licensing for renewable projects and mining permits. - Electricity Law No. 20/2002 attempted to liberalize the electricity sector and expand private sector participation (though annulled by the Constitutional Court). - Creation of the Ministry of Energy and Mineral Resources (DEMR) in 2000 consolidated energy governance under a dedicated ministry. - Subsidy reform rhetoric emerged under IMF pressure and climate policy

		(e.g., 2004 Renewable Energy Policy), recognizing the inefficiency of fossil fuel subsidies.
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5.1.2 Reformasi Era Assessment (1998-2004)

The Reformasi era introduced significant governance and institutional disruptions, most notably through decentralization laws that delegated energy-related responsibilities to subnational governments. The creation of the Ministry of Energy and Mineral Resources (MEMR) in 2000 represented a structural enhancement in energy policy coordination. Nonetheless, significant continuities endured, notably PLN’s dominance, persistent fossil fuel subsidies, and an inefficient tariff framework. Efforts to liberalize the electricity market, exemplified by the annulled 2002 Electricity Law encountered resistance from entrenched interests and constitutional limitations. Reform initiatives were largely externally induced, influenced by the IMF stabilization program and nascent climate governance frameworks, yet they failed to dismantle core structural constraints (Usman, 2001; GOI, 2007; Swastyardi, 2008; Beaton & Lontoh, 2010; Purra, 2011; IESR, 2018; Chelminski, 2018; Maulidia et al., 2019; Setiawati, 2020; Setyowati & Quist, 2022).

Table 5.3 Continuity and Disruption in Renewable Electricity Policy During the Yudhoyono Era (2004-2014)

Era	Continuity	Disruption
Yudhoyono Era (2004-2014)	<ul style="list-style-type: none"> - Coal-fired power remained the backbone of electricity generation, with its expansion reinforced through international partnerships, including memoranda of understanding with China. - PLN retained dominant control over transmission, distribution, and significant generation capacity. - Structural issues like fossil fuel subsidies and low 	<ul style="list-style-type: none"> - The institutional framework for climate and renewable energy policy was strengthened through the adoption of the National Energy Policy (KEN) under Government Regulation No. 79/2014 and its derivative, the National Energy General Plan (RUEN). - At the 2009 G-20 Summit, the President formally pledged to reduce national

	<p>electricity tariffs remained unaddressed.</p> <p>- Path dependency on fossil fuels continued due to energy poverty and resource nationalism.</p>	<p>greenhouse gas emissions by 26% through domestic efforts and up to 41% with international support by 2020.</p> <p>- The establishment of the National Council on Climate Change and the issuance of the 2011 National Action Plan for Greenhouse Gas Emission Reduction (RAN-GRK) signaled a more coordinated approach to climate mitigation.</p> <p>- Indonesia's hosting of COP-13 and the subsequent launch of the Bali Action Plan elevated the country's profile in global climate diplomacy and reinforced its commitment to environmental governance.</p> <p>- Formal recognition of 23% renewable energy target by 2025.</p>
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5.1.3 Yudhoyono Era Assessment (2004-2014)

The Yudhoyono administration signaled a notable reorientation in Indonesia's climate diplomacy and renewable energy agenda. Key developments included the formulation of the National Energy Policy (KEN), a commitment to achieving 23% renewable energy in the national mix by 2025, and a high-profile pledge at the 2009 G-20 Summit to reduce GHG emissions. These measures embedded a long-term sustainability vision within national policy. Nonetheless, significant contradictions persisted domestically: fossil fuel dependence deepened through continued coal expansion, reforms

to PLN stagnated, and energy subsidies remained intact. Consequently, this period reflects a dual legacy, rhetorical and institutional progress juxtaposed with structural and policy continuity (Sinaga, 2020; Ordóñez & Eckstein, 2020).

