

Unlocking Indonesia's Renewable Energy Investment Potential

Challenges and opportunities for accelerating
investment in solar and wind power

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Contents

- Key Findings.....4
- Policy Reformation is Needed to Achieve Renewable Energy Goals5
- Executive Summary.....5
- Introduction8
- The Role of Private Investment in the Renewable Energy Sector 10
- Risk Factors Affecting Renewable Energy Investment 12
- Opportunities for Renewable Energy Investment..... 13
 - Potential for Economic Growth 13
 - Untapped Renewable Energy Potential..... 15
- Policy and Regulatory Changes to Support Renewables Development..... 16
 - Mandatory Partner Scheme 18
 - Restrictions on the Transfer of Ownership Rights 21
 - Deliver-or-pay Scheme..... 24
 - Renewable Energy Tariffs..... 25
 - Local Content Requirements (LCRs)..... 26
 - Carbon Credits Incentives 28
 - Procurement Procedures 30
- Conclusion 32
- About IEEFA..... 34
- About the Author 34

Figures and Tables

- Figure 1: Investment Realization in the Energy and Mineral Resources Sector8
- Figure 2: Total Installed Capacity (left) and Additional Capacity (right), 2018 – 20239
- Figure 3: Operating Solar and Wind Power in Southeast Asia.....9
- Figure 4: Investment Needed to Achieve Indonesia’s 2030 Climate Target 11
- Figure 5: Additional Electricity Capacity, RUPTL 2021 – 2030 11
- Figure 6: Business Arrangement of an IPP Project..... 12
- Figure 7: Investment Attractiveness Factors 13
- Figure 8: Gross Domestic Product Trend 14

Figure 9: Indonesia’s Renewable Energy Utilization 15

Figure 10: Indonesia’s Renewable Energy Sector Regulations..... 16

Figure 11: Procurement Mechanism under Presidential Regulation No. 112 of 2022 17

Figure 12: Project Structure Under the 51% Mandatory Partner Mechanism 19

Figure 13: PLN’s Recent Joint Investments with IPPs in Renewable Energy Projects 21

Figure 14: Comparison Between Greenfield and Brownfield Investments..... 22

Figure 15: Project Milestones 23

Figure 16: Renewable Energy Tariffs (in cUS\$/kWh)..... 25

Figure 17: Indonesian Local Content Requirements for Solar Photovoltaic (PV) Installation 27

Figure 18: Price of Carbon, 2024 29

Figure 19: DPT Application Process 30

Figure 20: Overview of the Tender Process 31

Table 1: Key Recommendations 33

Key Findings

Investment in renewable energy in Indonesia has stagnated for the past seven years. In 2023, it attracted a mere US\$1.5 billion, lagging far behind its Southeast Asian neighbors.

Indonesia needs to attract US\$146 billion in near-term renewable energy investment to meet the country's 2030 climate target.

Current policies and onerous contractual requirements towards solar and wind power raise costs and discourage private investment.

Introducing transparent and well-defined procedures in renewable energy procurement, supported by more commercially balanced contractual terms and conditions, will provide assurance and certainty for potential investors.



Policy Reformation is Needed to Achieve Renewable Energy Goals

Indonesia's renewable energy investment has been stagnant for the past seven years. The latest data shows that the country could only attract around US\$1.5 billion (bn) in 2023, translating into a mere 574 megawatts (MW) of additional renewable energy capacity. To meet its 2030 climate commitment, Indonesia needs around US\$285bn, and private investment will be vital to fill the US\$146bn investment gap.

Indonesia has the ingredients needed to attract more investors in renewable energy projects due to rising demand from its 270 million population, historically strong economic growth, and abundant untapped renewable energy sources.

Private investors would be encouraged to enter the Indonesian market if there were transparent procurement procedures, as well as consistency and reliability in the implementation of current regulations. By reevaluating the mandatory partner scheme, electricity purchase tariffs, carbon credits incentives, and the local content requirements policy, the Government of Indonesia can ensure that the return on investment is appealing for investors.

By increasing the attractiveness of renewable energy investment and development in the country, Indonesia can accelerate its transition to clean energy and meet its climate targets.

Executive Summary

Indonesia, the most populous Southeast Asian country, with its abundant solar, wind, and natural resources, possesses significant potential for renewable energy development. However, it is struggling to make meaningful progress and needs to attract more investment to increase renewable energy capacity.

Indonesia's renewable energy investment has stagnated over the past seven years. The latest data shows that Indonesia could only attract around US\$1.5 billion (bn) in 2023, translating into a mere 574 megawatts (MW) of additional renewable energy capacity; 145MW of which was added in 2023 from the Cirata floating solar project. Meanwhile, Indonesia's neighboring countries have installed significant solar and wind capacity. Vietnam, for example, has a solar capacity of 13,035MW and

6,466MW of wind generation, recording an increase of 1,115MW capacity in solar and wind power in 2023 alone.¹

The Government of Indonesia (GOI) has issued several regulations to promote investment in renewable energy projects from the private sector or Independent Power Producers (IPPs) to achieve emission targets. However, due to the slow progress in development, especially in the solar and wind segments, the attractiveness of investing in renewable energy is in doubt. The government's latest regulation in 2022 did not yield the desired result of increasing renewable energy in the energy mix as investments continued to flow into fossil fuel-based energy sources such as oil and gas. As a result, GOI has felt compelled to reduce its 2030 renewable energy targets from 26% of the energy supply to 19 - 21%. Such adjustments raise questions about the government's commitment to a renewable energy transition.

Indonesia has committed to an unconditional 31.9% reduction target for greenhouse gas (GHG) emissions and a conditional 43.2% reduction in 2030.² To meet its 2030 climate commitments, Indonesia needs around US\$285bn, and private investment will be vital to fill the estimated US\$146bn investment gap. This report analyzes the current situation and makes recommendations to help boost renewable energy investment. It explores the investment opportunities and challenges in Indonesia's renewable energy sector, focusing on government policies, regulations, and implementation processes.

Indonesia has the ingredients to attract more investors in renewable energy projects due to rising demand from its 270 million population, historically strong economic growth, and abundant untapped renewable energy sources. However, several regulatory challenges create uncertainty for potential investors and financiers of renewable energy projects.

- **Mandatory partner scheme.** The government's strategy in renewable energy asset ownership places Indonesia's national electricity utility, PT Perusahaan Listrik Negara (PLN), and its subsidiaries in the driving seat on renewable energy development through a majority shareholders' scheme. This scheme raises risks for potential investors and creates investment challenges as it negatively impacts equity returns for investors.
- **Restrictions on the transfer of ownership rights.** This regulation was put in place to ensure the completion of projects, but conversely, it limits the private sector from obtaining additional capital and technical expertise during project delivery.
- **Deliver-or-pay scheme.** The implementation of the new "deliver-or-pay" scheme, replacing the "take-or-pay" scheme further burdens the private sector with penalties if the IPP fails to meet availability or capacity requirements.

¹ Global Energy Monitor. [A Race to the Top: Southeast Asia 2024](#). January 2024.

² United Nations Framework Convention on Climate Change. [Enhanced Nationally Determined Contribution Republic of Indonesia](#). 2022. Page 12.

- **Renewable energy ceiling tariff.** The new ceiling tariff introduced by GOI is considered too low, and the competitive method under a direct selection process where the lowest price proposed makes a bidder successful leads to even lower, unattractive tariffs.
- **Local Content Requirements (LCRs).** The LCRs policy had the unintended effect of increasing investment costs, resulting in initial system costs being significantly higher than global market averages. Low renewable energy tariffs and increased investment costs negatively impact investor returns and make renewable energy investment unfeasible.
- **Carbon credits incentives.** Carbon credits have a value that can be sold within the carbon market and become a source of additional revenue for investors. However, the recent Power Purchase Agreement (PPA) states that any renewable energy market-based instruments (including carbon credits and renewable energy certificates) will be fully allocated to PLN. Consequently, investors can no longer benefit from carbon credits.
- **Procurement procedures.** Complicated renewable energy procurement procedures hinder investment inflows. Establishing transparent and clear processes is essential to attract more investment.

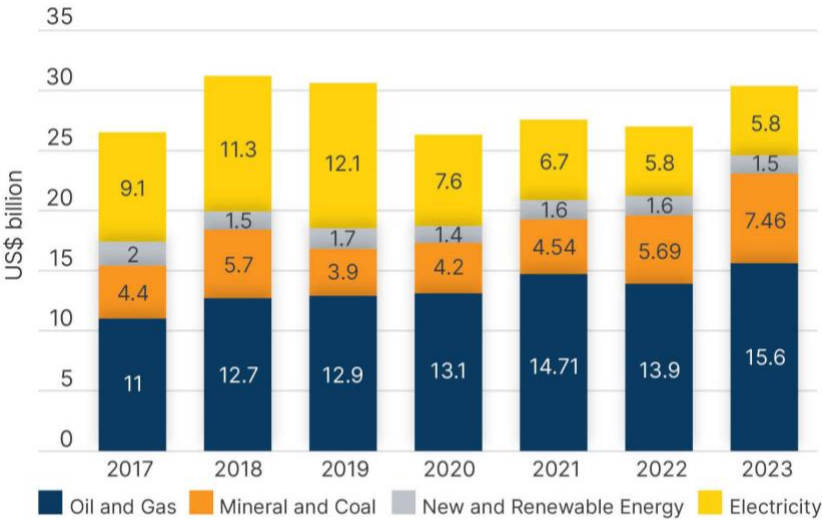
The government should assess and analyze the obstacles to potential private investment. The establishment of clear and concise procurement procedures, as well as consistent and reliable implementation of current regulations, will provide stability and certainty for potential investors. The government should also reevaluate the mandatory partner scheme, electricity purchase tariff, carbon credits incentives, and the local content requirements policy, which directly impact the financial viability of renewable energy projects as ultimately, return on investment is the most important factor in any financing decision.

Introduction

Global concerns over climate change have led to a major shift from fossil fuels to renewable energy sources. More money was invested in renewables than fossil fuels for electricity production for the first time in 2015.³ Renewable capacity additions increased by almost 50% to nearly 510 gigawatts (GW) in 2023, the fastest growth rate in the past two decades.⁴

While the rest of the world has made clear strides towards more renewable energy development, Indonesia appears to be lagging. Investment in renewable energy has stagnated over the past seven years. The latest data shows that Indonesia could only attract around US\$1.5bn in 2023, translating into a mere 574MW of additional renewable energy capacity. Meanwhile, Indonesia’s neighboring countries have installed significant solar and wind capacity. Vietnam, for example, has a solar capacity of 13,035MW and 6,466MW of wind generation, recording an increase of 1,115MW capacity in solar and wind power in 2023 alone.⁵

Figure 1: Investment Realization in the Energy and Mineral Resources Sector



Note: MEMR defines “New and Renewable Energy” to include solar, wind, hydro, and geothermal, while “Electricity” is defined as conventional fossil fuels plus transmission infrastructure.
Source: Ministry of Energy and Mineral Resources (MEMR).

