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FROM AMBITION TO EXECUTION

Enabling Condition for Indonesia's First 17 GW
Renewable Energy Deployment Phase

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Renewable Energy Deployment Phase

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LIST OF ABBREVIATIONS

| | |
|-----------------|--|
| ACWA | Arabian Company for Water and Power Development |
| ADIA | Abu Dhabi Investment Authority |
| ADNOC | Abu Dhabi National Oil Company |
| AFD | Agence Française de Développement |
| AZEC | Asia Zero Emission Community |
| BESS | Battery Energy Storage Systems |
| BII | British International Investment |
| BRI | Belt and Road Initiative |
| CATL | China's Contemporary Amperex Technology Co. Limited |
| CBAM | Carbon Border Adjustment Mechanism |
| CCLFA | Cities Climate Finance Leadership Alliance |
| CDP | Cassa Depositi e Prestiti |
| CIPP | Comprehensive Investment and Policy Plan |
| COVID-19 | Corona Virus Disease-19 |
| DFC | Development Finance Corporation |
| EBTKE | Energi Baru, Terbarukan, dan Konservasi Energi / Directorate General of New and Renewable Energy |
| EDC | Export Development Canada |
| ESG | Environmental, Social, Governance |
| EVs | Electric Vehicles |
| EXIM | Export-Import |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| GW | Gigawatts |
| GWh | Gigawatt-hours |
| IBC | Indonesia Battery Corporation |
| IEEFA | Institute for Energy Economics and Financial Analysis |
| IESR | Institute for Essential Services Reform |
| IKI | International Climate Initiative |
| IPG | International Partners Group |
| JBIC | Japan Bank for International Cooperation |
| JETRO | Japan External Trade Organization |
| JETP | Just Energy Transition Partnership |
| JICA | Japan International Cooperation Agency |
| KEN | National Energy Policy / Kebijakan Energi Nasional |
| KFW | Kreditanstalt für Wiederaufbau |
| MEMR | Ministry of Energy and Mineral Resources |
| MENA | Middle East and North Africa |
| METI | Ministry of Economy, Trade and Industry |
| PIF | Public Investment Fund |
| PLN | Perusahaan Listrik Negara / State Electricity Company |
| PLTH | Pembangkit Listrik Tenaga Hybrid |
| PPAs | Power Purchase Agreements |
| PT SMI | PT Sarana Multisarana Infrastruktur |
| PV | Photovoltaic |
| QIA | Qatar Investment Authority |
| RUEN | National Energy General Plan / Rencana Umum Energi Nasional |
| RUKN | National Electricity General Plan / Rencana Umum Ketenagalistrikan Nasional |
| RUPTL | PLN's Electricity Supply Business Plan / Rencana Usaha Penyediaan Tenaga Listrik |
| SECI | Solar Energy Corporation of India |
| SOE | State-Owned Enterprise |
| TAQA | Abu Dhabi National Energy Company |
| TKDN | Tingkat Komponen Dalam Negeri / The Local Content |
| UAE | United Arab Emirates |
| UK | United Kingdom |
| USAID | United States Agency for International Development |

KEY FINDINGS

Regulatory gaps, not resources or capital, are the binding constraint.

Indonesia has abundant solar potential (3,000+ GW technical potential) and strong investor interest from the G7, China, and MENA, but persistent regulatory fragmentation, PPA uncertainty, and weak project bankability are what's actually slowing deployment of the first 17 GW phase.

Transmission infrastructure, not generation capacity, is the biggest bottleneck.

Solar panels can be built quickly, but Indonesia's archipelagic grid, lagging transmission planning, and PLN's financing constraints mean generation assets risk being stranded without adequate grid capacity to absorb their output.

The financing challenge requires "architecture," not just volume.

International capital is already available (ASEAN Power Grid, AZEC, G7 institutions, Gulf sovereign wealth funds, Chinese industrial investment), but it needs to be matched to the right risk profile — commercial finance for generation, blended/concessional finance for transmission and storage — rather than treated as a single pool.

Coal retirement is a prerequisite, not a parallel track.

Without retiring at least 15 GW of "Toxic20" coal plants, the Java-Bali grid faces oversupply risk (108 GW installed, 56% coal as of April 2026), meaning the 17 GW solar phase could stall for lack of grid space even if projects are built.

Danantara and multi-alignment diplomacy are emerging as the coordination mechanisms to watch.

Indonesia's ability to use Danantara as a co-investment/de-risking platform, while balancing G7 governance support, Chinese manufacturing scale, and Gulf infrastructure capital, may determine whether the 17 GW phase succeeds as a credibility test for the full 100 GW ambition.

ENERGY TRANSITION PROGRESS AND CONTEXT

Indonesia has entered a new phase in its energy transition. Under President Prabowo Subianto, the government has announced one of the most ambitious renewable energy targets in the country's history: the development of 100 gigawatts (GW) of solar power capacity¹ as part of a broader strategy to strengthen energy security, reduce dependence on imported fuels, expand electricity access, and support long-term industrial transformation. The initiative reflects a growing recognition that renewable energy is no longer solely an environmental agenda, but increasingly a matter of economic competitiveness, industrial policy, and national resilience.

The power outages that occurred in Sumatra and Java in Q2 2026 served as a warning that dependence on fossil fuels, particularly coal, poses a vulnerability to Indonesia's power system. CELIOS recorded losses of Rp 2.6 trillion and the loss of 5,432 jobs during the blackout².

The 100 GW ambition emerged amid mounting domestic and international pressures for energy transition. Indonesia remains heavily dependent on fossil fuels, particularly coal, which continues to dominate electricity generation³. At the same time, global decarbonization policies are reshaping international trade and investment flows. Carbon-related regulations, including the European Union's Carbon Border Adjustment Mechanism (CBAM), new battery sustainability standards, and growing investor scrutiny of emissions-intensive supply chains, are increasing the costs of maintaining a fossil fuel-dependent development model⁴. For Indonesia, whose future industrial strategy increasingly relies on participation in electric vehicle, battery, critical mineral, and manufacturing value chains, accelerating renewable energy deployment has become an economic necessity rather than merely an environmental aspiration.

1 Setiawan, V. N. (2026). Prabowo Mau Bangun PLTS 100 Giga Watt, Butuh Sekitar Rp1.800 Triliun. *CNBC Indonesia*. <https://www.cnbcindonesia.com/news/20260608095233-4-740910/prabowo-mau-bangun-plts-100-giga-watt-butuh-sekitar-rp1800-triliun>

2 Azzahra, Q. (2026, June 24). Pemadaman Bergilir Alarm bagi Pemerintah untuk Beralih ke EBT. *Tirto*. <https://tirto.id/pemadaman-bergilir-alarm-bagi-pemerintah-untuk-beralih-ke-ebt-hyxv>

3 Indonesia-Emissions. (2023). IEA. <https://www.iea.org/countries/indonesia/emissions>

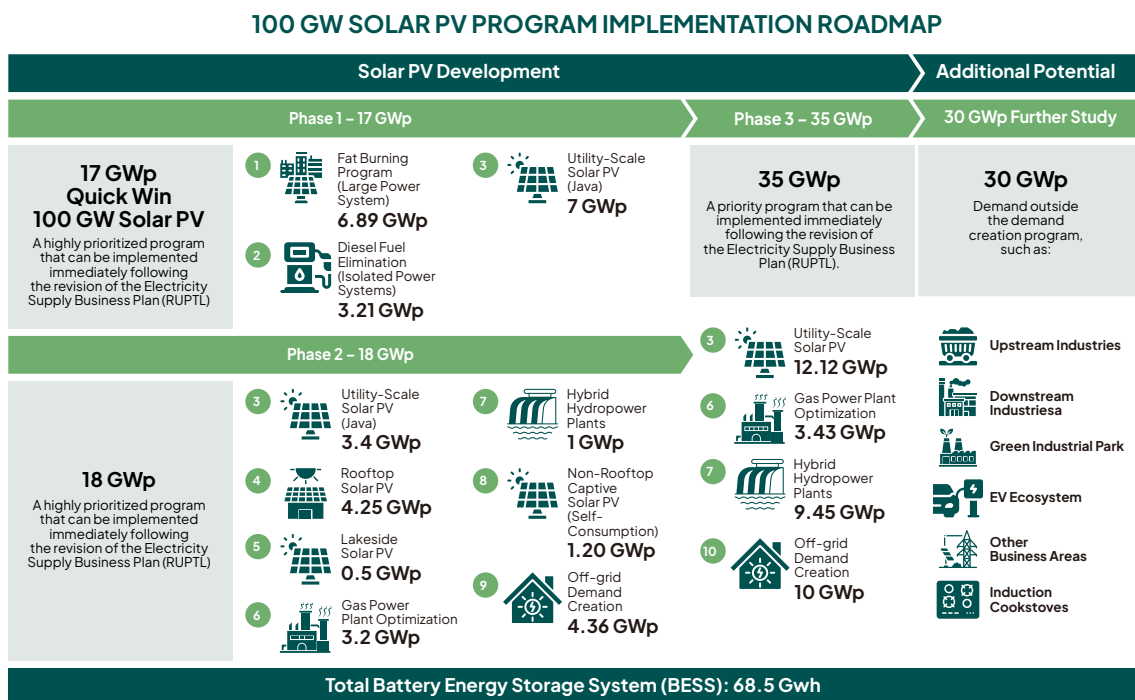
4 Sagone, S., & Cellura, M. (2025). The Carbon Border Adjustment Mechanism from developing countries' perspective: a systematic literature review on challenges and opportunities for the Mediterranean basin. *Energy Strategy Reviews*, 62, 101884. <https://doi.org/10.1016/j.esr.2025.101884>

President Prabowo's solar energy vision also reflects Indonesia's broader aspiration for energy self-sufficiency. Government statements have emphasized that large-scale solar deployment can reduce dependence on imported fuel, strengthen energy sovereignty, support rural electrification, and create new industrial opportunities across the renewable energy value chain⁵. The administration has repeatedly linked renewable energy expansion with its broader agenda of economic transformation and national development.

However, translating a headline target into actual installed capacity requires a significant shift from political ambition to technical implementation. While the 100 GW target has attracted substantial public attention, policymakers have increasingly focused on an initial deployment phase of approximately 17 GW of solar power capacity. This first phase is intended to serve as the foundation upon which the broader 100 GW vision can be built. Officials from the Ministry of Energy and Mineral Resources (MEMR) have stated that detailed planning is being developed to accelerate the realization of this initial deployment stage⁶.

The significance of the 17 GW phase extends far beyond its contribution to installed capacity. It represents a critical test of Indonesia's ability to mobilize capital, coordinate institutions, strengthen grid infrastructure, develop domestic supply chains, and establish regulatory certainty for investors. Success during this phase would provide confidence to domestic and international investors that Indonesia is capable of executing large-scale renewable energy projects. Failure, on the other hand, could undermine investor confidence and delay the country's broader energy transition agenda.

Figure 1. Graphic Roadmap 100 GW Solar PV



5 Yustika, M. (2026, April). Advancing Indonesia's 100GW solar program through de-dieselization for energy security. *Institute for Energy Economics and Financial Analysis*. <https://ieefa.org/resources/advancing-indonesias-100gw-solar-program-through-de-dieselization-energy-security>

6 Indonesia accelerates 100 GW solar program amid US tariffs. (2026, April). *Antara News*. <https://en.antaranews.com/news/413519/indonesia-accelerates-100-gw-solar-program-amid-us-tariffs>

Achieving 17 GW of renewable energy deployment within a relatively short timeframe will require investment at a scale not previously seen in Indonesia's renewable energy sector. Such investment cannot be mobilized through public financing alone. It will depend heavily on private sector participation, international financing institutions, sovereign wealth funds, development finance institutions, export credit agencies, and strategic investors from major partner countries including members of the G7, China, and countries in the Middle East and North Africa (MENA). The availability of capital, however, is only one part of the equation. Investors also require predictable regulations, transparent procurement mechanisms, bankable power purchase agreements, efficient permitting systems, reliable transmission infrastructure, and clear market signals.

This paper argues that the principal challenge facing Indonesia's first 17 GW deployment phase is not the lack of renewable energy resources or investment interest, but rather the persistence of regulatory and institutional bottlenecks that continue to constrain project development. While Indonesia possesses abundant solar potential, growing investor interest, and increasing geopolitical support for energy transition initiatives, existing regulatory frameworks often fail to provide the certainty and incentives required for large-scale investment.

Accordingly, the central objective of this paper is to identify the regulatory constraints that currently limit investment across three critical sectors: renewable power generation, grid transmission infrastructure, and battery energy storage systems (BESS). These three sectors constitute the foundational pillars required for successful implementation of the first 17 GW phase. The paper further proposes a comprehensive regulatory unlock agenda aimed at improving investment attractiveness, accelerating project execution, strengthening domestic industrial capacity, and leveraging Indonesia's growing network of international energy partnerships.