Table 5.4 Continuity and Disruption in Renewable Electricity Policy During the Jokowi Era (2014-2024)

Era	Continuity	Disruption
Jokowi Era (2014-2024)	<ul style="list-style-type: none"> - Continued structural dominance of PLN and fossil fuel generation. - Electricity market remains largely subsidized and unattractive to private investors. - Institutional inertia and miscoordination between ministries persist. - Regulatory instability and pricing rules (e.g., BPP cap) continue to discourage renewable investments. - Implementation of RUEN and RUKN remains weak and uneven. 	<ul style="list-style-type: none"> - Indonesia ratified the Paris Agreement and formally submitted its Nationally Determined Contributions (NDCs) under Law No. 16/2016, establishing 2030 targets for greenhouse gas emission reductions. - Adoption of Presidential Regulation 112/2022: early CFPP retirement, RE procurement rules, and PLN mandate for renewables. - Launch of Just Energy Transition Partnership (JETP) with \$20B climate finance pledge. - Government commitment to net-zero by 2060 and multiple energy transition roadmaps (DEN, MEMR). - Institutionalization of climate targets into national planning (e.g., KEN, RUEN, RUKN).

5.1.4 Jokowi Era Assessment (2014-2024)

Under the Jokowi administration, Indonesia reinforced its climate and energy transition agenda through international commitments, domestic regulatory frameworks, and long-term strategic initiatives, including the ratification of the Paris Agreement, adoption of national net-zero targets, and participation in the Just Energy Transition Partnership (JETP). However, these advances were undercut by persistent structural and regulatory barriers. PLN’s dominance, low feed-in tariffs, and frequent policy shifts undermined investor confidence and slowed renewable deployment. While the issuance of Presidential Regulation 112/2022 and multiple roadmaps marked genuine policy disruption, implementation lagged due to fragmented governance and entrenched fossil fuel interests. The era thus reflects a tension between progressive commitments and stagnant institutional practices (Bridle 2018; ADB 2020a; Suoneto 2021; Chen, Tan, & Quah 2022; PwC 2023; Resosudarmo et al., 2023; Climate Transparency 2024).

Table 5.5 Continuity and Disruption in Renewable Electricity Policy During the Early Prabowo Era (2024 & beyond)

Era	Continuity	Disruption
<p align="center">Prabowo Era and beyond (2024)</p>	<ul style="list-style-type: none"> - Persistent dominance of coal in the electricity mix. - Ongoing construction of CFPPs and structural overcapacity. - Fiscal reliance on coal exports for state revenue. - PLN monopoly and limited private sector participation. - Institutional inertia and economic disincentives for reform remain entrenched. 	<ul style="list-style-type: none"> - Presidential commitment at G20 (2024) to retire CFPPs by 2040. - Pledge to install 75 GW of new renewable capacity. - Integration of renewable targets within Golden Indonesia 2045 vision. - Strategic framing of energy transition as essential to achieving 8% economic growth. - Public acknowledgment of the need for private capital and diversified investment in clean energy.

5.1.5 Prabowo Era Assessment (2024 & beyond)

The early phase of Prabowo's presidency reflects both rhetorical ambition and enduring structural constraints. His administration's public commitment to retire coal plants by 2040 and install 75 GW of renewables signals a marked shift in discourse, integrating green growth into the broader Golden Indonesia 2045 vision. However, these commitments are set against a backdrop of entrenched coal dependence, PLN dominance, and fiscal reliance on fossil exports. Structural overcapacity and institutional inertia continue to hamper renewable integration. The challenge ahead lies in translating high-level commitments into actionable reforms that overcome systemic resistance and unlock private capital, a task that past administrations struggled to achieve. Whether these early shifts will translate into substantive reforms remains contingent on overcoming systemic constraints through decisive leadership and market liberalization (Resosudarmo et al., 2023; Thomas et al., 2025).