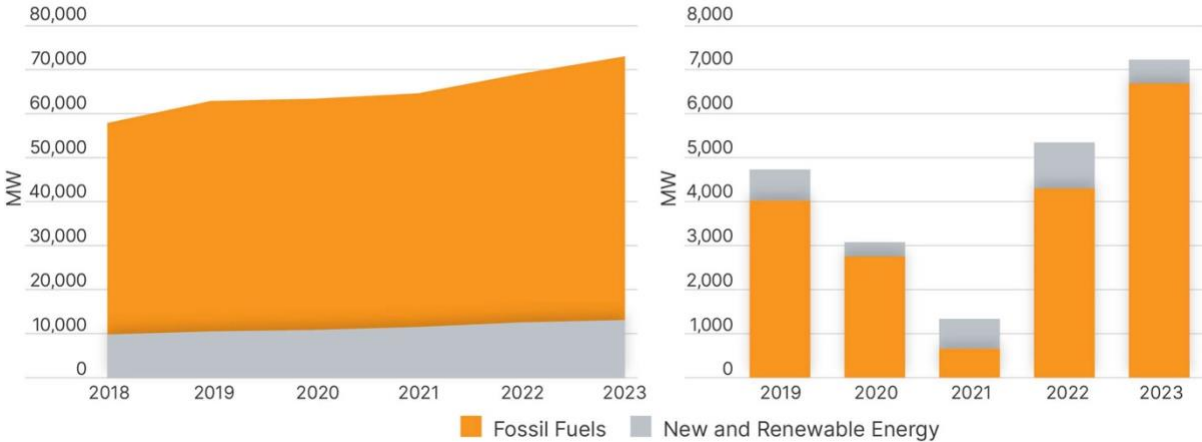
The chart above shows that Indonesian investment focused on the oil and gas, and mineral and coal sectors. The amount of investment translated directly into energy capacity. From 2018 to 2023, while Indonesia increased its electricity capacity by 21GW, 18.4GW of additional capacity came from fossil fuels, while only 3.2GW was from renewable energy.

³ The Global Green Growth Institute. [Renewable energy is now a commercially attractive investment opportunity](#). June 2019.

⁴ IEA, [Renewables 2023](#). 2024.

⁵ Global Energy Monitor. [A Race to the Top: Southeast Asia 2024](#). January 2024.

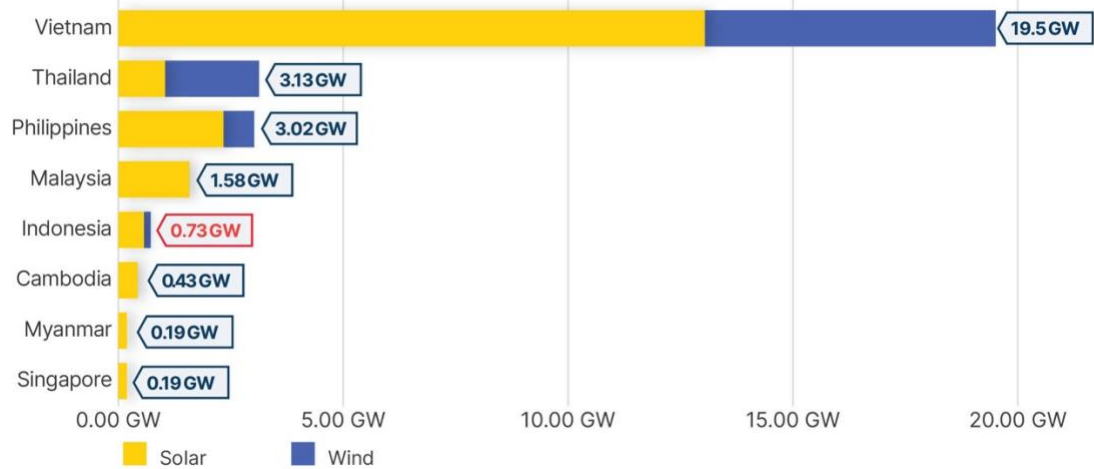
Figure 2: Total Installed Capacity (left) and Additional Capacity (right), 2018 – 2023



Source: MEMR; IEEFA.

In 2023, the share of renewable energy in the electricity mix was 13.1%, well below the government's target of 17.9%, with a capacity of 13.2GW comprising 94.5% of hydroelectric, biomass, and geothermal. As an equatorial archipelago of more than 17,000 islands, Indonesia should utilize the country's vast solar and wind resources for electricity, especially in remote areas. However, Indonesia has added only 574MW of solar power out of a possible 3,293GW, just 0.017% of its potential and one of the lowest rates in the Asia-Pacific region.⁶

Figure 3: Operating Solar and Wind Power in Southeast Asia



Source: Global Energy Monitor. *A Race to the Top: Southeast Asia 2024*. January 2024; IEEFA.

⁶ IEEFA. *Pathways to Financial Sustainability for PLN through Renewable Energy Development*. May 2024.

Due to the slow progress in Indonesia's renewable energy development, especially in solar and wind power, the attraction of investing in renewable energy is declining. This is exacerbated by Indonesia's plans to reduce its renewable energy target from 23% to 17% - 19% in 2025 and from 26% to 19% - 21% in 2030.⁷

The Renewable Energy Country Attractiveness Index (RECAI), issued in November 2023 by Ernst & Young, ranks the world's top 40 markets on the attractiveness of renewable energy investment. Indonesia is not featured on this Index, lagging behind the Philippines (ranked 32nd), Vietnam (ranked 33rd), and Thailand (ranked 38th).⁸

As a signatory to the Paris Agreement, Indonesia has committed to a 29% reduction in GHG emissions by 2030 through its independent efforts or a 41% reduction with international support. In the long term, Indonesia has pledged to reach net-zero emissions (NZE) by 2060 or earlier. Indonesia stated that it needs more than US\$1 trillion (tn) of investment to achieve its NZE target in 2060. This investment cannot be fulfilled solely through the national budget; therefore, the Government of Indonesia must attract private investment to develop renewable energy projects and invite private funding through the public-private partnership scheme. Improvements in the investment environment are needed to attract more renewable energy financing to help Indonesia achieve its climate targets.

The Role of Private Investment in the Renewable Energy Sector

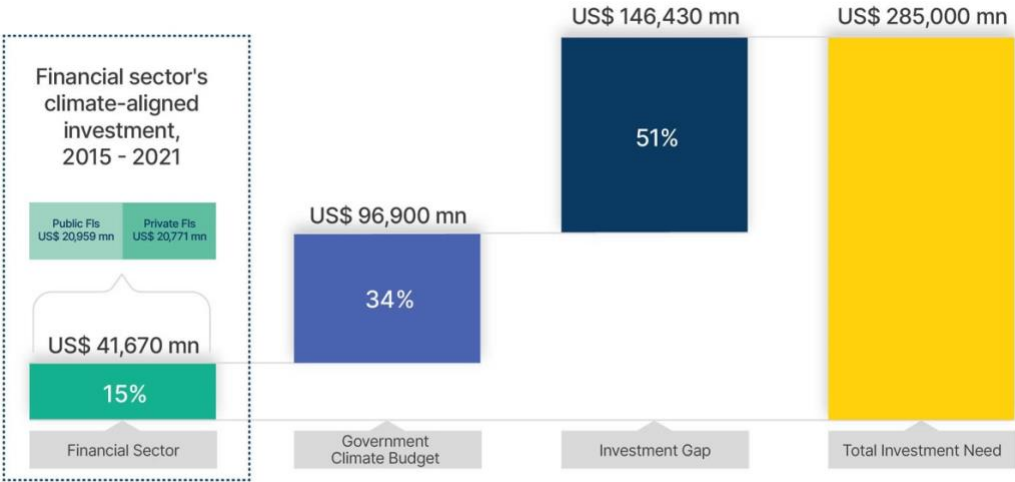
Renewable energy investment is urgently required to meet growing energy demand and to focus on climate action, enabling sustainable development and growth with significant socioeconomic, environmental, and health benefits. Renewable energy investment is also essential for Indonesia to meet its NZE targets. In September 2022, Indonesia submitted its enhanced Nationally Determined Contributions (NDCs), committing to a higher GHG reduction target of 31.9% (unconditional) and 43.2% (conditional) in 2030.⁹ Indonesia needs around US\$285bn to meet its 2030 climate goal, which the government cannot fund alone. It is estimated that there will be a US\$146bn investment gap, and private investment will be required to make up that difference.

⁷ IEEFA. [The Dark Cloud over Indonesia's Pledge to Achieve Net-Zero Emissions by 2060](#). 13 February 2024.

⁸ Ernst & Young. [Renewable Energy Country Attractiveness Index 62nd edition](#). November 2023.

⁹ UNFCCC. [Enhanced Nationally National Contribution](#). Page 12. 2022.

Figure 4: Investment Needed to Achieve Indonesia’s 2030 Climate Target

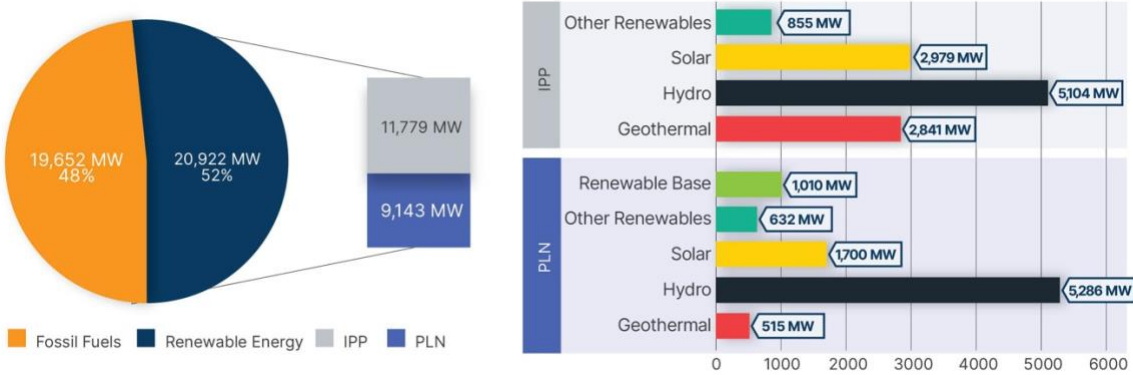


Source: Climate Policy Initiative. *‘Landscape of Climate-Aligned Investment in Indonesia’s Financial Sector.’* Page 8. December 2023.