At the same time, the energy transition agenda must be accompanied by the retirement of at least 15 GW of coal plants, designated as "Toxic20," a list of coal plants with high emissions, fiscal burdens, and health impacts that must be prioritized for retirement⁷. This retirement will require significant funding, involving investors, asset owners, and the government.

Without coal plant retirement, the remaining 17 GW will face the challenge of electricity oversupply in the Java-Bali corridor. As of April 2026, installed power plant capacity reached 108 gigawatts (GW), of which coal-fired power plants (PLTU) dominate, accounting for 56%, or 60.53 GW.

Ultimately, the success of Indonesia's 100 GW ambition will not be determined by the scale of its political announcements, but by its ability to create an enabling regulatory ecosystem that can convert investor interest into bankable projects, infrastructure deployment, and long-term industrial development. The first 17 GW phase therefore represents not merely a technical milestone, but the defining test of Indonesia's energy transition strategy.

⁷ List of 20 most polluted coal plant can be seen in this platform: <https://toxic20.org/>

WHY PRESIDENT PRABOWO ANNOUNCED THE 100 GW AMBITION

President Prabowo Subianto's announcement of a 100 GW solar power ambition represents one of the most significant energy policy signals issued by an Indonesian administration in recent decades. While the figure itself appears highly ambitious relative to Indonesia's current renewable energy deployment levels, the target reflects a broader strategic vision that extends beyond electricity generation. The 100 GW ambition should be understood as part of a wider agenda encompassing energy security, industrial transformation, economic nationalism, investment mobilization, and geopolitical positioning.

The announcement emerged against a backdrop of increasing uncertainty in global energy markets. Since the COVID-19 pandemic, energy supply disruptions, geopolitical tensions, and commodity price volatility have highlighted the vulnerabilities associated with dependence on imported fuels and centralized energy systems⁸. Like many emerging economies, Indonesia remains exposed to fluctuations in global energy markets despite being a resource-rich country. The Prabowo administration has increasingly framed renewable energy development as a means of reducing external dependence while strengthening domestic resilience.

This emphasis is closely linked to Prabowo's broader vision of national self-sufficiency. Since taking office, the administration has repeatedly promoted food security, energy security, and industrial independence as core pillars of Indonesia's long-term development strategy⁹. In various public statements, President Prabowo has argued that Indonesia possesses sufficient natural resources to achieve greater economic independence and reduce vulnerability to external shocks. Renewable energy, particularly solar power, has become a central component of this narrative. In March 2026, Prabowo explicitly linked renewable energy expansion to Indonesia's goal of achieving energy self-sufficiency within the next four years, while simultaneously directing the rapid construction of solar power facilities capable of generating up to 100 GW of electricity¹⁰.

8 Aljohani, T. M., Assolami, Y. O., Alrumayh, O., Mohamed, M. A., & Almutairi, A. (2025). Sustainable Energy Systems In a Post-Pandemic World: A Taxonomy-Based Analysis of Global Energy-Related Markets Responses and Strategies following COVID-19. *Sustainability*, 17(5), 2307. <https://doi.org/10.3390/su17052307>

9 Prayudhia, M. C. G., & Rochman, F. (2026, February). Prabowo: Swasembada pangan dan energi jadi fondasi transformasi bangsa. *Antara News*. <https://www.antaranews.com/berita/5390986/prabowo-swasembada-pangan-dan-energi-jadi-fondasi-transformasi-bangsa>

10 Prabowo targets energy self-sufficiency by 2029. (2026, April). *Antara News*. <https://en.antaranews.com/news/414061/prabowo-targets-energy-selfsufficiency-by-2029>

Solar power occupies a particularly strategic position within this vision because of its scalability and geographical flexibility. Unlike large hydropower or geothermal projects, solar photovoltaic (PV) systems can be deployed across diverse locations, including remote regions, industrial estates, mining areas, and rural communities¹¹. Government officials have increasingly discussed the possibility of deploying solar systems at the village level, allowing renewable energy to contribute not only to national electricity generation but also to local economic development and rural electrification. Minister of Energy and Mineral Resources Bahlil Lahadalia has stated that the government's long-term plan envisions solar deployment across villages nationwide as part of an energy independence strategy¹².

Beyond energy security, the 100 GW ambition reflects Indonesia's evolving industrial strategy. Under both the Joko Widodo and Prabowo administrations, economic policy has increasingly focused on downstream industrialization, value-added manufacturing, and integration into emerging green technology supply chains¹³. Indonesia's ambitions to become a global hub for electric vehicles (EVs), battery manufacturing, critical mineral processing, and green industrial production require a substantial increase in clean electricity supply.

International investors are increasingly evaluating renewable energy availability when making decisions regarding industrial investment¹⁴. Major manufacturers, technology firms, battery producers, and electric vehicle companies face growing pressure from shareholders, consumers, and regulators to reduce emissions throughout their supply chains. As a result, access to affordable renewable electricity has become an important factor influencing investment destination choices. Expanding solar power capacity therefore supports Indonesia's objective of attracting higher-value industrial investment while enhancing the competitiveness of its downstream industries.

The 100 GW ambition also serves an important signaling function for international capital markets. Large-scale renewable energy targets often operate not only as technical planning instruments but also as investment signals. By announcing a target of this scale, the government seeks to demonstrate long-term commitment to energy transition and create confidence among investors considering participation in Indonesia's renewable energy sector.

This signaling effect is particularly important because Indonesia is entering a period of intensifying competition for global clean energy investment. Countries across Asia, the Middle East, Latin America, and Africa are simultaneously attempting to attract renewable energy developers, infrastructure funds, sovereign wealth funds, development finance institutions, and green manufacturing investors¹⁵. In this context, ambitious national targets can help position Indonesia as a major destination for long-term energy transition capital.

11 Renewables 2025: Analysis and forecasts to 2030. (2025). In IEA. IEA. <https://iea.blob.core.windows.net/assets/76ad6eac-2aa6-4c55-9a55-b8dc0dba9f9e/Renewables2025.pdf>

12 Nano, V. (2025, September). Bahlil Ungkap Rencana Bangun PLTS Raksasa di Desa Hingga 100 GW. *CNBC Indonesia*. <https://www.cnbcindonesia.com/news/20250915182223-4-667167/bahlil-ungkap-rencana-bangun-plts-raksasa-di-desa-hingga-100-gw>

13 Patunru, A. (2024, November 21). Pivotal economic challenges for the Prabowo administration. *CIPS*. <https://www.cips-indonesia.org/post/pivotal-economic-challenges-for-the-prabowo-administration>

14 Goh, L. T., Law, S. H., & Trinugroho, I. (2025). Green Power: Exploring the nexus between renewable energy and foreign direct investment flows. *SAGE Open*, 15(2). <https://doi.org/10.1177/21582440251345661>

15 *State-owned enterprises lead the Global South's energy transition*. (2026, June 11). World Economic Forum. <https://www.weforum.org/stories/2026/06/state-owned-enterprises-energy-transition-global-south/>

The announcement also aligns with broader geopolitical dynamics surrounding the global energy transition. Indonesia increasingly occupies a strategic position within competing international energy partnerships. The country has become a key recipient of support from the International Partners Group (IPG) under the Just Energy Transition Partnership (JETP)¹⁶, while simultaneously deepening energy cooperation with China through investments in solar manufacturing, battery production, and critical mineral processing¹⁷. At the same time, Gulf countries—including the United Arab Emirates, Saudi Arabia, and Qatar—have shown growing interest in renewable energy and infrastructure investments in Indonesia¹⁸.

The 100 GW target provides a framework through which Indonesia can engage multiple investment partners simultaneously without becoming overly dependent on any single source of capital. In practice, the ambition creates opportunities for Indonesia to leverage competition among international investors while maintaining strategic autonomy over its energy transition pathway.

Another important dimension involves the emergence of Danantara as a strategic state investment vehicle. The Prabowo administration has increasingly emphasized the role of Danantara in mobilizing long-term capital for national development priorities¹⁹. Large-scale renewable energy infrastructure—including solar power plants, transmission networks, and battery storage systems—offers potential investment opportunities that align closely with Danantara's mandate to support strategic sectors while generating long-term economic returns. The 100 GW ambition therefore provides a pipeline of potential projects capable of attracting both domestic and international co-investment.

At the same time, the administration's emphasis on renewable energy reflects recognition of changing global economic realities²⁰. Carbon-related trade measures, green industrial policies, and sustainability-linked investment standards are becoming increasingly influential in shaping international competitiveness²¹. Indonesia's export-oriented industries will face growing pressure to demonstrate lower carbon intensity in production processes. Expanding renewable energy capacity can help mitigate future trade risks while supporting compliance with emerging international standards.

However, the announcement of a 100 GW target should not be interpreted as evidence that implementation challenges have already been resolved. The ambition remains substantially larger than Indonesia's current renewable energy deployment trajectory. Independent analysts have noted that achieving such a target would require unprecedented acceleration in project development, infrastructure construction,

16 Estherina, I. (2025, December). JETP Funding Commitment for Indonesia Jumps US\$1.4 Billion. *Tempo English*. <https://en.tempo.co/read/2071174/jetp-funding-commitment-for-indonesia-jumps-us1-4-billion>

17 Hasjanah, K. (2025, June). *Advancing Indonesia–China Strategic Partnership for Renewable Energy*. IESR. <https://iesr.or.id/en/advancing-indonesia-china-strategic-partnership-for-renewable-energy/>

18 Sarwindaningrum, I. (2025, January). UEA Pertegas Minat Tingkatkan Investasi Energi Hijau di Indonesia. *Kompas*. <https://www.kompas.id/artikel/uea-pertegas-minat-lanjutkan-investasi-energi-hijau-di-indonesia>

19 Office of Assistant to Deputy Cabinet Secretary for State Documents & Translation. (2026, March). *President Prabowo: Danantara Strengthens National Economic Resilience Amid Global Crisis* <https://setkab.go.id/en/president-prabowo-danantara-strengthens-national-economic-resilience-amid-global-crisis/>

20 Massagony, A., Pandit, R., & White, B. (2025). Political economy of energy policy in Indonesia towards net zero emissions by 2060. *Energy Sustainable Development/Energy for Sustainable Development*, 88, 101757. <https://doi.org/10.1016/j.esd.2025.101757>

21 Ahmad, F., Boumaiza, A., Sanfilippo, A., & Al-Fagih, L. (2025). A comprehensive review on green finance and its impact on net zero energy transition: From the perspective of renewable energy development. *Energy Strategy Reviews*, 62, 101948. <https://doi.org/10.1016/j.esr.2025.101948>

financing mobilization, workforce preparation, and regulatory reform²². Several studies have highlighted the need for significant improvements in planning, transmission readiness, investment frameworks, and institutional coordination to translate the vision into operational reality²³.

Ultimately, the significance of the 100 GW ambition lies not only in the scale of the target itself, but in what it represents politically and economically. The initiative reflects an attempt to reposition renewable energy as a central pillar of Indonesia's national development strategy. It links energy transition with economic sovereignty, industrial competitiveness, investment attraction, and geopolitical leverage. Yet the credibility of this vision will depend less on the announcement of long-term ambitions than on the government's ability to execute the first stages of implementation. This is precisely why the initial 17 GW deployment phase has become so important: it serves as the bridge between political aspiration and practical realization.

²² Powering resilience: How Indonesia is building a more secure energy future. (2026, June 23). UN News. <https://news.un.org/en/story/2026/06/1167784>

²³ Hauber, G. (2025, June). Realizing Indonesia's Ambitious Renewable Energy Goals Calls For a New Approach. *Institute For Energy Economics And Financial Analysis*. <https://ieefa.org/resources/realizing-indonesias-ambitious-renewable-energy-goals-calls-new-approach>

FROM 100 GW AMBITION TO TECHNICAL REALITY: UNDERSTANDING THE 17 GW FIRST PHASE

The announcement of a 100 GW solar power ambition represents a major political signal, but the success of the initiative will ultimately depend on its technical execution. Large-scale energy transitions are not achieved through headline targets alone. They require detailed planning, institutional coordination, financing frameworks, transmission readiness, regulatory certainty, and implementation capacity.

Recognizing these realities, the Indonesian government has increasingly focused on an initial deployment phase of approximately 17 GW as the operational foundation of the broader 100 GW vision. Officials from the MEMR have stated that the first 17 GW phase is being prioritized before scaling toward the full target²⁴. The EBTKE has also indicated that detailed implementation plans are currently being prepared to support this rollout²⁵.

The prioritization of the 17 GW phase reflects an important policy shift: the government's recognition that the challenge is no longer announcing renewable energy targets, but creating the enabling ecosystem necessary to deliver them. The first phase therefore serves as a practical test of Indonesia's ability to mobilize investment, coordinate institutions, strengthen infrastructure, and establish a bankable renewable energy market.