5.2 Continuities, Disruptions, and Path Dependencies

This section presents the researcher's original synthesis and interpretation of key patterns of continuity, disruption, and institutional path dependency, drawing directly from the empirical evidence analyzed in previous chapters. It connects the findings across presidential eras to highlight enduring structural features, reform inflection points, and the persistent challenges constraining renewable electricity advancement in Indonesia. Despite leadership changes, a consistent pattern across administrations is the dominance of PLN and fossil fuels, particularly coal, in shaping the energy landscape. The monopoly structure, justified constitutionally and politically since Suharto's rule, remains a central feature of Indonesia's electricity governance. This entrenched path dependency is reinforced by economic reliance on coal, subsidy regimes, and the institutional interests of state actors.

Moments of disruption such as the 1998 decentralization, the 2004 National Energy Policy (KEN), the 2016 Paris Agreement ratification, or PR 112/2022 introduced new frameworks and ambitions but often failed to dismantle structural barriers. Instead, reforms were frequently undermined by fragmented implementation, short-term political interests, and poor coordination between national and subnational actors. The lack of sustained institutional reform, particularly in pricing policy, investment regulation, and inter-agency coordination, has significantly constrained renewable electricity deployment. These barriers are not merely technical but rooted in Indonesia's broader political economy where energy decisions serve overlapping goals of regime legitimacy, economic growth, and patronage distribution.

5.3 Lessons Learned from Indonesia's Historical Trajectory

The historical review suggests several key lessons for accelerating renewable electricity adoption in Indonesia:

1. Policy instruments must be accompanied by institutional reform. Long-term plans like RUEN and PR 112/2022 are ineffective without capable, empowered, and well-coordinated implementing agencies.
2. Decentralization needs to be managed, not reversed. While the post-Reformasi decentralization created fragmentation, recentralization risks overlooking local contexts. Instead, stronger vertical coordination and capacity-building at subnational levels are essential.
3. PLN reform is unavoidable. As the central actor in the electricity sector, reforming PLN's mandate, tariff policy, and procurement process is critical to enabling a more open, competitive, and renewable-friendly market structure.
4. Coal phaseout must be politically and economically managed. The phaseout will require compensating for fiscal losses, securing stakeholder buy-in, and providing transition pathways for coal-dependent regions and labor forces.

5.4 Policy Implications

Based on the historical analysis, the following policy implications are proposed:

1. **Institutional Realignment and Coordination:** Indonesia should establish a dedicated, cross-ministerial Renewable Energy Transition Task Force reporting to the President. This would align goals across MEMR, PLN, DEN, MoF, and BAPPENAS and centralize oversight of implementation bottlenecks.
2. **Reform PLN's Role and Procurement Structure:** PLN should transition from a vertically integrated monopoly to a grid operator and market facilitator. This includes fair PPAs, clearer tariff mechanisms, and transparent tendering for renewables, as outlined (but not fully realized) in PR 112/2022.
3. **Revise Fossil Fuel Pricing and Subsidies:** Subsidy rationalization must continue, complemented by compensatory schemes for the poor and vulnerable. This would help level the playing field for renewables while maintaining energy equity.
4. **Strengthen Regulatory Certainty and Monitoring:** To attract investment, Indonesia must reduce regulatory volatility. This includes streamlining licensing, clarifying land-use regulations for RE projects, and strengthening M&E systems for roadmap implementation.

- 5. Support Subnational Renewable Initiatives:** Provide technical and financial support for provinces and districts to develop locally appropriate renewable energy plans, particularly in off-grid and remote areas.

CHAPTER VI

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This thesis has examined the evolution of renewable electricity development in Indonesia across five presidential administrations, structured through Thomas L. Daniels' Five-Era Environmental Planning Framework. The analysis reveals a persistent pattern of institutional path dependency, centralized governance, and fragmented reform efforts that have systematically constrained the advancement of renewable energy, despite increasing international and domestic commitments to sustainability and decarbonization.