Private investment through IPPs is crucial during the energy transition. IPPs complement public budgets, grow the electricity infrastructure, and help the government reduce and share financial risk.

According to the Electricity Supply Business Plan (RUPTL) 2021 – 2030, Indonesia was trying to achieve an additional capacity of 20.9GW from renewable energy, 56% of which was expected to be built by IPPs. This plan stipulated the important role of IPPs in achieving renewable energy targets.

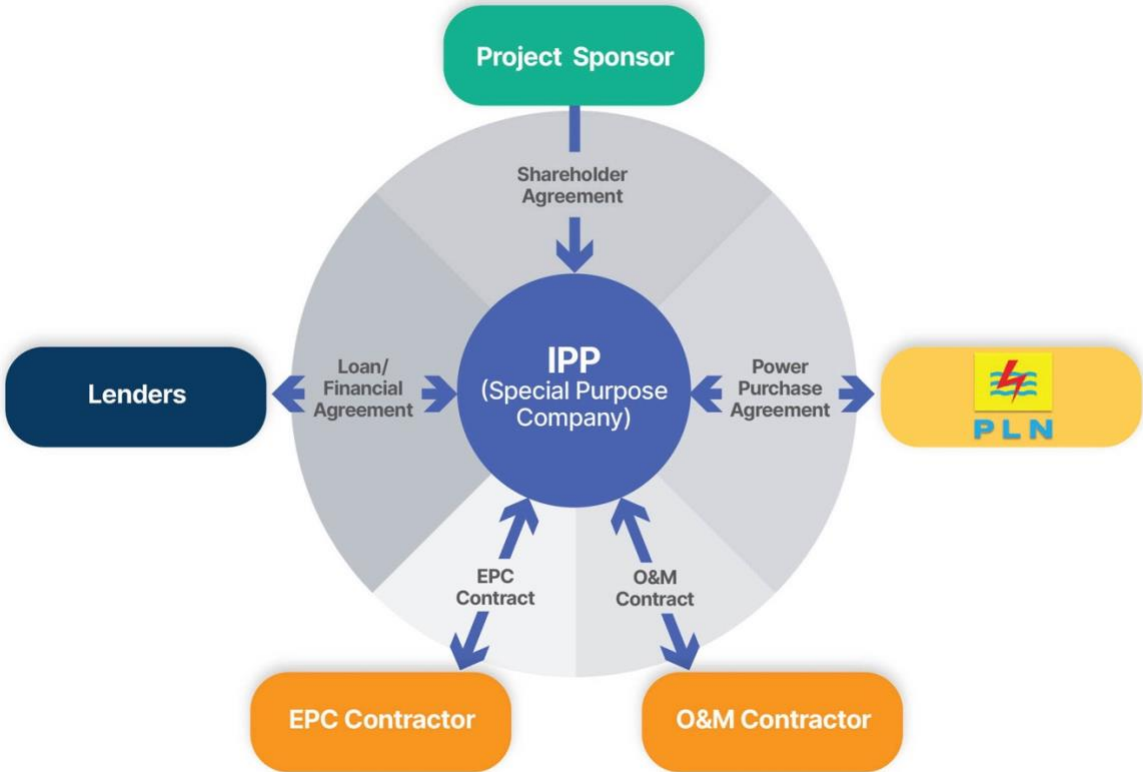
Figure 5: Additional Electricity Capacity, RUPTL 2021 – 2030



Source: RUPTL 2021 – 2030.

Within the energy sector, power generation is implemented by the state electricity corporation, PLN, the sole buyer, transmitter, and distributor of electricity in Indonesia. All renewable energy projects in the country are developed under the build-own-operate (BOO) or build-own-operate-transfer (BOOT) schemes, where PLN is the sole off-taker of the electricity produced. The IPP would own and operate production facilities for a limited period, as decided in the PPA with PLN.

Figure 6: Business Arrangement of an IPP Project



Source: PLN. *IPP Procurement Division*.

As the IPPs’ off-taker, PLN plays a vital role in supporting renewable energy development and promoting investments in the sector. Given the GOI’s substantial financial support of PLN and the RUPTL 2024 – 2033 plan for 75% additional capacity from renewable energy¹⁰, it is becoming increasingly urgent to attract private investment to develop renewable energy projects.

Risk Factors Affecting Renewable Energy Investment

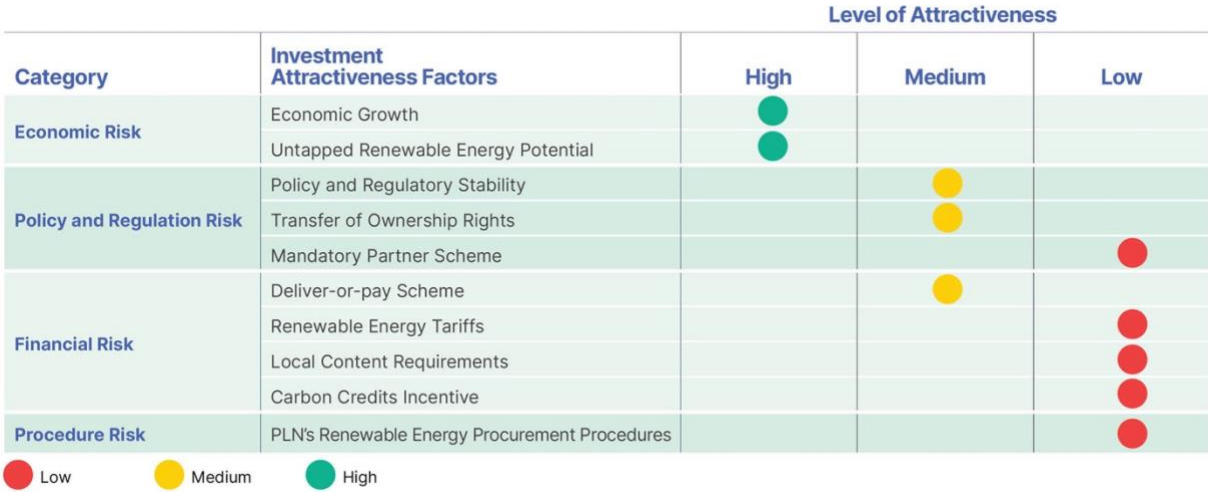
Investing in renewable energy offers financial, environmental, and health benefits. Like any other investment category, renewable energy investing involves evaluating risk factors related to economics, policy and regulation, and finances.

Through careful assessment, investors can contribute to a sustainable future while securing long-term financial returns. In Indonesia’s case, various investment risks have been identified, translating

¹⁰ CNBC Indonesia. *PLN Punya Rancangan Listrik “Paling Hijau” Hingga Tahun 2023*. 29 May 2024.

into the stagnancy of renewable energy investment. Addressing those risks and unlocking the potential for renewable energy is important for Indonesia.

Figure 7: Investment Attractiveness Factors



Source: IEEFA.

Opportunities for Renewable Energy Investment

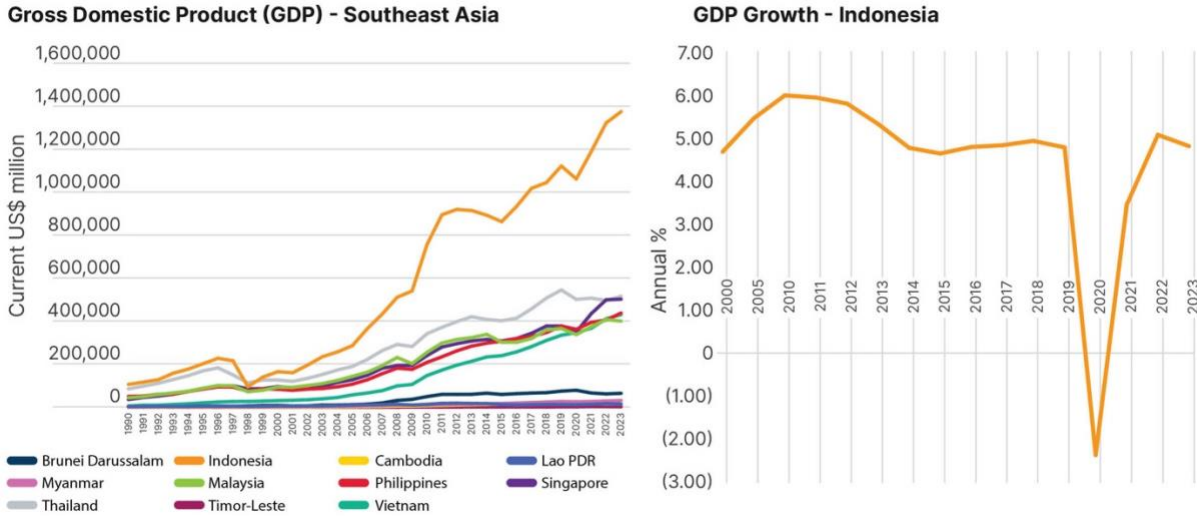
Potential for Economic Growth

By 2045, Indonesia is expected to become the fourth-largest economy in the world and aims to develop into a high-income country. It shows strong economic fundamentals with a 5% annual growth rate, and stable inflation and exchange rates.¹¹

Indonesia is the largest economy in Southeast Asia and the world’s fourth-most populous country. Its strong macroeconomic fundamentals, supported by two decades of political stability from 2000 to 2023, have allowed for robust economic growth. While growth slowed during the COVID-19 pandemic from an annual average of 5.0% in 2015 - 2019 to 3.7% in 2021, GDP growth slowly rose to 5.31% in 2022 and 5.05% in 2023 due to high private consumption. With current growth at 5.1% in the first quarter of 2024 (Q1-2024), the GDP remains resilient, surpassing the average of middle-income countries.¹² Indonesia’s presumed next president, Prabowo Subianto, set an ambitious 8% economic growth target in the next 3 - 5 years¹³, exceeding the previous high economic growth period of 1994 - 1996 which reached 7% - 8%.

¹¹ McKinsey & Company. [Indonesia’s Green Powerhouse Promise: Ten Bold Moves](#). 22 April 2024.
¹² World Bank. [Unleashing Indonesia’s Business Potential](#). June 2024.
¹³ Jakarta Globe. [Prabowo Sets Ambitious 8 Pct Economic Growth Target for Indonesia](#). 05 March 2024.