Why 17 GW Matters

The first 17 GW phase is strategically significant for several reasons. First, it represents a scale of deployment far beyond Indonesia's historical renewable energy growth trajectory. Indonesia's cumulative installed solar capacity remains relatively small compared to its overall power system and compared to regional peers. Deploying 17 GW within a compressed timeframe would require project development, procurement, financing, and construction activities at a pace not previously experienced in the domestic solar sector.

Second, the first phase will shape investor perceptions regarding the credibility of Indonesia's broader 100 GW ambition. International developers, infrastructure funds, sovereign wealth funds, export credit agencies, and institutional investors will closely observe whether the government can successfully execute this initial stage. If

²⁴ Rahman, M. R. (2026, April). Indonesia accelerates 100 GW solar program amid US tariffs. *Antara News*. <https://en.antaranews.com/news/413519/indonesia-accelerates-100-gw-solar-program-amid-us-tariffs>

²⁵ Hardiyon, M. F., and Riso, N. (2026, April). ESDM Prioritaskan Pembangunan Tahap I PLTS 17 GW, Target 100 GW Dikebut 2 Tahun. *Kumparan Bisnis*. <https://kumparan.com/kumparanbisnis/esdm-prioritaskan-pembangunan-tahap-i-plts-17-gw-target-100-gw-dikebut-2-tahun-27GmlLeT5wJ>

implementation is delayed by regulatory uncertainty, permitting bottlenecks, weak procurement frameworks, or grid constraints, investor confidence in subsequent phases could weaken significantly.

Third, the first phase will determine whether Indonesia can build the institutional experience required for larger deployment later. Large-scale renewable programs typically rely on learning-by-doing dynamics. Regulatory frameworks, contracting mechanisms, grid integration models, and financing structures often improve only after initial deployment phases reveal operational challenges. In this sense, the 17 GW phase functions as both an infrastructure program and an institutional learning process.

Beyond Solar Panels: The Infrastructure Behind 17 GW

One of the most common misconceptions surrounding the 100 GW ambition is the assumption that the challenge consists primarily of installing solar panels. In reality, solar generation capacity represents only one component of a much larger energy system transformation.

Delivering 17 GW of renewable energy requires simultaneous development across at least three critical infrastructure pillars:

1 Renewable Energy Generation

The most visible component involves the construction of PV facilities across multiple regions. These projects may include utility-scale solar farms, industrial solar installations, hybrid renewable systems, floating solar projects, and decentralized solar systems for remote communities.

Indonesia possesses substantial solar potential. Various government and independent studies estimate technical solar potential exceeding 3,000 GW, meaning resource availability is not the primary constraint²⁶. The challenge instead lies in translating resource potential into commercially viable projects through predictable regulations, land availability, financing access, and bankable power purchase agreements (PPAs).

In addition, project deployment will require significant coordination with provincial governments, local authorities, State Electricity Company (PLN), industrial estate operators, and private developers. Without streamlined permitting procedures and clear project pipelines, deployment risks falling behind planned targets.

²⁶ The International Renewable Energy Agency (IRENA). (2022). Indonesia Energy Transition Outlook. *International Renewable Energy Agency*. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Oct/IRENA_Indonesia_energy_transition_outlook_2022.pdf

Table 1. Cross-Country Comparison of Utility-Scale Solar PV Costs

| Country | | Utility-scale Solar PV Price (USD/1000W) |
|---------------------------|--|---|
| Baseline |  Indonesia | 667 |
| Regional competitors |  Vietnam | 494 |
| |  Thailand | 903 |
| |  Malaysia | 981 |
| |  Philippines | 1,461 |
| Major investment partners |  China | 442 |
| |  Japan | 1,853 |
| |  India | 630 |
| |  UAE | 544 |
| |  USA | 1,925 |

2 Grid Transmission Expansion

Transmission infrastructure represents one of the most important but often overlooked requirements of the energy transition.

Solar generation can only contribute effectively to the power system if electricity can be transmitted from generation sites to demand centers. This challenge is particularly important in Indonesia because renewable resource locations and electricity demand centers are often geographically separated.

Historically, transmission development has lagged behind generation planning. Renewable projects frequently face delays because transmission infrastructure is either unavailable or not completed on schedule. For a program as large as 17 GW, transmission readiness becomes a critical determinant of success.

The challenge is further complicated by Indonesia's archipelagic geography. Unlike continental countries with highly interconnected grids, Indonesia operates multiple isolated and semi-isolated electricity systems. Integrating large volumes of variable renewable energy therefore requires not only additional transmission lines but also improved interconnection capacity, grid modernization, digital monitoring systems, and more advanced system planning.

Failure to accelerate transmission investment could result in renewable generation assets being constructed without sufficient grid capacity to absorb their output, creating stranded infrastructure and financial inefficiencies.

3 Battery Energy Storage Systems

The third pillar involves BESS, which are increasingly becoming indispensable components of modern renewable energy systems.

Solar power generation fluctuates according to weather conditions and daylight availability. As renewable penetration increases, power systems require greater flexibility to maintain grid stability. Battery storage helps address this challenge by storing excess electricity during periods of high generation and releasing it during periods of lower supply or higher demand.

Indonesia's 100 GW vision increasingly incorporates solar-plus-storage models rather than standalone solar projects. Several analysts have argued that battery deployment will be essential for maintaining reliability as renewable penetration expands²⁷. Recent assessments of Indonesia's solar strategy note that solar-plus-BESS systems could significantly reduce dependence on costly diesel generation, particularly in remote regions, while improving energy security and reducing subsidy burdens²⁸.

The importance of storage extends beyond technical considerations. Battery deployment also aligns closely with Indonesia's industrial ambitions. The country possesses substantial nickel reserves and has invested heavily in battery manufacturing and electric vehicle supply chains²⁹. Expanding domestic BESS deployment could therefore generate synergies between renewable energy development and industrial downstreaming strategies.

4 Coal Plant Retirement

The fourth pillar includes coal plant retirement, to ensure the continued operation of the additional 17 GW, some of which is fed into the PLN grid and transmission system. At least 15 GW of coal plants fall into the Toxic 20 category, representing coal plants with significant health impacts, high emissions, and significant fiscal burdens. Examples of the Toxic 20 list include the Bukit Asam coal-fired power plant (37 years of operation), the Ombilin-West Sumatra coal-fired power plant (28 years), the Paiton coal-fired power plant (22 years), and the Suralaya coal-fired power plant (19 years). Calculations of the health impacts of the 20 most dangerous coal-fired power plants in Indonesia, or the Toxic 20, indicate at least 307,000 deaths due to air pollution and economic costs of up to USD 1.4 trillion (equivalent to IDR 18,709 trillion)³⁰.

The challenges of coal plant retirement are more related to regulatory reforms, which are often hampered by 'state loss' clauses, discouraging investors from continuing coal retirement programs in the cases of Cirebon-1 and Pelabuhan Ratu.

27 Yustika, M. (2026, April). Advancing Indonesia's 100GW solar program through de-dieselization for energy security. *IEEFA*.

28 Ibid.

29 Nugraha, F. (2026, June). Indonesia Opens Investment Opportunities for EV Battery Development. *Metro TV*. <https://www.metrotvnews.com/read/kewCjOzL-indonesia-opens-investment-opportunities-for-ev-battery-development>

30 Tentang Toxic20. (2025). Toxic20. <https://toxic20.org/tentang-toxic-20/>

Furthermore, the transfer of asset ownership to PLN if the coal plant is owned by an Independent Power Producer (IPP) presents a challenge. However, it's worth noting that investor pressure is needed to ensure the 17 GW of solar panel deployment isn't hampered by the oversupply of Indonesia's generating capacity, thus requiring no additional new power plants.

5 The Financing Challenge

The scale of investment required for the first 17 GW phase is substantial. Renewable energy deployment at this level requires financing not only for generation assets, but also for transmission infrastructure, storage systems, grid upgrades, manufacturing facilities, and supporting infrastructure.

Public funding alone will be insufficient. The success of the first phase will depend heavily on mobilizing private capital, including project developers, commercial banks, infrastructure funds, pension funds, sovereign wealth funds, development finance institutions, export credit agencies, and strategic investors.

This is particularly important because investors increasingly evaluate renewable projects through a bankability lens. Even where resource potential is strong, capital deployment remains constrained if projects face unclear procurement mechanisms, uncertain tariff structures, weak contractual protections, land acquisition risks, or regulatory inconsistency. The challenge facing Indonesia is therefore not merely attracting capital, but creating investment conditions capable of converting investor interest into financial close.

6 The Manufacturing and Supply Chain Dimension

The first 17 GW phase also has important implications for domestic manufacturing. Government officials have increasingly emphasized that the solar expansion agenda should contribute to industrial development rather than rely entirely on imported equipment³¹. The administration views renewable energy deployment as an opportunity to strengthen domestic manufacturing capacity, create employment, and expand participation in regional clean technology supply chains.

Recent government statements indicate that the 100 GW initiative is also expected to support domestic solar panel demand and strengthen local manufacturing ecosystems³². However, achieving this objective requires careful policy design. Excessively restrictive local content requirements may discourage investment if domestic manufacturing capacity remains insufficient. Conversely, overly liberal import policies could limit opportunities for industrial development. Balancing investment attractiveness with industrial policy objectives therefore becomes a central regulatory challenge.

³¹ Apollo Solar Indonesia. (2026, June). Indonesia's 100 GW Solar Target in Three Years: A Major Opportunity for the National Solar Industry. *Apollo Solar Indonesia*. <https://apollosolarindonesia.com/article-news/indonesias-100-gw-solar-target-in-three-years-a-major-opportunity-for-the-national-solar-industry>

³² Indonesia accelerates 100 GW solar program amid US tariffs. (2026, April). *Antara News*. <https://en.antaranews.com/news/413519/indonesia-accelerates-100-gw-solar-program-amid-us-tariffs>

The Real Test: Institutional Coordination

Ultimately, the first 17 GW phase is not simply an energy project. It is a national coordination challenge involving multiple ministries, PLN, provincial governments, financial institutions, industrial actors, and international partners.

The success of the first phase depends on whether Indonesia can align regulations, financing frameworks, infrastructure planning, industrial policy, and investment promotion into a coherent implementation strategy. In many respects, the technical feasibility of deploying 17 GW is less uncertain than the institutional capacity required to coordinate such deployment at scale.

For this reason, the central obstacle facing the first phase is not resource availability, technology readiness, or investor interest. Rather, it is the persistence of regulatory and institutional barriers that continue to slow project development, increase investment risk, and constrain infrastructure deployment. Understanding these barriers is therefore essential to identifying the reforms necessary to unlock the first 17 GW and ultimately realize Indonesia's broader 100 GW ambition.



WHY REGULATORY UNLOCK MATTERS: THE INVESTMENT IMPERATIVE BEHIND THE 17 GW FIRST PHASE

The success of Indonesia's first 17 GW renewable energy deployment phase will depend largely on its ability to mobilize investment at an unprecedented scale. While political ambition provides direction and investor interest continues to grow, neither is sufficient on its own. Renewable energy projects, transmission infrastructure, and BESS require long-term capital commitments supported by predictable regulatory frameworks. Without substantial regulatory reform, Indonesia risks creating a gap between announced targets and actual project realization.

The challenge is particularly significant because the first 17 GW phase represents far more than a power generation program. It requires simultaneous investment across generation assets, transmission networks, energy storage infrastructure, manufacturing ecosystems, digital grid systems, and supporting facilities. The scale of capital required therefore extends well beyond conventional electricity sector financing.

At the same time, Indonesia is entering an increasingly competitive global market for clean energy investment. Countries across Asia, Latin America, the Middle East, and Africa are actively competing to attract renewable energy developers, infrastructure funds, sovereign wealth funds, development finance institutions, export credit agencies, and strategic industrial investors³³. In this environment, investment does not automatically flow toward countries with the largest renewable resources. Instead, capital increasingly gravitates toward markets that offer regulatory certainty, project bankability, institutional predictability, and efficient implementation mechanisms.

This reality makes regulatory reform one of the most important determinants of whether Indonesia's 17 GW phase can succeed.

The Scale of Investment Required

The financial requirements associated with the first phase are substantial. Based on international benchmarks, utility-scale solar projects typically require investments ranging from approximately USD700 million to USD1 billion per GW depending on technology configuration, storage integration, transmission requirements, and local market

³³ Liu, S., Zhou, L., Wang, Y., and Higgins, H. (2026, June). \$102 Billion in Climate Finance Beyond the "Usual Suspects" Reveals a Growing Multipolar Reality. *World Resource Institute*. <https://www.wri.org/technical-perspectives/non-traditional-climate-finance>

conditions³⁴. When transmission infrastructure, battery storage systems, grid modernization, and supporting infrastructure are included, the overall investment needs associated with the first 17 GW phase could reach tens of billions of dollars.