From the Suharto era's entrenched state monopoly under PLN and fossil fuel prioritization to the post-Reformasi decentralization and aborted liberalization attempts, institutional fragmentation and political-economic inertia have consistently delayed renewable energy transitions. The Yudhoyono administration advanced international commitments and introduced the National Energy Policy (KEN), yet domestic policy implementation remained contradictory due to persistent reliance on coal and investor-unfriendly market conditions. Under Jokowi, despite legal reforms and high-level climate pledges, regulatory uncertainty, PLN's conflicted institutional role, and policy incoherence continued to hinder progress. The early Prabowo period signals potential rhetorical realignment, but structural barriers fiscal coal dependence, overcapacity, and limited investment frameworks remain largely intact.

Across all eras, continuity has dominated over disruption. Policy instruments often lacked operational clarity, coordination among institutions has been weak, and investment in renewable infrastructure has consistently underperformed. The result is a persistent gap between Indonesia's renewable energy targets and the institutional capacity required to realize them.

Finally, future research could investigate the internal political economy of PLN, Indonesia's state-owned electricity utility. Such studies could explore how its institutional incentives, governance structure, and fiscal dependencies either enable or resist renewable energy reforms. This would deepen the understanding of PLN's role as a gatekeeper in Indonesia's electricity transition.

6.2 Policy Recommendations

These policy recommendations are derived from the thesis findings across five presidential administrations. They aim to address the institutional, financial, and regulatory barriers identified in Indonesia's renewable electricity transition and inform more coherent strategies for achieving long-term national energy and climate goals.

1. Clarify and Strengthen Institutional Roles in Energy Policy

Addressing institutional overlaps among the Ministry of Energy and Mineral Resources (MEMR), PLN, the National Energy Council (DEN), and other relevant actors requires targeted legal and administrative reforms. Establishing clearly defined mandates and independent regulatory oversight is essential to minimize institutional friction and enhance accountability in policy implementation.

2. Reform PLN's Market Role

PLN's simultaneous role as both system operator and market participant creates a structural conflict of interest. Addressing this, either by unbundling these functions or by implementing a transparent and competitive procurement framework could stimulate private sector participation and mitigate rent-seeking behavior within the fossil-fuel-dominated energy sector.

3. Establish Stable and Transparent Tariff Structures

Feed-in tariffs (FiTs) or auction-based pricing mechanisms should reflect actual project costs and provide long-term price certainty. Revising price caps such as the local generation cost benchmark (BPP) is critical to ensuring financial viability and attracting sustained investment.

4. Phase Out Fossil Fuel Subsidies Gradually but Decisively

Coal and fossil fuel subsidies should be phased out through a structured transition, supported by targeted social protection for vulnerable populations. This would level the playing field for renewables and signal long-term policy reliability.

5. Enhance Subnational and Inter-Ministerial Coordination

Energy policy must be harmonized across national and regional levels. Strengthening the capacity of local governments and establishing a cross-ministerial task force would ensure alignment between energy, environment, and development priorities.

6. Develop a Legally Binding National Energy Transition Roadmap

Fragmented plans such as RUEN, RUKN, and the 2023 DEN Roadmap should be consolidated into a unified, legally binding national roadmap. This roadmap should outline timelines, investment pathways, and institutional responsibilities, and be revised periodically in light of technological and economic developments.

7. Mobilize Climate Finance and De-risk Investment

Achieving the goals of the Just Energy Transition Partnership (JETP) and Net Zero Emissions (NZE) will require mobilizing diverse funding streams including concessional finance, green bonds, and blended finance. Government-backed guarantees and risk-sharing instruments can improve the bankability of renewable energy projects.

8. Foster Political Will and Institutional Continuity

Long-term success depends on cross-party political consensus that survives electoral cycles. Embedding climate and energy targets into legally anchored mid- and long-term development plans would help shield reforms from political instability.

This thesis concludes that while Indonesia has made important rhetorical and regulatory strides, structural reforms, long-term investment strategies, and institutional realignment are indispensable if the country is to achieve its renewable electricity targets and deliver on its climate commitments by 2060.

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