Figure 8: Gross Domestic Product Trend



Source: World Bank. GDP Indonesia.

Indonesia also successfully maintained inflation at 2.8% in 2023. In June 2024, consumer price index (CPI) inflation recorded a deflation of 0.08% (month-to-month) so that on an annual basis it fell to 2.51% (year-on-year) from the previous month's realization of 2.84%.¹⁴

Total investment realization in the first three months of 2024 reached IDR401.5 trillion (tn), 24.3% of the 2024 investment target of IDR1,650tn. The latest total investment realization rose by 22.1% compared to the same period in 2023 and was 9.76% higher than the previous quarter. This indicates that investment realization in Q1-2024 was not impacted by the election period when investors usually adopt a wait-and-see approach.¹⁵

Indonesia's prudent and consistent macroeconomic policy framework has been a cornerstone of its successful economic performance and has been acknowledged as such by the markets. For example, the credit default swap (CDS) rate and the JPMorgan Emerging Market Bond Index (EMBI) spread for Indonesia have consistently fallen since the pandemic and are lower than several comparator countries. Credit rating agencies have also maintained investment grades for sovereign credit, including a stable outlook. As a result, the country has successfully navigated external shocks, attracted investment, and boosted growth.¹⁶

¹⁴ Bank Indonesia. [Inflasi Juni 2024 Menurun](#). 01 July 2024.
¹⁵ LPEM FEB UI. [Indonesia Economic Outlook Q2-2024](#). May 2024.
¹⁶ World Bank. [Unleashing Indonesia's Business Potential](#). June 2024.

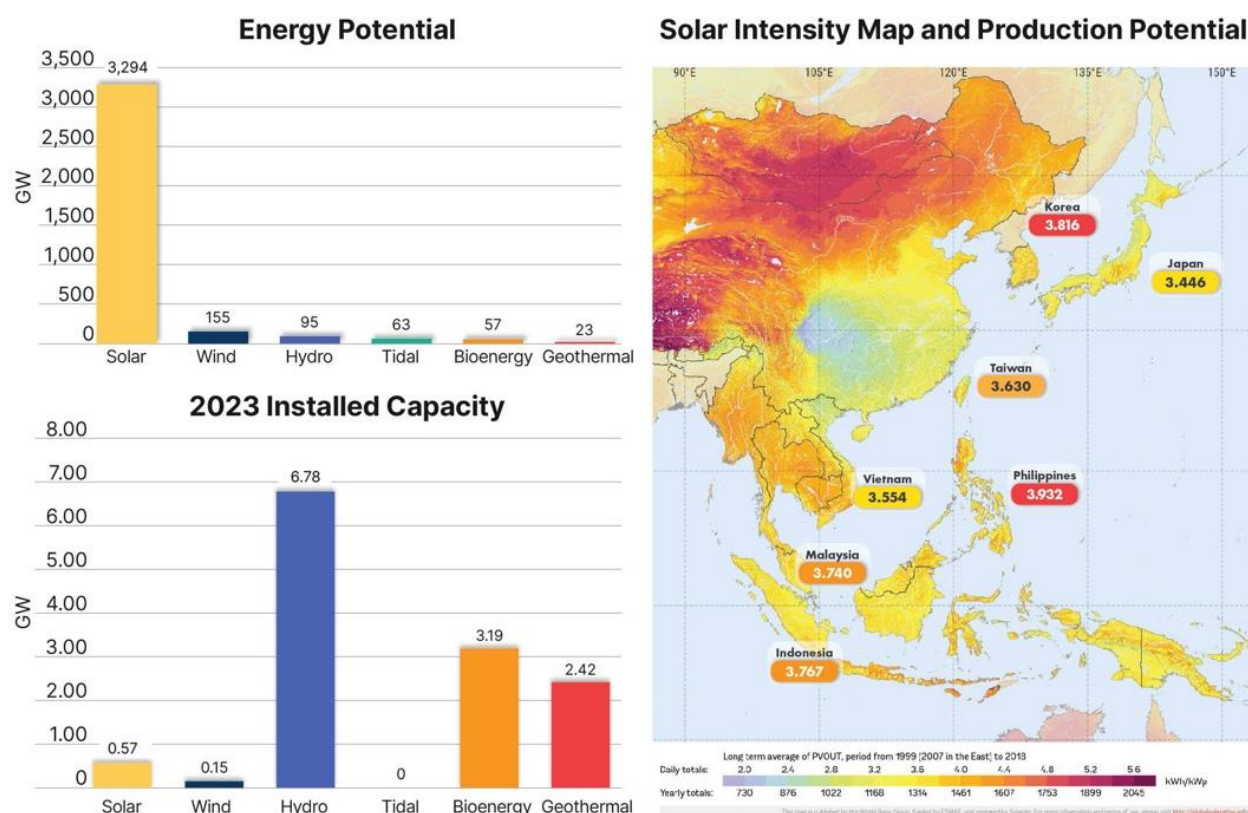
Untapped Renewable Energy Potential

As an equatorial archipelago of more than 17,000 islands, Indonesia should utilize the country's extensive resources of solar and wind for electricity, especially in remote areas. However, it has only been able to develop 0.4% of its renewable energy potential.

Indonesia, ranked third in the region for solar potential, has almost no installed solar capacity. Despite having 3.294GW of solar potential, Indonesia only added 574MW solar power to the grid, a mere 0.017% of its potential. This means Indonesia has the lowest rate of solar use in the Asia Pacific and is also among the lowest globally.¹⁷

Additionally, Indonesia has only developed 154MW of wind power from a possible 155GW, or 0.001% of its total potential. Indonesia's renewable energy sector offers a promising landscape for investors with its inviting combination of strong economic growth and immense renewable energy possibilities.

Figure 9: Indonesia's Renewable Energy Utilization



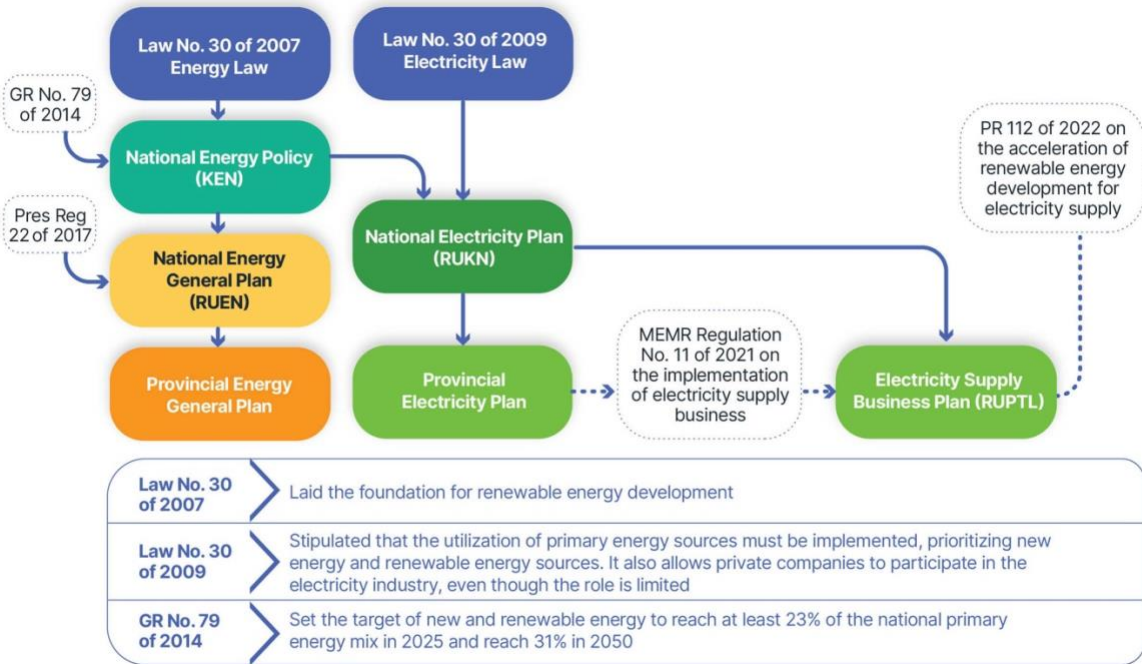
Source: National Energy Council (DEN); MEMR; IEEFA.

¹⁷ IEEFA. [The Asia Pacific renewable supply chain opportunity](#). June 2024.

Policy and Regulatory Changes to Support Renewables Development

The Government of Indonesia (GOI) has issued several regulations to promote investment in the development and implementation of renewable energy to support the energy transition and achieve NZE targets (Figure 10).

Figure 10: Indonesia’s Renewable Energy Sector Regulations



Source: UK Mentari, 2022; Comprehensive Investment and Policy Plan PP JETP, 2023; IEEFA.

Renewable energy is defined in the Ministry of Energy and Mineral Resources (MEMR) Regulation No. 50 of 2017 on the Utilization of Renewable Energy Sources for Power Supply, amended several times, lastly by MEMR Regulation No. 4 of 2020 (MEMR Regulation No. 50/2017), as any source of energy generated from resources that are sustainable if managed properly, including geothermal, wind, biofuel, solar, hydro, and tidal.¹⁸

The latest policy is the Presidential Regulation (PR) No. 112/2022. It regulates two major issues that have long been cited as the primary roadblocks to Indonesia’s growth of renewable energy, which

¹⁸ Lexology. [Renewable Energy Indonesia](#). August 2023.

are the procurement mechanism and electricity purchase prices for renewable energy power plant projects.

Under PR No. 112 of 2022, the renewable energy procurement method has been classified into two scenarios: (1) direct appointment, where PLN can appoint and negotiate directly with the IPP, and (2) direct selection or competitive bidding, where PLN can choose the IPP offering a better price.

Figure 11: Procurement Mechanism under Presidential Regulation No. 112 of 2022

	Direct Appointment	Tender (Direct Selection)
Energy ¹⁹	Geothermal	Hydropower
	MSW Plant	Bio Energy
	Hydro (with Ministry of Public Works)	Solar PV
	Grant, Excess Power and Expansion	Wind
		Ocean
Mechanism	Assignment from MEMR	DPT
	PLN Tender	PLN Tender
	PLN + PPA	PLN + PPA
Tariff	Tariff is determined based on negotiations but must not exceed the ceiling tariff	Tariff is determined based on negotiations but must not exceed the ceiling tariff
Procurement Lead Time	90 days	180 days
Investors interested in participating in PLN’s procurement for IPP schemes can register on the List of Selected Developers (DPT/preapproved). PLN will invite companies that have registered in the DPT to participate in IPP procurement processes.		