The challenge becomes even greater when considering the broader 100 GW ambition. Recent assessments by the Institute for Essential Services Reform (IESR) and the Coordinating Ministry for Economic Affairs indicate that achieving Indonesia's long-term solar deployment targets will require large-scale expansion of renewable generation capacity alongside approximately 34 GW of energy storage systems and major transmission investments³⁵.

Such financing requirements cannot be met through state budgets alone. Indonesia's fiscal resources face competing demands across infrastructure, food security, defense modernization, social welfare, industrial development, and public services³⁶. As a result, the government's role will increasingly center on creating conditions that enable private capital mobilization rather than directly financing the entire transition. The first 17 GW phase therefore depends fundamentally on the participation of private investors.

Global Capital Exists — But It Is Selective

One of the most important realities shaping the global energy transition is that capital availability is not the primary constraint. Over the past decade, international financial institutions, sovereign wealth funds, pension funds, infrastructure investors, climate funds, and development finance institutions have significantly increased allocations toward renewable energy and sustainable infrastructure³⁷. Major economies have also launched various green financing initiatives designed to accelerate clean energy deployment in emerging markets³⁸.

Indonesia itself has become a major recipient of international energy transition support. Through mechanisms such as the JETP, multilateral development financing, climate investment funds, and bilateral cooperation programs, the country has already attracted considerable international attention³⁹.

Yet despite growing capital availability, investment deployment often remains slower than expected. The reason is simple: investors do not finance ambitions. They finance bankable projects. Renewable energy investors evaluate projects based on risk-adjusted returns. Even where renewable resources are abundant and market demand is strong, capital remains cautious if projects face unclear regulations, unstable procurement frameworks, uncertain tariff structures, lengthy permitting processes, land acquisition risks, weak contractual protections, or political unpredictability.

³⁴ World Energy Investment 2026. (2026). In IEA. IEA. <https://iea.blob.core.windows.net/assets/4fda38df-523c-46f5-ae75-49481abdc8fc/WorldEnergyInvestment2026.pdf>

³⁵ Report Launching on Solar Archipelago: Delivering 100 GW Solar PV Program in Indonesia In Collaboration IESR and the Coordinating Ministry for Economic Affairs (CMEA). (2026). IESR. <https://iesr.or.id/agenda-iesr/report-launching-on-solar-archipelago-delivering-100-gw-solar-pv-program-in-indonesia-in-collaboration-iesr-and-the-coordinating-ministry-for-economic-affairs-cmea/>

³⁶ Paat, Y., Kristianus, A., and Ismoyo, B. (2025, August). Prabowo's 2026 State Budget Pours Trillions Into Energy, Food, and Education. *Jakarta Globe*. <https://jakartaglobe.id/news/prabowos-2026-state-budget-pours-trillions-into-energy-food-and-education>

³⁷ Liu, S., Zhou, L., Wang, Y., and Higgins, H. (2026, June). \$102 Billion in Climate Finance Beyond the "Usual Suspects" Reveals a Growing Multipolar Reality.

³⁸ Ibid.

³⁹ SIPET. (n.d.). JETP Indonesia.

In practice, the existence of capital does not automatically translate into project financing. This distinction is particularly important for Indonesia. The country is often viewed positively by investors because of its large market size, economic growth prospects, abundant renewable resources, and strategic role in global supply chains. However, investors frequently identify regulatory uncertainty as one of the principal obstacles limiting faster deployment of renewable energy projects. As a result, the challenge facing Indonesia is not attracting investor attention. The challenge is converting investor interest into financial close.

Understanding Bankability

The concept of bankability sits at the center of renewable energy investment decisions. A project is considered bankable when investors and lenders believe its revenues, risks, contractual arrangements, and regulatory environment are sufficiently predictable to justify long-term financing⁴⁰.

In renewable energy markets, bankability depends on several factors:

| | |
|--|------------------------------------|
| Predictable PPAs | Transparent procurement mechanisms |
| Stable tariff structures | Reliable off-takers |
| Clear land acquisition procedures | Efficient permitting systems |
| Currency and foreign exchange protections | Regulatory consistency |
| Grid availability and transmission readiness | |

Weakness in any of these areas can significantly increase financing costs. For example, a solar project may possess excellent resource potential and technical feasibility. However, if investors remain uncertain about tariff adjustments, licensing approvals, transmission access, or contractual enforcement, financing costs will increase substantially. In some cases, projects may fail to secure financing altogether.

Regulatory quality therefore directly affects the cost of capital. This relationship is particularly important because renewable energy projects are highly capital-intensive. Unlike fossil fuel generation, where operating fuel costs constitute a significant portion of expenditures, renewable energy projects require large upfront investments while generating returns over long periods. Consequently, financing costs play a major role in determining overall project economics. Reducing regulatory risk is therefore equivalent to reducing project costs.

⁴⁰ CCFLA. (2022, April). What is Bankability?. CCFLA. <https://citiesclimatefinance.org/publications/what-is-bankability>

Why the Regulatory Challenge Extends Beyond Power Generation

Many policy discussions focus primarily on regulations affecting renewable power plants themselves. While generation-related regulations are important, the success of the 17 GW phase depends equally on regulatory frameworks governing transmission infrastructure and BESS.

Transmission investment faces unique challenges because grid infrastructure often requires long development timelines, complex permitting processes, coordination across multiple jurisdictions, and significant capital expenditures. Delays in transmission development can prevent completed renewable projects from delivering electricity to consumers, creating bottlenecks throughout the system.

Battery storage systems face an additional layer of uncertainty because regulatory frameworks remain relatively underdeveloped in many emerging markets. Questions surrounding ownership models, market participation rules, tariff structures, dispatch arrangements, and investment incentives continue to shape investor decisions.

Several recent assessments of Indonesia's solar-plus-storage strategy have highlighted that regulatory uncertainty remains one of the principal barriers slowing deployment despite strong economic fundamentals⁴¹. An analysis by the Institute for Energy Economics and Financial Analysis (IEEFA) found that Indonesia's planned 100 GW solar-plus-BESS initiative faces significant implementation challenges due to financing constraints, unclear tariff frameworks, land acquisition difficulties, and policy inconsistency⁴². This demonstrates that investment barriers are not confined to one segment of the renewable energy ecosystem. They are systemic.

The Credibility Test of the 17 GW Phase

The first 17 GW phase will function as a credibility test for Indonesia's broader 100 GW ambition. Investors, development finance institutions, export credit agencies, and strategic partners will closely observe whether Indonesia can successfully move projects from planning to implementation. The ability to deliver the first phase will influence perceptions regarding future investment opportunities across the country's energy transition landscape.

International experience suggests that ambitious renewable energy targets become credible only after initial deployment phases demonstrate implementation capacity. India's National Solar Mission, for example, evolved through phased deployment strategies that gradually built investor confidence, institutional experience, and regulatory maturity before reaching larger capacity targets⁴³.

41 Yustika, M. (2024, July). Addressing regulatory barriers will boost renewable energy investment in Indonesia. *IEEFA*. <https://ieefa.org/articles/addressing-regulatory-barriers-will-boost-renewable-energy-investment-indonesia-1>

42 Yustika, M. (2026, April). Advancing Indonesia's 100GW solar program through de-dieselization for energy security.

43 Jawaharlal Nehru National Solar Mission Towards Building SOLAR INDIA. (n.d.). In *SECI*. SECI. https://policy.asiapacificenergy.org/sites/default/files/mission_document_JNNSM.pdf

Indonesia now faces a similar challenge. The country possesses substantial renewable resources, growing international support, increasing investor interest, and strong political backing at the highest levels of government. What remains uncertain is whether the regulatory ecosystem can support deployment at the scale and speed required.

For this reason, regulatory reform should not be viewed as a secondary administrative issue. It is the central enabling condition that will determine whether the first 17 GW phase succeeds or stalls. Ultimately, the core challenge facing Indonesia's renewable energy transition is not technological feasibility, resource availability, or even financing availability. Rather, it is the ability to create a regulatory environment capable of transforming capital interest into infrastructure deployment. The first 17 GW phase therefore represents not merely an investment program, but a test of Indonesia's institutional readiness for large-scale energy transition.



INTERNATIONAL PARTNERS GROUP (IPG)–INDONESIA ENERGY INVESTMENT LANDSCAPE

The success of Indonesia's first 17 GW renewable energy deployment phase will depend heavily on its ability to mobilize international capital. While domestic financing institutions, state-owned enterprises, and sovereign investment vehicles will play important roles, the scale of investment required exceeds the capacity of public funding alone. As a result, international partnerships have become increasingly central to Indonesia's energy transition strategy.

Among these partnerships, the IPG occupies a particularly important position. Formed under the JETP, the IPG represents one of the largest international energy transition financing initiatives ever established for Indonesia. Beyond its financial value, the partnership serves as an important signal of international confidence in Indonesia's long-term renewable energy potential.

For the first 17 GW phase of the 100 GW ambition, understanding both the opportunities and limitations of the IPG framework is essential.

The Emergence of the JETP Framework

Indonesia's JETP was officially launched during the G20 Summit in Bali in November 2022. The partnership was established between the Government of Indonesia and the IPG, which includes major developed economies led by Japan and Germany, alongside support from multilateral development institutions and private financial actors. The initiative initially committed USD20 billion in public and private financing to support Indonesia's energy transition agenda⁴⁴.

The JETP framework was designed to accelerate Indonesia's transition away from coal dependency while expanding renewable energy deployment. Key objectives include reducing power sector emissions, increasing renewable energy penetration, strengthening grid infrastructure, and supporting long-term decarbonization pathways⁴⁵. Under the partnership, Indonesia aims to peak power sector emissions by 2030 and accelerate progress toward net-zero emissions in the electricity sector⁴⁶.

⁴⁴ *The EU and International Partners launch ground-breaking Just Energy Transition Partnership with Indonesia*. (2022, November). European Union. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6926

⁴⁵ SIPET. (n.d.). JETP Indonesia. *SIPET*. <https://www.sipet.org/jetp-country.aspx>

⁴⁶ *Ibid.*

The significance of JETP extends beyond climate policy. For Indonesia, the initiative effectively positioned energy transition as a major area of international economic cooperation, creating new channels for financing, technical assistance, policy coordination, and investment facilitation.

JETP is currently transforming into the JETP Delivery Unit, which differs from the JETP Secretariat model⁴⁷. The difference lies in the transfer of co-leads to Germany and Japan, allowing for a project-specific financing model rather than regulatory reform. A drawback of the JETP Delivery Unit is the lack of public participation in project determination.

Why IPG Matters for the 17 GW First Phase

The relevance of the IPG framework to the first 17 GW deployment phase lies in the nature of the investment challenge itself. Renewable energy deployment at this scale requires more than project financing. It also requires support for transmission expansion, grid modernization, storage systems, institutional strengthening, project preparation facilities, and risk mitigation mechanisms. Many of these areas are traditionally underfunded because they generate lower short-term returns compared to power generation assets.

The IPG framework is important because it combines multiple forms of financing, including grants, concessional loans, commercial financing, guarantees, technical assistance, and blended finance mechanisms. This allows investment support to extend beyond individual renewable projects toward broader system transformation. According to official JETP documents, financing instruments include public funding, development finance, guarantees, and private investment mobilization mechanisms⁴⁸.

For Indonesia's first 17 GW phase, such support is particularly relevant because several critical bottlenecks—especially transmission infrastructure and storage deployment—may struggle to attract sufficient commercial investment without additional risk-sharing mechanisms.

Moreover, participation by G7 countries and major development finance institutions provides an important signaling effect. International investors often interpret large-scale public financing commitments as indicators of policy credibility and long-term government commitment. In emerging markets, such signals can help reduce perceived investment risks and encourage broader private sector participation.

From Financing Commitments to Investment Realization

Despite the scale of announced commitments, an important distinction must be made between financing pledges and actual project realization. One of the recurring criticisms of energy transition partnerships globally is that headline financing figures often overstate the volume of immediately deployable capital⁴⁹. Large portions of announced financing may

47 SIPET. (n.d). JETP Indonesia. *SIPET*. <https://www.sipet.org/jetp-country.aspx>

48 Aulia, M., and Ginting, A. P. (2023). Charting the Financial Path of JETP: Challenges, Risks, and Policy Insights. *AEER*. https://www.aeer.or.id/wp-content/uploads/2023/12/Draft_Handbook-JETP-Investment-Layouted_compressed.pdf

49 Srivastava, S., and Tiwari, S. (2025, October). De-risking Just Energy Transition Partnerships For Sustained Action. *IEEFA*. <https://ieefa.org/resources/de-risking-just-energy-transition-partnerships-sustained-action>

consist of loans, guarantees, technical assistance, or investment opportunities that still require project preparation and regulatory readiness before disbursement.

Indonesia's experience reflects this challenge. The JETP Comprehensive Investment and Policy Plan (CIPP), launched in late 2023, identified multiple priority investment areas including renewable energy deployment, transmission infrastructure, industrial decarbonization, and renewable energy supply chain development⁵⁰. The document effectively serves as a roadmap for channeling financing toward priority sectors.

However, implementation has progressed more slowly than many stakeholders initially expected. Analysts have noted that project preparation challenges, regulatory uncertainties, procurement issues, and coordination complexities have slowed financing deployment. Several studies and policy assessments have emphasized that mobilizing capital remains difficult without parallel regulatory reforms capable of generating bankable projects. This lesson is particularly relevant for the first 17 GW phase. International capital may be available, but its deployment depends on Indonesia's ability to create investable project pipelines.

The Strategic Importance of Transmission and Grid Financing

One of the most important contributions that the IPG framework could make to Indonesia's renewable energy transition involves transmission infrastructure. Historically, energy transition financing discussions have focused heavily on generation capacity⁵¹. Yet grid infrastructure often represents one of the largest barriers to renewable integration. Solar projects can only contribute meaningfully to the power system if electricity can be transmitted efficiently to demand centers.

Indonesia's archipelagic geography further increases the importance of transmission investment. Expanding renewable energy deployment across multiple islands requires grid reinforcement, interconnection improvements, digital monitoring systems, and enhanced system flexibility.

The JETP framework explicitly recognizes transmission expansion as a major investment priority. Official planning documents identify grid infrastructure development as one of the key areas requiring large-scale financing support⁵². For the 17 GW first phase, transmission readiness may ultimately become as important as renewable generation capacity itself.

⁵⁰ Larasati, L. K., and Mafira, T. (2023, December). Highlights from Indonesia's JETP Comprehensive Investment and Policy Plan. *Climate Policy Initiative*. <https://www.climatepolicyinitiative.org/id/highlights-from-indonesias-jetp-comprehensive-investment-and-policy-plan/>

⁵¹ Soejachmoen, M. H., Halimatussadiyah, A., Ketelsen, A., Rachmatika, A. D., Rangkuti A. K., and Affi, F. A. R. (2023, June). Grid & Financing Challenges for Energy Transition in Indonesia. *Energy Transition Partnership*. <https://www.energytransitionpartnership.org/wp-content/uploads/2024/04/Grid-Financing-Challenges-for-Energy-Transition-in-Indonesia.pdf>

⁵² Progress Report 2025. (2025). In *JETP*. JETP.

Challenges Following the United States Withdrawal

The IPG landscape also experienced an important development in 2025 when the United States announced its withdrawal from JETP-related commitments. The U.S. commitment had included more than USD2 billion in financing support through loans, guarantees, and grant mechanisms⁵³.

While Indonesian officials emphasized that the withdrawal would not derail the broader partnership and that remaining members continued their commitments⁵⁴. The episode highlighted the geopolitical vulnerabilities associated with international financing arrangements. Japan and Germany subsequently assumed greater leadership roles within the partnership framework⁵⁵.

Following the US withdrawal, Japan has increasingly focused on the Asia Zero Emission Community (AZEC), an agreement with ASEAN countries on energy transition, which is dominated by fossil gas and small modular nuclear reactors. With the AZEC in place, Japan appears to be playing a less significant role in the continuation of JETP.

For Indonesia, this development reinforces the importance of diversification. Relying excessively on any single financing source increases exposure to political shifts beyond Indonesia's control. The country's broader strategy of engaging multiple investment partners—including G7 countries, China, Gulf states, multilateral institutions, and private investors—therefore remains important for maintaining financing resilience.

Why Regulatory Reform Remains the Missing Link

Perhaps the most important lesson from the IPG experience is that financing availability alone does not guarantee deployment. Indonesia has already succeeded in attracting substantial international attention and financing commitments⁵⁶. Yet the pace of renewable energy development continues to be constrained by regulatory uncertainty, procurement challenges, project preparation weaknesses, and institutional bottlenecks.

Recent policy analyses have repeatedly concluded that investment mobilization depends less on the availability of capital than on the existence of credible project pipelines and bankable regulatory frameworks⁵⁷. In other words, the principal obstacle is often not financing supply, but investment readiness.

This reality directly affects the first 17 GW phase of the 100 GW ambition. The IPG framework can provide financing support, technical expertise, risk-sharing mechanisms, and international credibility. However, none of these advantages can fully compensate for weak domestic regulatory conditions.

⁴³ Vietnam News Agency. (2025, March). Indonesia Keeps Commitment on Energy Transition. *The Investor Vafe Magazine*. <https://theinvestor.vn/indonesia-keeps-commitment-on-energy-transition-d15012.html>

⁵⁴ Ibid.

⁵⁵ SIPET. (n.d.). JETP Indonesia.

⁵⁶ Yustika, M., and N. Iyer, R. (2026, February). Building credibility in Indonesia's Energy Transition: Insights from the ETM and JETP Indonesia. *IEEFA*. <https://ieefa.org/resources/building-credibility-indonesias-energy-transition-insights-etm-and-jetp-indonesia>

⁵⁷ Ibid.

Ultimately, the value of the IPG partnership should not be measured solely by the volume of announced financing. Its real significance lies in its potential to act as a catalyst for broader investment mobilization. Whether that potential is realized will depend largely on Indonesia's ability to implement the regulatory reforms necessary to transform international commitments into operational projects.

For the first 17 GW deployment phase, this means that financing and regulation cannot be treated as separate policy domains. They are mutually reinforcing. International capital may help accelerate the transition, but only if Indonesia can create a regulatory environment capable of absorbing that capital efficiently and at scale.



G7-INDONESIA ENERGY INVESTMENT LANDSCAPE

Indonesia's renewable energy transition increasingly sits at the intersection of global economic competition and climate diplomacy. Among Indonesia's international partners, the G7 countries play a particularly important role due to their financial resources, development finance institutions, export credit agencies, technology providers, and influence within multilateral financial systems.

Since the launch of the JETP in 2022, G7 countries have positioned themselves as major supporters of Indonesia's energy transition agenda⁵⁸. Their involvement extends beyond climate finance and includes grid modernization, renewable energy deployment, industrial decarbonization, transmission infrastructure, battery storage systems, policy reform, and technical assistance.

However, the G7 should not be viewed as a unified investment actor. Each member country approaches Indonesia's energy transition through different strategic frameworks, financing mechanisms, and commercial interests. As Indonesia seeks to mobilize investment for the first 17 GW phase of its 100 GW solar ambition, understanding these differences becomes increasingly important.

Table 2. Table: Major G7 Energy Transition Partnerships with Indonesia

| Country | Main Institutions | Key Areas of Cooperation |
|---------|---|---|
| Japan | JICA (Japan International Cooperation Agency), Japan Bank for International Cooperation (JBIC), Ministry of Economy, Trade and Industry (METI), Japan External Trade Organization (JETRO) | Renewable energy, transmission, battery storage, hydrogen, ammonia, Asia Zero Emission Community (AZEC) |
| Germany | Kreditanstalt für Wiederaufbau (KfW), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), International Climate Initiative (IKI) | Grid infrastructure, renewable energy deployment, policy reform, energy governance |
| France | Agence Française de Développement (AFD), Proparco | Energy transition financing, sustainable infrastructure, blended finance |

⁵⁸ European Commission. (2022, November). Joint Statement by the Government of the Republic of Indonesia and International Partners Group members on the Indonesia Just Energy Transition Plan. *European Commission*. https://ec.europa.eu/commission/presscorner/detail/en/statement_22_6892

| Country | Main Institutions | Key Areas of Cooperation |
|---------------------|--|---|
| United Kingdom (UK) | UK Foreign Office, British International Investment (BII) | Climate finance, green infrastructure, energy transition policy support |
| Canada | Export Development Canada (EDC), climate finance mechanisms | Sustainable infrastructure, renewable energy financing |
| Italy | Cassa Depositi e Prestiti (CDP), energy infrastructure partnerships | Energy transition financing and industrial cooperation |
| United States* | Development Finance Corporation (DFC), United States Agency for International Development (USAID), Export-Import (EXIM) (before JETP withdrawal) | Energy transition financing, project development, technical support |

*The United States withdrew from JETP-related commitments in 2025, although some bilateral energy cooperation mechanisms remain.

Japan: Indonesia's Most Influential Energy Transition Partner

Among all G7 countries, Japan occupies the most significant position in Indonesia's energy transition landscape. Japan's involvement extends beyond climate finance and includes infrastructure development, industrial policy cooperation, transmission systems, hydrogen initiatives, battery technologies, and long-term energy planning⁵⁹. Japanese institutions have maintained deep engagement with Indonesia's energy sector for decades, giving them a level of institutional familiarity that few other international partners possess⁶⁰.

A central pillar of Japan's current strategy is the AZEC, launched jointly with Indonesia during the G20 Summit in Bali in 2022. AZEC seeks to promote decarbonization across Asia through investment, technology cooperation, and energy transition partnerships while recognizing different national development circumstances⁶¹.

Under AZEC and related bilateral frameworks, Japanese institutions have expanded cooperation in renewable energy, hydrogen, ammonia, carbon management technologies, battery storage, and transmission infrastructure⁶². The JICA has established multiple programs with PLN focused on renewable energy integration, smart grids, battery storage systems, and long-term decarbonization planning. JICA's cooperation programs explicitly include support for grid stability, battery storage deployment, and energy transition capacity building within PLN⁶³.

59 Nasution, R. (2026, February) Indonesia accelerates hydrogen ecosystem, deepens Japan partnership. Antara News. <https://en.antaranews.com/news/402830/indonesia-accelerates-hydrogen-ecosystem-deepens-japan-partnership>

60 Ibid.

61 Joint Announcement on Asia Zero Emission Community (AZEC) Concept. (2022, November). Kedutaan Besar Jepang di Indonesia. https://www.id.emb-japan.go.jp/news22_53.html

62 JICA. (2026, February). Indonesia – Japan Collaboration Roadmap For Accelerating A Hydrogen Ammonia Society In Indonesia (HASI). JICA. https://www.jica.go.jp/english/overseas/indonesia/information/press/2025/_icsFiles/afeldfile/2026/02/04/20260203_1.pdf

63 JICA Berikan Bantuan US\$80 juta Untuk PLN. (2011, February). Kementerian ESDM. <https://www.esdm.go.id/id/media-center/arsip-berita/jica-berikan-bantuan-us80-juta-untuk-pln>

Japan is also increasingly positioning itself as a strategic financing partner. In 2025, Indonesia's sovereign investment vehicle Danantara signed a memorandum of understanding with the JBIC to jointly finance renewable energy, power transmission, and sustainable infrastructure projects⁶⁴. For Indonesia's first 17 GW deployment phase, Japan is likely to remain one of the most important sources of long-term infrastructure financing and technical cooperation.

Germany: Regulatory and Grid Transformation Partner

Germany's contribution differs significantly from Japan's. While Japanese engagement often emphasizes infrastructure financing and industrial partnerships, Germany has concentrated heavily on regulatory reform, energy governance, grid modernization, and institutional capacity building⁶⁵.

German involvement is primarily channeled through institutions such as KfW Development Bank, Deutsche GIZ, and the IKI⁶⁶. These institutions support projects related to renewable energy expansion, fiscal reform, carbon pricing mechanisms, energy regulation, and energy transition governance.

Germany has also emerged as a major partner in transmission and grid infrastructure financing. In 2024, PLN and KfW signed agreements worth approximately €1.2 billion to support pumped storage hydropower and transmission infrastructure projects designed to strengthen renewable energy integration into Indonesia's power system⁶⁷.

This focus is particularly relevant because transmission readiness remains one of the largest constraints facing Indonesia's first 17 GW deployment phase. Germany's experience integrating large volumes of renewable energy into power systems gives it comparative advantages in supporting grid modernization and system flexibility initiatives.

France and Blended Finance Mechanisms

France plays a significant role through development finance institutions, particularly AFD. French involvement has largely focused on sustainable infrastructure financing, policy support, and blended finance mechanisms designed to reduce investment risks in emerging markets⁶⁸. AFD has also participated in co-financing programs alongside multilateral institutions and other G7 partners supporting Indonesia's energy transition agenda⁶⁹.