Source: PLN; MEMR.

Despite regulatory support, investment in the renewable energy sector was sluggish and remained relatively stagnant at US\$1.5bn from 2018 - 2023²⁰, contributing just 0.24% of the total global investment of US\$623bn in 2023.²¹ Renewable energy investment in Indonesia is also far lower compared to the Philippines which gained US\$7.8bn investment in the renewable energy sector in 2022.²²

Furthermore, according to Government Regulation No. 79 of 2014, Indonesia set a target of 26% renewable energy share by 2030. In 2023, the Comprehensive Investment and Policy Plan (CIPP) working group, under the proposed US\$20bn Just Energy Transition Partnership (JETP), increased this target to 44% for 2030.²³ Currently, Indonesia’s National Energy Council (DEN) is working on

¹⁹ Although there is a clear criterion regarding which technologies are directly appointed and those directly selected, the stakeholders must also check the RUPTL for each renewable energy project. PLN will carry out direct appointments for projects in the PLN project category and directly select projects that fall into the IPP project category in the RUPTL. For example, although wind power generation projects fall under direct selection procurement, the wind power plant project in Sumatra is included in the RUPTL as PLN project category, thus the project is being tendered through a direct appointment mechanism instead.

²⁰ MEMR. [Capaian Kinerja Sektor ESDM Tahun 2023](#). January 2024.

²¹ Bloomberg NEF. [Energy Transition Investment Trends](#). January 2024.

²² Statista. [Total Value of Investments in Renewable Energy in the Philippines from 2009 to 2022](#). by Energy Source. A 2023.

²³ JETP Indonesia. [Comprehensive Investment and Policy Plan 2023](#). November 2023. Page 2.

updating Regulation No. 79 concerning the National Energy Policy (KEN) which proposes lowering the target to 19 - 21% of renewable energy share. Such planning inconsistencies add an element of uncertainty for potential investors and financiers in renewable energy development.

The Indonesian government has continued to promote reliance on coal and natural gas by continuing the Domestic Market Obligation (DMO)²⁴, which has detracted from renewable energy development.²⁵ Challenging regulatory policies and lack of fiscal incentives have further suppressed interest in renewable energy. IEEFA has identified several challenges and barriers regarding regulations and their implementation that reduce investors' willingness to participate in the renewable energy sector:

- Mandatory partner scheme
- Restrictions on the transfer of ownership rights
- Deliver-or-pay scheme
- Renewable energy tariffs
- Local content requirements (LCRs)
- Carbon credit incentives
- Procurement procedures

Mandatory Partner Scheme

During the presidency of Joko Widodo, GOI launched an initiative to build 35,000MW new generation capacity that would attract billions of dollars of foreign investment. To accelerate the development of electricity infrastructure, the government issued PR No. 14 of 2017, which allowed IPPs to collaborate with any PLN subsidiary that had at least 51% of its shares owned by the national utility, either directly and/or through a subsidiary of PLN.²⁶

There have been differing interpretations of the regulation. PLN has taken it to mean that one of its subsidiaries must be appointed as a majority partner and have a minimum 51% ownership stake in the IPP's renewable energy project company. Alternatively, some stakeholders infer that IPPs can collaborate with any of PLN's subsidiaries of which the national utility has at least 51% ownership, and the ownership will depend on PLN and/or the PLN subsidiary's financial capability to contribute to the project. However, that does not mean PLN can own 51% of the shares in the project company.²⁷

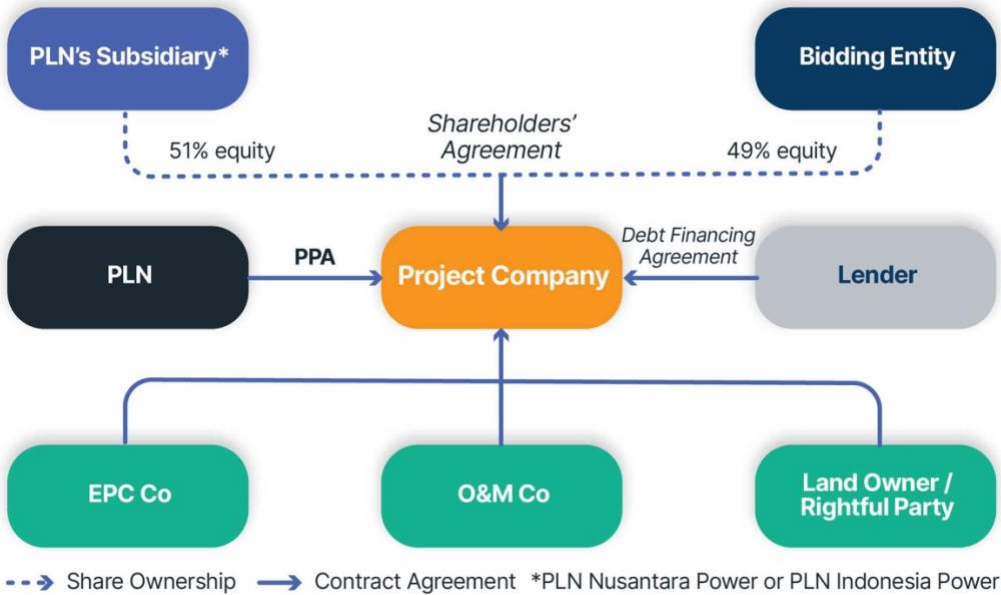
²⁴ Kontan. [Up 3.2% Indonesia Targets Coal DMO at 220 Million Tons in 2024](#). 18 February 2024.

²⁵ IEEFA. [Pathways to Financial Sustainability for PLN through Renewable Energy Development](#). May 2024.

²⁶ A "subsidiary" is any corporate entity, at least 51% of whose shares are owned by PLN, either directly and/or through a PLN subsidiary. Examples of such entities include, PT Indonesia Power, PT Nusantara Power, PT PLN Batam, or any majority state-held subsidiary established by PLN.

²⁷ This information was provided to IEEFA on the condition of confidentiality through conversations held with several private developers engaged in renewable energy projects proposed under current PLN policies.

Figure 12: Project Structure Under the 51% Mandatory Partner Mechanism



Source: IEEFA.

Equity co-ownership demands in recent renewable project tenders discourage international bidders. With a 51% shareholding, PLN would become the de facto owner and the ultimate decisionmaker on how the project would be developed and financed, as well as on how dividends would be distributed. IPPs with less than 50% ownership rights, would have less control and limited right to run the project the way they want.

Though it appears advantageous for GOI and PLN, this scheme has several weaknesses that can cause problems for the government and the national utility.

First, PLN would have to accept the project's financing risk. To implement the project and maximize return on equity for investors, the project needs to raise debt to meet the required investment. Project level debt is usually aggregated based on the credit quality of the project structure. This includes the underlying contract's strength, the off-taker's credit quality, and the project sponsor's quality. The quality of sponsors is measured based on their implementation experience, operational management, and financial strength. PLN, with a 51% ownership position, would be responsible for leading debt management and providing representation to lenders.

Second, as the 51% owner, PLN would either have to raise 51% of the cash equity for the investment or provide some other value-in-kind contribution instead of cash. As PLN has limited cash funds²⁸ and relies heavily on subsidies and compensation from the government, it would be difficult for PLN

²⁸ IEEFA. Pathways to Financial Sustainability for PLN through Renewable Energy Development. May 2024.

to meet the cash equity requirement. PLN would rely on their partner/IPP's financial capability through loan mechanisms to meet the 51% requirement.²⁹

PLN's value-in-kind contributions instead of cash would also impose a carried interest requirement for investors as it would seek grants of carried interest and/or shareholder loans from the private bidder to make up its 51% equity contribution.³⁰ This is a significant tax on project economics for private participants.

For investors to achieve a target return, they would either need to charge a higher tariff, cut costs, or reduce returns in direct proportion to the carried interest requirement. These factors make it challenging for prospective investors to earn appropriate investment returns. The few projects that have reached completion indicate that some investors have agreed to PLN's requests, although the details of the terms remain undisclosed. Such a lack of transparency makes it difficult for other investors to weigh the risks or benefits of this framework.

Third, there would also be a conflict of interest between PLN's role as project owner and off-taker. In case of any project underperformance, it would be difficult for PLN to impose penalties on the operating company as it would be penalizing itself as an equity shareholder. Similarly, if PLN is engaged in a breach of contract as an off-taker, it could prevent the project company from calling an event of default or enforcing protections since it would be a blocking shareholder in voting. This is an undesirable situation for both investors and the utility as it encourages overlooking underperformance and effectively undermines the IPP program premise.

Recently, PLN has applied the same structure with a lower ownership percentage (up to 35% equity) for renewable energy projects under the direct selection procurement mechanism. PLN would assign its subsidiary to become the minority shareholder in the project company and develop the project with the IPP. For example, the recent diesel replacement procurement stipulates that a PLN subsidiary will take a 15% equity interest in the project company established by a successful bidder.³¹

These partnership schemes mean that PLN would become either a minority or a majority shareholder in all new renewable energy projects. Even if PLN is a minority shareholder, there would still be a conflict of interest between its role as project owner and off-taker.

²⁹ PLN Nusantara Power. [Partnership](#).

³⁰ This information was provided to IEEFA on the condition of confidentiality through conversations held with several private developers engaged in renewable energy projects proposed under current PLN policies.

³¹ JETP Indonesia. [Comprehensive Investment and Policy Plan 2023](#). November 2023. Page 188.

Figure 13: PLN's Recent Joint Investments with IPPs in Renewable Energy Projects

Project Name	Entity	Status	PLN's Percentage of Ownership (%)	Partner
145 MW Cirata Floating Solar Power Plant	PT Pembangunan Jawa Bali Masdar Jakarta	Commenced operations in 2023	51%	Masdar or Abu Dhabi Future Energy Company
50 MW Solar PV + 14 MWh BESS IKN	PT Nusantara Sembcorp Solar Energi	In development or construction stage	51%	Sembcorp Industries Ltd
46 MWp Tembesi Floating Solar Power Plant	PT Nusantara Tembesi Baru Energi	PPA/Financial Close stage	51%	PT TBS Energi Utama Tbk
70 MW Wind + 10 MWh BESS Tanah Laut	PT Tata Alam Baru	PPA/Financial Close stage	30%	PT Adaro Power and Total Eren

Source: PLN; IEEFA.

This arrangement should be adjusted through discussions with stakeholders in the renewable energy market to find a new strategy where the government can balance its desire for ownership without limiting the advantages of private sector participation.