⁶⁴ Danantara Indonesia Menandatangani Nota Kesepahaman Dengan JBIC Untuk Membuka Jalur Investasi. (2025, July). [Press release]. <https://www.danantaraindonesia.co.id/id/media-center/press-releases/danantara-indonesia-signs-mou-with-japans-jbic-to-unlock-investment-pipeline>

⁶⁵ GIZ. (n.d.). German-Indonesian Cooperation Mission Statement: Providing clean, affordable and secure energy for all Indonesians. GIZ. <https://ger-idn.energyhub.id/cooperation-priorities/>

⁶⁶ Germany and Indonesia sign EUR 200 million agreement to advance the Just Energy Transition. (2025, June). Embassy of the Federal Republic of Germany - Jakarta. <https://jakarta.diplo.de/id-en/jetp-juni-2725664>

⁶⁷ Indonesia, Germany Invest €1.2 Billion Green Funding for Clean Energy Development. (2024, November). ESG News. <https://esgnews.com/indonesia-germany-invest-e1-2-billion-green-funding-for-clean-energy-development/>

⁶⁸ Indonesia. (n.d.). Agence Française De Développement (AFD). <https://www.afd.fr/en/countries-regions/indonesia>

⁶⁹ Ibid.

France's importance lies less in the scale of individual projects and more in its ability to mobilize concessional financing and support risk-sharing structures that improve project bankability. French institutions have increasingly focused on creating investment conditions capable of attracting larger volumes of private capital.

This role becomes especially important for transmission infrastructure and battery storage projects, where commercial returns may be less immediately attractive compared to conventional power generation investments.

The United Kingdom and Canada: Climate Finance and Institutional Support

The United Kingdom and Canada have generally played supporting roles within the broader JETP framework⁷⁰. Both countries have emphasized climate finance, policy support, institutional strengthening, and sustainable infrastructure development⁷¹. While their direct investment volumes may be smaller than those of Japan or Germany, their participation contributes to the credibility and diversification of Indonesia's international financing ecosystem.

Importantly, both countries have supported international efforts to strengthen renewable energy investment frameworks, enhance transparency, and improve governance standards. These priorities align closely with investor concerns regarding project bankability and regulatory predictability. Their participation also reinforces broader efforts to position Indonesia as a credible destination for global climate finance.

Italy and the European Union's Global Gateway Strategy

Italy's engagement has increasingly been linked to broader European Union initiatives, particularly the Global Gateway strategy⁷². The Global Gateway framework aims to mobilize investment in sustainable infrastructure, connectivity, and energy transition projects across partner countries. Within Indonesia, the European Union has expanded support for renewable energy integration, transmission infrastructure, and sustainable energy planning⁷³.

Recent cooperation involving the European Union, KfW, PLN, and PT SMI has focused on pumped storage hydropower and grid flexibility projects designed to support large-scale renewable energy integration⁷⁴. These initiatives are viewed as critical for strengthening system reliability as renewable energy penetration increases. The EU's approach is particularly relevant because it increasingly links investment with sustainability standards, governance requirements, and long-term decarbonization objectives.

⁷⁰ Just Energy Transition Partnership Indonesia Progress Report 2025. (2025). JETP.

⁷¹ Ibid.

⁷² Global Gateway: The EU supports Indonesia's clean energy transition. (2025, November). European External Action Service (EEAS). https://www.eeas.europa.eu/delegations/indonesia/global-gateway-eu-supports-indonesia%E2%80%99s-clean-energy-transition_en

⁷³ Ibid.

⁷⁴ Ibid.

The United States: From Leadership to Uncertainty

The United States initially played a major role in the formation of Indonesia's JETP framework. During the launch of the partnership in 2022, U.S. institutions were expected to contribute significant financing support through a combination of loans, guarantees, and investment mobilization mechanisms. The United States also played an important diplomatic role in promoting JETP as a model for accelerating coal transition in emerging economies⁷⁵.

However, the investment landscape changed in 2025 when the United States withdrew from JETP-related commitments⁷⁶. While Indonesian officials emphasized that the broader partnership would continue under the leadership of other members⁷⁷, the withdrawal highlighted the vulnerability of international financing frameworks to political shifts. For Indonesia, this development reinforced the importance of maintaining diversified financing partnerships rather than relying excessively on any single country or institution.

What G7 Investors Want

Despite differences among individual countries, several common themes characterize G7 investment priorities. First, G7 financing institutions generally place strong emphasis on regulatory certainty⁷⁸. Investors require predictable procurement frameworks, transparent tariffs, reliable contractual protections, and clear permitting processes.

Second, G7 institutions often prioritize transmission infrastructure and grid readiness alongside renewable generation capacity⁷⁹. This reflects recognition that renewable deployment cannot scale effectively without supporting system infrastructure.

Third, governance and transparency remain important considerations⁸⁰. Many G7-backed financing mechanisms incorporate environmental, social, governance (ESG), disclosure, and accountability requirements.

Fourth, project bankability remains central⁸¹. Financing commitments are often contingent on the existence of commercially viable project structures capable of attracting private co-investment.

⁷⁵ *Indonesia Just Energy Transition Comprehensive Investment and Policy Plan Launched*. (2023, November). U.S. Embassy & Consulates in Indonesia. <https://id.usembassy.gov/indonesia-just-energy-transition-comprehensive-investment-and-policy-plan-launched/>

⁷⁶ Dwi, A. (2025, April). Behind the US Withdrawal from Indonesia's Energy Transition Program. *Kompas*. <https://www.kompas.id/artikel/en-dibalik-mundurannya-as-dari-program-transisi-energi-indonesia>

⁷⁷ S&P Global. (2025, March). Indonesia's Just Energy Transition Partnership to continue despite US withdrawal: Official. *S&P Global*. <https://www.spglobal.com/energy/en/news-research/latest-news/energy-transition/032525-indonesias-just-energy-transition-partnership-to-continue-despite-us-withdrawal-official>

⁷⁸ Institute De La Finance Durable. (2026, May). The Paris Financial Centre supports the G7's priority on financing development. *Institute De La Finance Durable*. <https://institutdelafinancedurable.com/the-paris-financial-centre-supports-the-g7s-priority-on-financing-development/>

⁷⁹ IEA. (n.d.) Achieving Net Zero Electricity Sectors in G7 Members. *OECD*. https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/11/achieving-net-zero-electricity-sectors-in-g7-members_79eceb15/a5022b0e-en.pdf

⁸⁰ Institute De La Finance Durable. (2026, May). The Paris Financial Centre supports the G7's priority on financing development.

⁸¹ Focus 2030. (2026, June). G7 2027: A Summit Marked By Consensus But Without Major Progress on Development Issues. *Focus 2030*. <https://focus2030.org/en/g7-2027-a-summit-marked-by-consensus-but-without-major-progress-on-development-issues/>

These priorities have direct implications for Indonesia's first 17 GW deployment phase. While G7 countries can provide financing, technical assistance, and international credibility, capital deployment will remain constrained if underlying regulatory barriers persist.

Ultimately, the G7 investment landscape demonstrates that international capital is available for Indonesia's energy transition. The principal challenge is not the absence of financing interest, but the creation of regulatory conditions capable of converting that interest into deployable projects. For this reason, regulatory reform remains the critical bridge between international financing commitments and the successful realization of Indonesia's renewable energy ambitions.



CHINA-INDONESIA ENERGY INVESTMENT LANDSCAPE

China has emerged as one of the most influential external actors shaping Indonesia's energy transition landscape⁸². While cooperation between the two countries was initially concentrated in infrastructure development, mining, and manufacturing, the relationship has increasingly expanded into renewable energy, battery value chains, electric vehicles (EVs), critical minerals, and clean technology industries⁸³.

For Indonesia's first 17 GW phase of the 100 GW solar ambition, China occupies a uniquely important position. Unlike many Western partners that focus primarily on climate finance, policy reform, or transmission infrastructure, China brings advantages across the entire renewable energy ecosystem—from manufacturing and technology to project development and industrial supply chains. This makes China not only an investor in Indonesia's energy transition, but also a potential architect of its industrial transformation.

At the same time, China's growing role raises important policy questions regarding technological dependence, domestic manufacturing development, strategic autonomy, and long-term economic value capture. As Indonesia seeks to accelerate renewable energy deployment, balancing these opportunities and risks will become increasingly important.

China's Global Dominance in Renewable Energy

Understanding China's role in Indonesia requires first understanding China's position in the global clean energy economy. Over the past two decades, China has become the world's dominant producer of solar panels, batteries, electric vehicles, critical mineral processing technologies, and renewable energy equipment⁸⁴. Chinese companies now occupy leading positions across nearly every segment of the global renewable energy supply chain⁸⁵. Recent assessments estimate that China possesses more than half of global clean

⁸² Karina, E. N. (2025, October). How China's Green Surplus Defines Indonesia's Energy Future. *The Diplomat*. <https://thediplomat.com/2025/10/how-chinas-green-surplus-defines-indonesias-energy-future/>

⁸³ Tenggara Strategics. (2025, March). Political-Economy Landscape for Advancing Indonesia-China Energy Transition Agenda. *Tenggara Strategics*. <https://asset.tenggara.id/assets/source/file-research/2025/file/%5BPPT%20Final%20Report%5D%20Political-Economic%20Landscape%20Study%20on%20Advancing%20the%20Indonesia-China%20Renewable%20Energy%20Agenda%20-%20By%20Tenggara%20Strategics.pdf>

⁸⁴ Kissane, C. (2026). Energy Dominance With Chinese Characteristics. *Foreign Affairs*. <https://www.foreignaffairs.com/united-states/energy-dominance-chinese-characteristics>

⁸⁵ Ibid.

energy manufacturing capacity in several strategic sectors, including solar PV modules and lithium-ion batteries⁸⁶.

China's domestic renewable energy deployment has also reached unprecedented scale. By 2025, the country had surpassed 1,000 GW of installed solar capacity⁸⁷ and continued adding renewable energy at a pace unmatched globally. In the first five months of 2025 alone, China installed approximately 198 GW of new solar capacity and 46 GW of wind power⁸⁸.

This industrial scale has created major cost advantages for Chinese firms. Large manufacturing ecosystems, extensive state support, technological learning, and economies of scale have enabled Chinese companies to become highly competitive in international markets. For Indonesia, this means that China possesses capabilities that many other investment partners cannot easily replicate.

From Infrastructure Cooperation to Green Industrial Partnership

China-Indonesia economic relations have historically been associated with infrastructure projects under the Belt and Road Initiative (BRI), including railways, industrial parks, ports, and mining projects⁸⁹. However, the relationship is increasingly evolving toward renewable energy and green industrial cooperation.

Recent policy assessments note that China-Indonesia cooperation now includes solar manufacturing, electric vehicle ecosystems, battery supply chains, renewable energy deployment, and green industrial development⁹⁰. Several studies argue that renewable energy cooperation is becoming one of the fastest-growing dimensions of the bilateral relationship⁹¹.

This shift reflects the interests of both countries. For China, overseas renewable energy investment helps absorb manufacturing overcapacity, expand export markets, strengthen geopolitical influence, and secure long-term demand for Chinese clean energy technologies. Analysts have noted that growing production capacity in China's renewable energy sector has encouraged companies to seek expansion opportunities across developing markets, particularly in Southeast Asia⁹². For Indonesia, cooperation with China provides access to technology, manufacturing investment, financing, and supply chain integration at a scale that would otherwise be difficult to achieve.

86 Pacheco, M. (2024, July). China dominating soaring global clean tech industry. *Euro News*. <https://www.euronews.com/2024/05/06/china-dominating-soaring-global-clean-tech-industry>

87 Hawkins, A. (2025, June). China breaks more records with surge in solar and wind power. *The Guardian*. <https://www.theguardian.com/world/2025/jun/26/china-breaks-more-records-with-massive-build-up-of-wind-and-solar-power>

88 Ibid.

89 Syarif, A. (2023, December). Belt and Road Initiative's new approach and what it means for Chinese investments in Indonesia. *The Conversation*. <https://theconversation.com/belt-and-road-initiatives-new-approach-and-what-it-means-for-chinese-investments-in-indonesia-218438>

90 Yudhistira, B., Rakhmat, M. Z., and Purnama, Y. (2025). China-Indonesia Energy Transition Cooperation: Progress, Prospects, and Recommendations. *CELIOS*. <https://celios.co.id/wp-content/uploads/2025/10/Celios-China-Indonesia-Energy-Transition.pdf>

91 Ibid.

92 KPMG. (2024). China's New Energy Enterprises "Going Abroad" Series: Sailing to Southeast Asia. *KPMG*. <https://assets.kpmg.com/content/dam/kpmg/cn/pdf/en/2024/04/southeast-asia-new-energy-market.pdf>

China's Role in Solar Manufacturing

One of the most important areas of cooperation involves solar photovoltaic manufacturing. Indonesia's 100 GW solar ambition cannot rely indefinitely on imported equipment if the government intends to use renewable energy deployment as a driver of industrial development. Expanding domestic manufacturing capacity therefore becomes a strategic objective.

Chinese firms are increasingly central to this effort. Recent renewable energy investment initiatives have included Chinese participation in solar panel manufacturing facilities in Indonesia⁹³. Companies such as Trina Solar have established production activities in the country, while policymakers continue exploring opportunities to strengthen domestic solar manufacturing ecosystems through international partnerships⁹⁴.

Several Indonesian policy experts have proposed a dedicated China–Indonesia Solar Partnership that would combine China's technological leadership with Indonesia's renewable energy potential and industrial ambitions⁹⁵. The proposal includes cooperation in advanced solar cell production, large-scale solar deployment, battery energy storage systems (BESS), green financing, and joint research initiatives.

This approach aligns closely with Indonesia's broader downstream industrialization strategy. Rather than serving solely as an import market for renewable technologies, Indonesia increasingly seeks to position itself as a manufacturing and processing hub within regional clean energy supply chains.

Battery Ecosystems and Strategic Industrial Integration

China's importance extends even further in the battery sector. Battery energy storage systems will become increasingly critical as Indonesia expands renewable energy deployment. Large-scale solar integration requires storage solutions capable of improving grid flexibility and balancing variable electricity generation.

At the same time, batteries sit at the center of Indonesia's industrial ambitions. Indonesia possesses the world's largest nickel reserves, a critical resource for battery production. Successive administrations have pursued downstream industrialization strategies aimed at transforming Indonesia from a raw material exporter into a producer of higher-value battery and electric vehicle products⁹⁶.

Chinese companies have become major participants in this ecosystem. One of the most significant developments involves cooperation between Indonesia Battery Corporation (IBC) and China's Contemporary Amperex Technology Co. Limited (CATL)⁹⁷. A major joint

⁹³ Xin, Z. (2025, June). Longi announces plans for solar panel factory in Indonesia. *China Daily*. <https://www.chinadaily.com.cn/a/202506/25/WS685b9502a310a04af22c86e7.html>

⁹⁴ Tanah Air. (2025, August). Indonesia, Trina Solar Cooperation Will Strengthen The Domestic Solar Panel Industry. *Tanah Air*. <https://tanahair.net/indonesia-trina-solar-cooperation-will-strengthen-the-domestic-solar-panel-industry/>

⁹⁵ Advancing Indonesia-China Strategic Partnership for Renewable Energy. (2025, June). *IESR*. <https://iesr.or.id/en/advancing-indonesia-china-strategic-partnership-for-renewable-energy/>

⁹⁶ Rahman, M. R. (2026, June). Indonesia Targets US\$121 billion EV Battery Investment Push. *Antara News*. <https://en.antaranews.com/news/420308/indonesia-targets-us121-billion-ev-battery-investment-push>

⁹⁷ Endeavoring to become key EV player through ASEAN chairmanship. (2023, June). *Antara News*. <https://en.antaranews.com/news/283710/endeavoring-to-become-key-ev-player-through-asean-chairmanship>

battery manufacturing project is expected to begin operations by the end of 2026, with initial production capacity of 6.9 gigawatt-hours (GWh) and potential expansion toward 40 GWh, including battery systems for solar energy storage.

This integration between renewable energy deployment and battery manufacturing creates potential synergies that are highly relevant for Indonesia's first 17 GW phase. Rather than treating energy transition and industrial policy as separate agendas, Indonesia increasingly seeks to connect renewable energy deployment with domestic battery production, EV manufacturing, critical mineral processing, and export-oriented industrial development.

The Speed Advantage of Chinese Capital

Another reason China remains attractive to many developing countries is its ability to move relatively quickly. Compared with many Western financing mechanisms that involve lengthy approval processes, environmental assessments, and complex compliance requirements, Chinese investors are often perceived as more flexible and implementation-oriented.

Several policy studies note that Chinese investment models frequently emphasize industrial integration and infrastructure deployment rather than focusing primarily on governance reforms⁹⁸. For Indonesia's first 17 GW phase, this speed advantage could become important.

Large-scale renewable deployment requires rapid expansion of manufacturing capacity, project construction, battery ecosystems, and supporting infrastructure. Chinese firms possess extensive experience developing solar, battery, and transmission projects at scale. As Indonesia seeks to accelerate implementation, these capabilities become increasingly attractive.

Risks of Technological and Supply Chain Dependence

However, China's growing role also introduces important strategic concerns. One of the most frequently discussed challenges involves supply chain dependence⁹⁹. Despite efforts to localize production, Indonesia's renewable energy sector remains heavily reliant on imported Chinese components, including wafers, modules, inverters, battery materials, and manufacturing technologies. Analysts note that even successful projects such as the Cirata floating solar power plant continue to depend substantially on Chinese supply chains.

This dependence creates several risks. First, excessive concentration may limit Indonesia's bargaining power over time. Second, local manufacturing development may remain shallow if domestic firms participate primarily in assembly activities rather than higher-value technology segments. Third, geopolitical tensions affecting global supply chains could create vulnerabilities for future deployment.

⁹⁸ Xu, Y., McElroy, J., Yi, L., Poon, A., Kapoor, R., Yin, I., & Tao, G. (2026). China's dual industrial mandate: Autonomy and productivity. In S&P Global. S&P Global. <https://www.spglobal.com/en/research-insights/special-reports/china-dual-industrial-mandate>

⁹⁹ Hendriyo Widi. (2023, November). RI Increasingly Dependent on China. *Kompas.id*. <https://www.kompas.id/artikel/en-ri-makin-bergantung-pada-china>

These concerns are particularly relevant because Indonesia's renewable energy ambitions extend far beyond deployment. The government also seeks industrial upgrading, technology transfer, employment creation, and long-term domestic value capture. Without careful policy design, large-scale investment could increase renewable energy capacity while generating limited technological upgrading.

Balancing Opportunity and Strategic Autonomy

The challenge facing Indonesia is therefore not whether to cooperate with China, but how to structure that cooperation. China possesses capabilities that are highly relevant for Indonesia's renewable energy ambitions, particularly in solar manufacturing, battery production, industrial integration, and large-scale deployment. Excluding China from Indonesia's energy transition would be neither realistic nor economically efficient.

At the same time, overreliance on a single investment source could create strategic vulnerabilities. For this reason, Indonesia increasingly requires a diversified investment strategy that combines Chinese industrial strengths with financing, governance support, and infrastructure partnerships from other actors such as the G7, multilateral institutions, and emerging investors from the MENA.

Ultimately, China's role in Indonesia's first 17 GW deployment phase should be understood as both an opportunity and a strategic balancing exercise. Chinese investment can accelerate renewable energy deployment, strengthen manufacturing ecosystems, and support industrial transformation. However, maximizing these benefits requires regulatory frameworks capable of ensuring technology transfer, local value creation, supply chain resilience, and long-term national competitiveness.

This makes regulatory governance particularly important. The question is no longer whether Chinese capital will participate in Indonesia's energy transition. The more important question is whether Indonesia can design policies that channel this participation toward national development objectives while maintaining strategic flexibility and investment diversification.

MENA-INDONESIA ENERGY INVESTMENT LANDSCAPE

The MENA region is emerging as an increasingly important partner in Indonesia's energy transition. While cooperation between Indonesia and MENA countries has historically centered on trade, labor mobility, religious diplomacy, and hydrocarbon imports, the relationship is now expanding into renewable energy, sustainable infrastructure, battery ecosystems, sovereign investment partnerships, and energy transition financing.

This shift reflects broader structural changes occurring across the Gulf region. Major Gulf economies—including the United Arab Emirates (UAE), Saudi Arabia, and Qatar—are no longer positioning themselves solely as hydrocarbon producers¹⁰⁰. Instead, they are increasingly investing in renewable energy, green infrastructure, hydrogen, battery technologies, and climate-related industries as part of their own economic diversification strategies¹⁰¹.

For Indonesia, this transformation creates new opportunities to attract long-term capital capable of supporting the first 17 GW deployment phase of its broader 100 GW solar ambition. Unlike many G7 financing institutions that emphasize regulatory reform and governance frameworks, or Chinese investors that often focus on industrial integration and manufacturing ecosystems, Gulf investors frequently operate through sovereign wealth funds, infrastructure investment vehicles, and state-backed energy companies with large balance sheets and long investment horizons¹⁰². This gives them a distinctive role within Indonesia's evolving renewable energy landscape.

Why MENA Matters for Indonesia's Energy Transition

The growing importance of MENA investors stems from a convergence of interests between both sides. Indonesia requires substantial financing to support renewable energy deployment, transmission expansion, BESS, and supporting infrastructure. At the same time, Gulf countries are actively seeking international investment opportunities capable of generating long-term returns while expanding their influence within emerging green industries.

¹⁰⁰ West Watch Asia. (June, 2026). The New Gulf Economy: How Saudi Arabia, the UAE, and Qatar Are Competing to Become the Middle East's Innovation Powerhouses. West Watch Asia. <https://westasiawatch.com/explainers/the-new-gulf-economy-saudi-arabia-uae-qatar-innovation-race/>

¹⁰¹ Ibid.

¹⁰² West Watch Asia. (June, 2026). Sovereign Wealth Funds and the GCC: How Gulf States Are Reshaping Global Investment. West Watch Asia. <https://westasiawatch.com/explainers/sovereign-wealth-funds-and-the-gcc-how-gulf-states-are-reshaping-global-investment/>

Recent policy assessments have noted that renewable energy cooperation has become one of the fastest-growing dimensions of Indonesia–MENA economic relations¹⁰³. Several Gulf countries increasingly view Indonesia not only as a large consumer market but also as a strategic destination for long-term infrastructure and clean energy investments.

The scale of Indonesia's renewable energy ambitions makes the country particularly attractive. Large deployment targets provide opportunities for infrastructure investors seeking projects capable of absorbing significant amounts of capital over extended periods. This is especially relevant because sovereign wealth funds and state-backed energy companies often prefer large-scale investments rather than fragmented project portfolios.

The United Arab Emirates: Indonesia's Leading Gulf Renewable Energy Partner

Among MENA countries, the United Arab Emirates has emerged as Indonesia's most advanced renewable energy partner. The UAE's role is driven primarily through Masdar, the Abu Dhabi-based renewable energy company owned by Mubadala Investment Company, Abu Dhabi National Oil Company (ADNOC), and Abu Dhabi National Energy Company (TAQA)¹⁰⁴. Masdar has become one of the most visible foreign renewable energy investors in Indonesia and increasingly serves as a model for future Gulf participation in the country's energy transition¹⁰⁵.

The most prominent example is the Cirata Floating Solar Power Plant in West Java, which was developed through cooperation between Masdar and PLN Nusantara Power. The project is widely regarded as one of Southeast Asia's largest floating solar facilities and represents a landmark renewable energy investment partnership between Indonesia and the UAE¹⁰⁶. Recent renewable energy assessments continue to cite Cirata as one of the flagship examples of Indonesia–UAE energy cooperation.

The significance of Cirata extends beyond electricity generation. First, it demonstrated that large-scale renewable energy projects involving international investors can be successfully developed in Indonesia. Second, it established a precedent for cooperation between Indonesian state-owned enterprises and Gulf renewable energy firms. Third, it provided a proof-of-concept for future utility-scale solar deployment under Indonesia's broader renewable energy ambitions. For investors observing the first 17 GW phase, projects such as Cirata serve as important indicators of implementation feasibility.

¹⁰³ Rakhmat, M. Z. (2024, December). The Middle East: Indonesia's Alternative Partner for Energy Transition. *Middle East Institute*. https://mei.nus.edu.sg/think_in/the-middle-east-indonesias-alternative-partner-for-energy-transition/

¹⁰⁴ MASDAR. (n.d.). Masdar is one of the world's fastest growing renewable energy companies and a green hydrogen leader, placing the UAE at the forefront of the energy transition. MASDAR. <https://masdar.ae/en/our-company/about-masdar>

¹⁰⁵ UAE's Masdar pledges to expand renewable energy investment in Indonesia. (2025, December). Indonesia Business Post. <https://indonesiabusinesspost.com/5876/energy-and-resources/uae-s-masdar-pledges-to-expand-renewable-energy-investment-in-indonesia>

¹⁰⁶ Indonesia, Masdar partner to expand renewable energy projects. (2025, February). Antara News. <https://en.antaranews.com/news/344613/indonesia-masdar-partner-to-expand-renewable-energy-projects>

Saudi Arabia and the Rise of ACWA Power

Saudi Arabia is also becoming an increasingly important actor within Indonesia's renewable energy landscape. The country's leading renewable energy developer, Arabian Company for Water and Power Development (ACWA) Power, has expanded its presence in Indonesia through partnerships focused on solar power development and energy infrastructure¹⁰⁷. ACWA has become one of the world's largest renewable energy developers, managing projects across multiple continents with a portfolio exceeding 78 GW of power generation capacity¹⁰⁸.

In Indonesia, ACWA has entered into joint ventures with PLN Indonesia Power Renewables to develop solar projects including the Singkarak Solar Power Plant in West Sumatra and the Saguling Floating Solar Power Plant in West Java¹⁰⁹. These projects are intended to support Indonesia's renewable energy targets while strengthening bilateral cooperation in clean energy infrastructure.