Restrictions on the Transfer of Ownership Rights

Since 2017, GOI has prohibited the transfer of project ownership rights before the commercial operation date (COD). This resulted from previous experiences with IPPs where several could not reach financial close³² and sold the project company to third parties not part of the original tender process. Under the revised policy, transfers are permitted before COD if the transfer is to an affiliate where the sponsor owns more than 90% of the shares; however, the sale of equity to third parties is prohibited. In the case of post-COD ownership, a shareholding transfer is also subject to PLN's approval and must be reported to the Ministry of Energy and Mineral Resources.





Limited access to supplementary investment capital for projects is one of the challenges arising from these restrictions. Developers take on substantial costs and risks when putting together projects. They often seek to sell equity shares to financial investors or partners who are interested in renewable energy projects but do not want to undertake development risks. With the money raised from these partial sales, developers often invest the proceeds into new projects, thus continuing the growth cycle. Equity exits are a key part of the renewable energy investment process.

This regulation has slowed private investment in the renewable energy sector, especially Foreign Direct Investment (FDI) which seeks to expand its interests by making physical investments and purchases in other countries. FDI can help accelerate the energy transition by providing the financial and technological resources needed to support green growth. FDI usually purchases, leases, or otherwise acquires assets in the host country including facilities such as plants, office space, or other

³² Kontan. [Banyak IPP EBT sulit capai financial closing](#). 10 January 2018.

buildings. FDI can take two forms, greenfield and brownfield through mergers and acquisitions (M&A).

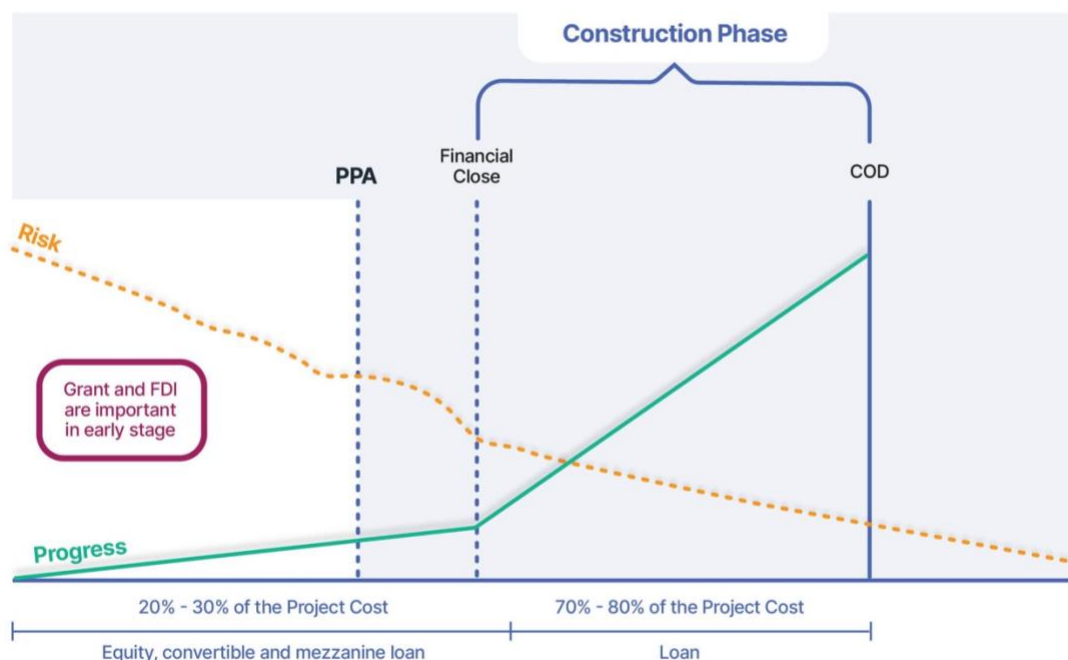
Figure 14: Comparison Between Greenfield and Brownfield Investments

Greenfield	vs	Brownfield
Investors construct new facility		Build on to existing system
Choose new technology and facilities		Use existing technology and facilities
Requires more time (takes time to do the upfront planning and development)		Requires less time (get started fast)
Higher risk		Lower risk
Higher return		Lower return

Source: IEEFA.

Different financial institutions undertake varying levels of risk, ranging from high-risk greenfield investing to less risky investment by acquiring established projects through M&A. The type of investors willing to fund greenfield assets or early-stage infrastructure development expect a higher return for taking on more risks in developing the renewable energy project at the early stages; before selling it to other investors when the project obtains the PPA or reaches financial close or the commercial operation date. Risk-averse investors are usually willing to purchase a project when a PPA is secured or is nearing its financial close.

Figure 15: Project Milestones



Source: IEEFA.

FDI is essential to accelerate renewable energy investment as they are willing to invest pre-financial close when risk is high. Greenfield investment and cross-border M&As are two important entry points for foreign investors. Therefore, it is crucial for investors to be able to enter the project during the PPA, financial close, or even during construction.

Given the US\$1tn investment required to meet Indonesia's NZE targets, the government should consider encouraging FDI. Green portfolio investors could raise green/sustainability bonds, further boosting Indonesia's profile as an attractive sustainable investment destination for recycling capital, investing in projects, and building portfolios.

While ensuring that the project sponsor can meet its commitments and deadlines leading up to COD is important, it is also essential to guarantee ease of doing business. Therefore, the relaxation of this regulation is critical to attract private investment to Indonesia. Given that there are usually four key timeframes for project development, which are pre-construction, construction, initial operation, and later, in-operation, IEEFA suggests:

- Maintaining the originating sponsor group as majority shareholders ($\geq 75\%$) until the financial close date
- Maintaining the originating sponsor group as majority shareholders ($\geq 51\%$) through an initial operation period (say, 2-3 years post-COD) to prove project reliability
- No restriction on later in-operation sales

Deliver-or-pay Scheme

During President Susilo Bambang Yudhoyono's term, a contractual 'take-or-pay' mechanism was used to attract power generation project investment to Indonesia. Take-or-pay means that PLN, as the electricity off-taker, has the obligation of either taking delivery of electricity from the IPP at some established minimum rate, or must pay a specified penalty amount for not accepting delivery. This provides the IPP with a guaranteed base cash flow which helps finance the project. However, there is a downside, particularly for PLN, which must purchase the power generated by the private sector regardless of demand.

PLN is currently experiencing high excess power generation capacity, with a reserve margin (or generation above maximum demand) exceeding 40%. With the take-or-pay scheme, PLN has been burdened for years, and continues to cover the excess supply of electricity generated from IPPs.³³ To ease PLN's financial burden, Indonesia has introduced a new scheme of 'deliver-or-pay' with an annual contracted energy (ACE) arrangement for renewable energy projects.³⁴

While take-or-pay requires PLN to absorb electricity from the IPP at a certain percentage of the total electricity generation capacity, deliver-or-pay requires the IPP to supply a certain amount of electricity to PLN.

Apart from the deliver-or-pay system, GOI also introduced other incentives and penalty schemes. The IPP must pay a fine to PLN to compensate for the utility's losses if PPA obligations are not met, or there is a delay in the COD, or ACE requirements are not met due to generator disruption.³⁵ Similarly, PLN is required to pay a penalty for any failure to absorb electricity based on the agreed ACE (except under natural force majeure). IPPs also have the right to incentives if PLN requests reaching COD ahead of schedule.

Although the deliver-or-pay system for renewable energy projects may protect PLN from the greater financial burden of the take-or-pay scheme³⁶, it is considered less attractive than the take-or-pay commitment for fossil fuel plants, which compels PLN to purchase excess electricity from those. Penalties directed at renewable energy investors further increase the risk factor in renewable energy investment.

Since these regulations have already been announced and implemented, the detailed terms and conditions, as well as penalty calculations, should be reevaluated with investors involved in determining related formulas and indicators.

³³ IEEFA. [Pathways to Financial Sustainability for PLN through Renewable Energy Development](#). May 2024.

³⁴ MEMR Regulation No. 10/2017, as amended by MEMR Regulations No. 49/2017 and 10/2018.

³⁵ MEMR. [Energi Primer Setempat sebagai Efisiensi Pembangunan Tenaga Listrik](#). 10 April 2017.

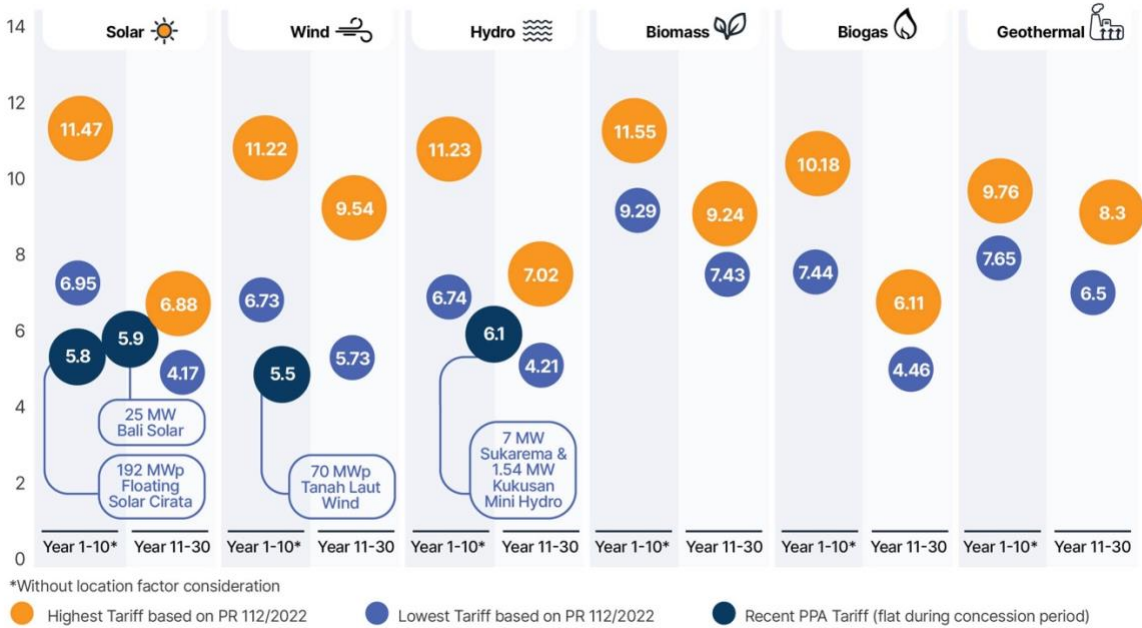
³⁶ IEEFA. [Pathways to Financial Sustainability for PLN through Renewable Energy Development](#). May 2024.

Renewable Energy Tariffs

Power purchase prices are the most significant factor in project investment decisions. Despite the push to have a feed-in-tariff (FIT) for renewable energy projects, GOI introduced a new ceiling tariff which varies depending on the type of technology and geographic location. The tariff is staggered over two periods, with a higher ceiling tariff for the first period (years 1 – 10) to enable the IPP to recover its costs and pay debts, and then lower for the second period (years 11 – 30).³⁷ There are several concerns regarding tariffs including an almost 50% reduction of the second period tariff, the debt tenor may be more than 10 years, and there is no consideration of increasing operational costs due to inflation.

Furthermore, PLN’s renewable energy project procurement through direct selection or direct appointment results in even lower tariffs.³⁸ Direct selection is a competitive method in which at least two offers or bids are compared, and the winner is determined by the lowest tariff proposed, thus decreasing tariffs even further. Auctions for new renewable energy generation projects are unpopular because of unattractive electricity prices.³⁹ Under direct appointment, the tariff is negotiated and should not exceed the ceiling tariff under the stated regulation. Low tariffs make it difficult for IPPs to achieve return on equity or profit targets and cause projects to be unprofitable.

Figure 16: Renewable Energy Tariffs (in cUS\$/kWh)



Source: Presidential Regulation Number 112 of 2022; CNBC Indonesia; Bisnis; CNBC Indonesia; Global Energi.

³⁷ GOI. Presidential Regulation Number 112 of 2022.
³⁸ GOI. Presidential Regulation Number 112 of 2022.
³⁹ Kontan. Lelang Proyek Pembangkit EBT Kerap Gagal Terjagal Harga Listrik yang Rendah. 12 September 2023.

PLN's financial situation is affected by its dependence on subsidies and compensation from the government and its reliance on fossil-fuel generation. PLN is under pressure to rely less on the government and reduce its overall production costs. These dynamics limit PLN's ability to sign PPAs for renewable projects.⁴⁰ If the PPA tariff is assessed to be higher than the current production cost at the site, then PLN's recommendation to MEMR is to reject the project conditionally. If MEMR agrees to fund the difference between the required tariff and the cost of generation, then PLN will accept the project, although it is unclear where the funds would come from.⁴¹ The renewable energy tariff must compete with fossil fuel generation which is heavily subsidized and supported by the Domestic Market Obligation (DMO) regulation which aids coal-fired power plants in keeping generation costs affordable.⁴²

Current regulation caps renewable energy tariffs which reduce the attractiveness of such projects. Renewable energy tariff adjustment and DMO reduction are necessary considering regional tariffs. For example, the Philippines offers around US\$16c/kWh for solar projects.⁴³ GOI should also allow bidders to compete transparently with other sources of energy, including fossil fuels, on an unsubsidized basis. Failing to determine competitive tariffs will result in potential investors going to other countries in the region.

Local Content Requirements (LCRs)

LCRs have been established by the GOI to use domestic energy inputs in industrial production and encourage the development of the local industry. Renewable energy projects in Indonesia are also subject to the LCRs with targets set for 2024 for solar power (40%), bioenergy (40%), and geothermal (35%).⁴⁴

Even though the LCRs target for solar projects is 40% in 2024, there is a requirement of 41% for centralized on-grid solar and 44% for centralized off-grid solar (Figure 16).

⁴⁰ IRENA. [Renewable Energy Prospects: Indonesia](#). March 2017.

⁴¹ IRENA. [Renewable Energy Prospects: Indonesia](#). March 2017.

⁴² Kompas. [DMO Bikin RI Ketergantungan Batu Bara, Susah "Move On" Ke Energi Terbarukan](#). 05 June 2024.

⁴³ Statista. [Approved Feed-In-Tariff \(FIT\) Rates in the Philippines as of January 2024, by Energy Source](#). March 2024.

⁴⁴ Ministry of Industry. [Buku Pedoman Peningkatan Penggunaan Produk Dalam Negeri \(P3DN\)](#). 2020.

Figure 17: Indonesian Local Content Requirements for Solar Photovoltaic (PV) Installation

Minister of Industry (Mol) Regulation no. 5 of 2017

	Centralised on-grid solar	Centralised off-grid solar*	Stand alone off-grid solar** (including rooftop and home systems)
% of materials***	34%	38%	40%
% of services	100%	100%	100%
% total value	41%	44%	46%

% of total value was to be ratcheted up to 60% by 1 January 2025 under Mol Regulation no 23 of 2023
Additional detail provided in Ministry of Industry Regulation No 4 of 2017 that defines local content requirements by weight for each component

Notes
* Includes solar PV systems in areas where energy is distributed through lines not managed by PLN
** Includes any solar PV system where produced energy is used directly without entering a distribution network
*** Percentages are defined for specific components, values given here are a weighted average across all components

Source: IEEFA; Mentari.

Though aimed at boosting the local industry, the LCRs have hindered the acceleration of renewable energy development since the local industry lacks sufficient capacity and relies heavily on imported materials to manufacture equipment. Additionally, the limited number of renewable energy projects in Indonesia hampers the development of local production, making it even more challenging and unfeasible for the renewable manufacturing industry to scale up.

Stringent LCRs, disadvantageous conditions, and limited proposed capacity additions restrict solar industry development. Some domestic module manufacturing facilities, primarily focused on exports, could supply the domestic market. However, due to the policy-constrained lack of demand, there are few balance of systems solar equipment suppliers, manufacturers, and contractors. Consequently, the LCRs policy has had the unintended effect of increasing investment costs and causing initial system costs in Indonesia to be significantly higher than global market averages.⁴⁵

Domestically made solar modules are 30% - 45% more expensive than imported products. Indonesia also does not have the local capacity to support the LCRs⁴⁶ conditions, and many solar technology inputs must be imported. Demand is low and political uncertainty prevents manufacturers from committing to investing in plants before demand materializes.

Realizing that these strict requirements hinder the acceleration of investment, the Ministry of Industry has proposed relaxing LCRs. Discussions are currently ongoing with the Ministry for Maritime and Investment Affairs.⁴⁷ The relaxation of the LCRs is important to attract investment in the renewable energy sector and for IPPs to complete projects by using imported materials. GOI should assess the local market for certain technology based on its availability before determining the minimum requirement for local content.

⁴⁵ IEEFA. [The Asia Pacific Renewable Supply Chain Opportunity](#). June 2024.

⁴⁶ Kontan. [Investasi PLTS di Tanah Air Terhambat Kebijakan TKDN](#). 20 May 2024.

⁴⁷ The Jakarta Post. [Industry Ministry to Ease Local Content Rule on Renewable Projects](#). 20 May 2024.

Carbon Credits Incentives

Carbon credits are permits that allow companies to emit a certain amount of carbon. High-quality carbon credits (or carbon offsets) are an increasingly important part of the net-zero toolkit for organizations, particularly within hard-to-abate, high-emitting sectors such as aviation, cement, steel, and oil and gas. Indonesia has the largest nature-based solution potential of any country globally, translating to over 1.5 billion tonnes of carbon dioxide (GtCO₂) in carbon credit potential. With an increasing number of corporations committing to emissions reductions, the demand for all types of carbon credits in Indonesia is projected to grow tenfold from 2022 to 2030, reflecting a global trend.⁴⁸

Indonesia's carbon market momentum is accelerating with the recent launch of the Indonesia Carbon Exchange (IDX Carbon) for the issuance of the Carbon Pricing Mechanism⁴⁹, marking another milestone in the country's commitment to achieve NZE by 2060.⁵⁰

Private investors who lead the clean energy transition consider leveraging the carbon credit market to gain additional revenue streams. Selling carbon credits in both domestic and international markets from renewable energy generation could enhance returns and become a viable source of extra income for developers. This extra cash flow could potentially allow developers to lower their tariffs on power sales to PLN.

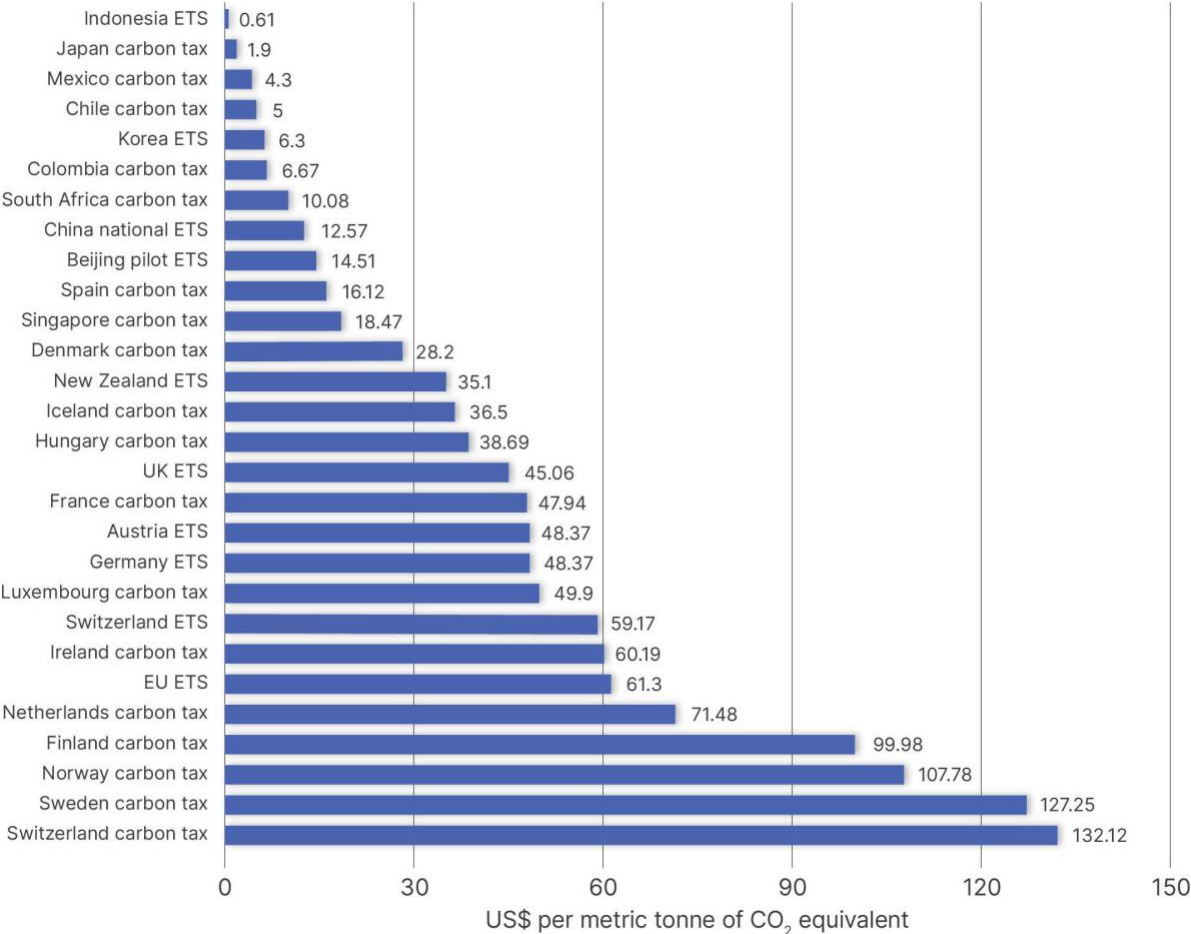
Currently, the carbon market in Indonesia is emerging, and prices are low, which is insufficient to drive investment decisions. However, when examining markets with more mature carbon pricing mechanisms, there is a clear incentive for Indonesian policymakers to consider carbon credits as a vital tool in attracting private investors to finance the US\$1tn required for clean energy development.

⁴⁸ McKinsey & Company. [Indonesia's Green Powerhouse Promise: Ten Bold Moves](#). 22 April 2024.

⁴⁹ GOI. [Presidential Regulation Number 98 of 2021](#). October 2021.

⁵⁰ PricewaterhouseCoopers Indonesia. [Indonesia's Carbon Pricing](#). 2023.

Figure 18: Price of Carbon, 2024



Source: World Bank.

However, under recent PPAs with PLN, any renewable energy market-based instruments (including carbon credits and renewable energy certificates) must be fully allocated to PLN, and hence IPPs cannot benefit from carbon credits.⁵¹

Carbon credits have a value that can be traded within the carbon market. Carbon credit shares between PLN and the IPP partner could provide additional income that can be included in the business plan calculation. This may allow developers to offer lower tariffs during the concession period.

⁵¹ Based on discussions with several IPPs during the Solar Week Indonesia 2024 conference held in Jakarta on 06 June, 2024.

Procurement Procedures

Transparency is a core principle of high-quality public procurement. Since 2017, the procurement of renewables, especially solar and wind, has been done in two stages: Pre-Qualification (PQ) and proposal submission.⁵² This process has several concerns, especially regarding transparency, which has diminished IPP participation.

Pre-Qualification Process. To be able to participate in the PLN procurement process, IPPs need to be enrolled on a List of Selected Providers (DPT). The DPT list varies by renewable energy technology and IPPs must apply separately for different types of renewable energy, meeting certain administrative, financial, and technical criteria.

The process is similar for all types of renewable energy technologies, with the main difference being that some applications are open all year long, while some are only available for a specific period. Under PR No. 112, PLN is required to open a DPT application every three months. Although PLN has published the DPT process on an e-procurement website, the procedure is complicated.

Figure 19: DPT Application Process



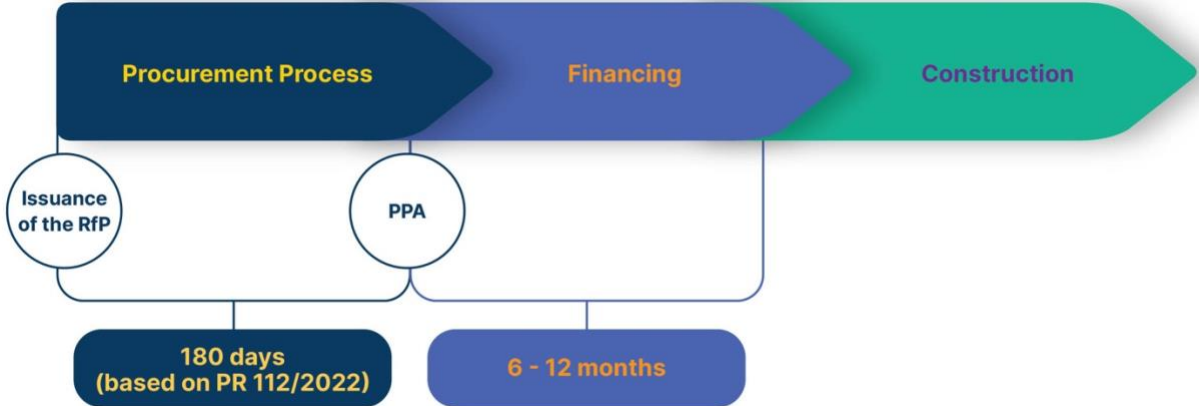
Source: PLN; RUPTL; IEEFA.

There is no clear timeline provided for the application process which makes it difficult to estimate how long PLN would take to provide feedback. Sometimes, IPPs may receive feedback within a few weeks, while in some cases, it could take over a year.

Proposal Submission. PLN begins the tender process by issuing a Request for Proposal (RfP) that is only available to a DPT-registered company. Under PR No. 112, the procurement lead time should be around 90 days for direct appointment and 180 days for direct selection.

⁵² JETP Indonesia. *JETP Comprehensive Investment and Policy Plan*. November 2023.

Figure 20: Overview of the Tender Process



Source: IEEFA.

However, there is no guarantee that the procurement process will adhere to the timeframes provided. The procurement process from the issuance of an RfP until the signing of the PPA could happen more than 180 days later, or the tender could be canceled altogether for no apparent reason. For example, the de-dieselization tender to be held in 2022⁵³ was canceled by PLN even though several investors had submitted proposals.⁵⁴ Investors who have incurred tender preparation costs, providing details such as an initial study, bid bond, and legal documents, would have to record these expenses as sunk costs.

Furthermore, it is unclear which project tender will be initiated by PLN as several recent open tenders have not followed the timeline provided in the RUPTL. RUPTL is essential for investors to ascertain which renewable energy projects the government is encouraging. A project absent from the approved RUPTL indicates that it could be canceled or disallowed at any time. This makes it difficult for investors to commit large sums of finance to something that may not eventually be approved.

Unclear Bid Bond Requirements. An important PLN requirement is that the IPP must submit a bid bond to participate in the tender process.⁵⁵ The bid bond acts as a form of insurance for PLN, guaranteeing that the utility will be compensated if the winning bidder fails to meet obligations. A bid bond is submitted with the IPP’s proposal. Bid proposals without a valid bond are rejected, and if the IPP is awarded the project, a performance bond must be provided at the PPA signing.

⁵³ The Jakarta Post. [PLN Opens Bid to De-dieselize 212 MW of Power Plants](#). 28 March 2022.

⁵⁴ PLN announced an open bid to convert 212MW of diesel power plants spread across 183 locations in the Java-Madura and Kalimantan Island in early 2022. However, there was no further update after the open bid announcement. In 2023, PLN announced another de-dieselization 116MW phase 1 program ([Kontan](#). 26 April 2023) which indicated that the previous 212MW de-dieselization project was canceled.

⁵⁵ PLN. [Kebijakan Strategis Pengadaan Barang Jasa 2023](#). July 2023.

IPPs face problems due to unclear procedures and differing bid bond requirements between tenders. Additionally, to obtain a bid bond from a bank or third-party guarantor, sometimes IPPs need to provide collateral in the form of cash or deposits of the same amount as the bond, which needs to be locked in for a certain period.⁵⁶

Transparency of the bid bond requirements is crucial to attract investors to participate in the PLN procurement process. IEEFA suggests that PLN provide clear guidelines regarding the bid bond requirements for all renewable energy tenders' procurement.

Transparency and clear procedures are the key aspects to obtaining investors' trust. Having clear criteria, consistent requirements, and objective, well-disclosed means for evaluation gives investors' confidence that a high-quality proposal would be given fair consideration. This encourages them to invest the money, time, and resources needed to prepare bids.

One-on-one negotiations, unclear timelines, and unapproved projects, undermine the procurement process, leading to decreased investor interest, less competition, and uneven outcomes. It is also time-consuming for all parties involved, particularly for PLN. Given the scope, scale, and urgency of Indonesia's energy transition needs, PLN and the government should reform procurement procedures to reassure potential investors and attract more investment.

Conclusion

With its strong economic growth and substantial untapped renewable energy potential, Indonesia has positioned itself as a contender for investment especially in renewable energy development. However, while the rest of the world has made clear strides towards renewable energy, Indonesia has lagged in comparison. Investment in renewable energy has stagnated for the past seven years. Indonesia was only able to attract around US\$1.5bn in 2023 which translated to a mere 574MW of additional renewable energy capacity.

IEEFA has identified several challenges in Indonesia which raise concerns among potential investors. The Government of Indonesia should undertake an immediate review of its planning, procurement, and investment processes to increase the attractiveness of renewable energy development. Private investors would be encouraged to enter the Indonesian market if there were clear and concise procurement procedures, as well as consistency and reliability in the implementation of current regulations. By reevaluating the mandatory partnership scheme, electricity purchase tariffs, carbon credits incentives, and the local content requirements policy, the government and PLN can ensure the return on investment is appealing for investors to accelerate the country's transition to renewable energy and meet its climate targets.

⁵⁶ This information was provided to IEEFA on the condition of confidentiality through conversations held with several private developers engaged in renewable energy projects proposed under current PLN policies.

Table 1: Key Recommendations

Investment Unattractiveness Factors	Key Recommendation
Policy and regulatory unpredictability	GOI should clarify each of the relevant regulations to provide certainty for potential investors.
Mandatory partner scheme	A new strategy should be devised where the government can participate in ownership without limiting the advantages for the private sector.
Restrictions on the transfer of ownership rights	These rules should be adjusted to aid private sector investors in raising additional capital for projects.
Deliver-or-pay scheme	The implementation of penalties on investors increases investment risks. The terms and conditions of this policy, as well as the calculation of penalties should be reviewed. Investors should be involved in determining formulas and indicators.
Renewable energy tariffs	Current regulation caps renewable energy tariffs which reduce the attractiveness of projects. Tariff adjustment is necessary when comparing the rest of the Southeast Asia region. Failing to determine competitive tariffs may drive potential investors to other markets.
Local content requirements	Availability of certain renewable energy technology in the local market, such as solar panels and wind turbines, is limited. However, there are numerous opportunities to participate in balance of systems supply and project implementation. GOI should assess the local market before determining the minimum requirement for local content.
Carbon credits incentives	Shared carbon credits between PLN and IPPs would provide additional income which could be used to lower tariffs during the concession period.
Renewable energy procurement procedures	Transparency is the key to obtaining investors' trust. Transparent and well-defined procedures in procurement will provide assurance and certainty for potential investors and result in fair outcomes.

Source: IEEFA.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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