The growing role of ACWA is particularly important because Saudi renewable energy firms increasingly combine project development expertise with access to substantial pools of Gulf capital. Unlike some traditional infrastructure investors, ACWA possesses operational experience in large-scale renewable deployment across multiple regulatory environments. This experience may become increasingly valuable as Indonesia seeks to accelerate implementation of the first 17 GW phase.

Sovereign Wealth Funds and Long-Term Infrastructure Capital

One of the most important advantages offered by Gulf partners involves access to sovereign wealth capital. Institutions such as Mubadala Investment Company, Abu Dhabi Investment Authority (ADIA), Public Investment Fund (PIF) of Saudi Arabia, and Qatar Investment Authority (QIA) manage hundreds of billions of dollars in assets globally¹¹⁰. These funds increasingly allocate capital toward renewable energy, sustainable infrastructure, climate technologies, and strategic industrial sectors¹¹¹.

Unlike conventional project financiers, sovereign wealth funds often operate with longer investment horizons and greater risk tolerance for infrastructure projects. This characteristic is particularly relevant for Indonesia's energy transition because transmission infrastructure and battery storage systems frequently require long payback periods¹¹². While power generation projects may generate relatively predictable revenues, grid infrastructure and system flexibility investments often face more complex financing challenges.

¹⁰⁷ Indonesia's Danantara, ACWA Power sign \$10 bln deal on green projects. (2025, July). *Antara News*. <https://en.antaraneews.com/news/363773/indonesias-danantara-acwa-power-sign-10-bln-deal-on-green-projects>

¹⁰⁸ *Investor's overview*. (n.d.). ACWA Power. <https://acwapower.com/en/investors/investors-overview/>

¹⁰⁹ Karyza, D. (2020, December). PLN, Saudi's ACWA Power to build two floating solar plants. This article was published in thejakartapost.com with the title. *The Jakarta Post*. <https://www.thejakartapost.com/business/2023/12/07/pln-saudis-acwa-power-to-build-two-floating-solar-plants>

¹¹⁰ Diplo. (2025, August). Investment Diplomacy in Action with Gulf Sovereign Wealth Funds. *Diplo*. <https://www.diplomacy.edu/blog/investment-diplomacy-in-action-with-gulf-sovereign-wealth-funds/>

¹¹¹ *Ibid*.

¹¹² Anjani, N. F. (2026, April). Indonesia's Energy Transition Hampered by Electrical Network Readiness. *Universitas Muhammadiyah Yogyakarta*. <https://en.umy.ac.id/transisi-energi-indonesia-terkendala-sistem-kelistrikan/>

Gulf sovereign investors could therefore become important partners not only for solar generation projects but also for transmission and storage infrastructure that are essential for integrating large volumes of renewable energy into Indonesia's power system.

Danantara as a Platform for Gulf Cooperation

The emergence of Danantara adds a new dimension to Indonesia–MENA energy cooperation¹¹³. Established in 2025 as Indonesia's strategic sovereign investment vehicle, Danantara was designed to mobilize capital, optimize state-owned assets, and attract international co-investment into priority sectors¹¹⁴. The institution manages substantial state-linked assets and is expected to play a central role in financing strategic infrastructure and industrial projects.

Danantara's structure aligns closely with the investment preferences of Gulf sovereign wealth funds. Both sides operate through state-backed investment platforms focused on long-term strategic sectors. This creates opportunities for co-investment models that may be more difficult to achieve through conventional development finance frameworks.

Recent reports indicate growing discussions involving Gulf participation in Indonesian renewable energy projects through Danantara-linked mechanisms¹¹⁵. Policy analyses have highlighted UAE interest in financing up to 10 GW of renewable energy projects, while Saudi investors have explored opportunities in battery storage systems and sustainable energy infrastructure¹¹⁶. These developments suggest that Danantara could evolve into a major platform connecting Indonesian infrastructure needs with Gulf capital.

Why Gulf Investors Are Increasingly Interested in Renewable Energy

The growing interest of MENA investors in Indonesia reflects changes occurring within the Gulf economies themselves. Historically, Gulf investment abroad focused heavily on hydrocarbons, real estate, financial assets, and conventional infrastructure¹¹⁷. Today, however, many Gulf governments are pursuing ambitious economic diversification programs designed to reduce long-term dependence on oil revenues¹¹⁸.

Renewable energy occupies a central role within these strategies. Countries such as the UAE and Saudi Arabia have become major investors in solar power, green hydrogen, battery technologies, sustainable infrastructure, and climate-related industries. Their renewable

¹¹³ Danantara Indonesia. (April, 2025). Danantara Indonesia and Qatar Investment Authority Appointed to Manage USD 4 Billion Joint Investment Fund to Support Indonesia's Development. *Danantara Indonesia*. <https://www.danantaraindonesia.co.id/media-center/press-releases/danantara-indonesia-and-qatar-investment-authority-appointed-to-manage-usd-4-billion-joint-investment-fund-to-support-indonesias-development>

¹¹⁴ BritCham Indonesia. (2025, February) Danantara: Indonesia's New Sovereign Wealth Fund. *BritCham Indonesia*. <https://britcham.or.id/danantara-indonesias-new-sovereign-wealth-fund/>

¹¹⁵ Business Indonesia. (2025, February). Indonesia and UAE to Develop 10 GW Renewable Energy Through Danantara Joint Venture. *Business Indonesia*. <https://business-indonesia.org/news/indonesia-and-uae-to-develop-10-gw-renewable-energy-through-danantara-joint-venture>

¹¹⁶ Ibid.

¹¹⁷ OECD. (2021). Middle East and North Africa Investment Policy Perspectives. *OECD*. https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/03/middle-east-and-north-africa-investment-policy-perspectives_ee6d1198/6d84ee94-en.pdf

¹¹⁸ El Dahan, M., Saba, Y., El Safty, S., Hogue, T., and Baum, B. (2026, January). UAE's Masdar reaches global clean energy capacity of 65 GW. *Reuters*. <https://www.reuters.com/business/energy/uaes-masdar-reaches-global-capacity-65-gw-clean-energy-2026-01-13/>

energy firms increasingly seek international growth opportunities as domestic markets mature.

Indonesia offers several advantages in this context:

| | |
|--|---|
| Large and growing electricity demand | Significant renewable energy potential |
| Expanding industrial sectors | Strong battery and critical mineral ecosystems |
| Government commitment to energy transition | Opportunities for long-term infrastructure investment |

These factors make Indonesia one of the most attractive renewable energy destinations in Southeast Asia from a Gulf investor perspective.

The Regulatory Challenge

Despite strong investment interest, MENA participation remains subject to many of the same constraints affecting other international investors. Gulf investors may possess substantial capital and long-term investment horizons, but capital deployment still depends on project bankability¹¹⁹.

Renewable energy developers, sovereign wealth funds, and infrastructure investors continue to evaluate factors such as¹²⁰:

| | |
|-----------------------------|--------------------------|
| Regulatory predictability | Procurement transparency |
| Land acquisition procedures | Tariff certainty |
| Grid readiness | Contract enforcement |
| Transmission availability | |

In other words, Gulf capital cannot substitute for regulatory reform. Indeed, one reason projects such as Cirata have attracted attention is that they demonstrate the importance of stable partnerships, clear institutional coordination, and bankable project structures. Scaling from individual projects toward a 17 GW deployment phase requires these conditions to become systemic rather than exceptional.

¹¹⁹ OECD. (2021, June). Clean Energy Finance and Investment Policy Review of Indonesia. OECD. https://www.oecd.org/en/publications/clean-energy-finance-and-investment-policy-review-of-indonesia_0007dd9d-en.html

¹²⁰ Ibid.

Toward a Multi-Alignment Investment Strategy

The rise of MENA participation offers Indonesia an important strategic opportunity. Rather than relying exclusively on either G7 financing frameworks or Chinese industrial ecosystems, Indonesia can increasingly pursue a diversified investment strategy that combines the comparative advantages of multiple partners.

The G7 contributes governance support, concessional financing, and transmission expertise¹²¹. China contributes manufacturing capacity, industrial integration, and deployment speed¹²². MENA countries contribute sovereign capital, infrastructure financing, and long-term investment horizons. Together, these investment ecosystems create opportunities for Indonesia to avoid excessive dependence on any single bloc while maximizing access to capital, technology, and industrial partnerships.

For the first 17 GW phase of the 100 GW ambition, this diversification may become one of Indonesia's greatest strategic advantages¹²³. However, attracting investment from all three blocs ultimately depends on a common factor: the existence of a regulatory environment capable of transforming international interest into bankable projects.

This is why regulatory reform remains the decisive variable. Regardless of where financing originates, investors require certainty. Without it, even the most ambitious international partnerships will struggle to deliver infrastructure at the scale and speed required. With it, Indonesia can position itself as one of the most important renewable energy investment destinations in the Global South.

121 Indraini, A. (2025, February). Pendanaan Transisi Energi JETP Jalan Terus Meski Tanpa AS—Disebut Proyek Gagal. *Detik Finance*. <https://finance.detik.com/ekonomi-hijau/d-7765937/pendanaan-transisi-energi-jetp-jalan-terus-meski-tanpa-as-disebut-proyek-gagal>

122 Sulaiman, S., Coghill, K., and Mallard, W. (2025, June). Indonesia-China lithium battery plant operational by end-2026, official says. *Reuters*. <https://www.reuters.com/world/china/indonesia-china-lithium-battery-plant-operational-by-end-2026-official-says-2025-06-29/>

123 OECD. (2021, June). *Clean Energy Finance and Investment Policy Review of Indonesia*.

CURRENT REGULATORY FRAMEWORK: DIAGNOSIS

Indonesia's renewable energy transition is not taking place in a regulatory vacuum. Over the past decade, the government has introduced a growing number of laws, presidential regulations, ministerial regulations, procurement guidelines, and energy planning documents aimed at accelerating renewable energy development^{124,125}.

In recent years, these efforts have intensified. The government has issued new regulations on renewable energy procurement, revised PPA frameworks, expanded energy transition planning mechanisms, strengthened renewable energy targets, and introduced new rules governing battery storage integration and hybrid power systems¹²⁶.

From a policy perspective, Indonesia increasingly possesses many of the formal regulatory components required to support renewable energy deployment. Yet despite this progress, project realization continues to lag behind ambition. The central challenge is therefore no longer the absence of regulations, but rather the persistence of regulatory fragmentation, implementation uncertainty, institutional overlap, and market design constraints that continue to slow investment and infrastructure deployment.

For the first 17 GW phase of Indonesia's 100 GW ambition, understanding these regulatory constraints is critical because investor confidence depends not only on the existence of regulations but also on their consistency, predictability, and practical implementation.

The Core Regulatory Architecture

Indonesia's renewable energy sector is governed through a multi-layered framework involving national legislation, presidential regulations, ministerial regulations, electricity planning documents, and PLN procurement mechanisms.

¹²⁴ Badan Pemeriksa Keuangan. (2017). Peraturan Presiden (Perpres) Nomor 22 Tahun 2017 tentang Rencana Umum Energi Nasional. *Badan Pemeriksa Keuangan*. <https://peraturan.bpk.go.id/>

¹²⁵ Badan Pemeriksa Keuangan. (2022). Peraturan Presiden (Perpres) Nomor 112 Tahun 2022 tentang Percepatan Pengembangan Energi Terbarukan untuk Penyediaan Tenaga Listrik. *Badan Pemeriksa Keuangan*. <https://peraturan.bpk.go.id/Details/225308/perpres-no-112-tahun-2022>

¹²⁶ Ibid.

At the highest level, energy policy is guided by:

| | |
|---|---|
| Law No. 30/2007 on Energy ¹²⁷ | Law No. 30/2009 on Electricity ¹²⁸ |
| National Energy Policy (KEN) ¹²⁹ | National Energy General Plan (RUEN) ¹³⁰ |
| National Electricity General Plan (RUKN) ¹³¹ | PLN's Electricity Supply Business Plan (RUPTL) ¹³² |

Together, these instruments establish Indonesia's long-term energy transition objectives, electricity planning framework, and renewable energy targets.

The most significant regulatory milestone in recent years was Presidential Regulation No. 112/2022 concerning the Acceleration of Renewable Energy Development for Electricity Supply¹³³. The regulation introduced new procurement mechanisms, renewable energy pricing frameworks, coal retirement provisions, and broader support for renewable energy deployment. It effectively became the central policy foundation for Indonesia's renewable energy acceleration agenda.

However, while Presidential Regulation 112/2022 improved policy direction, implementation still depends heavily on downstream regulations and PLN procurement practices. This creates one of the defining characteristics of Indonesia's renewable energy regulatory environment: substantial policy ambition at the strategic level, but continued uncertainty at the operational level.

The Central Role of PLN

No discussion of Indonesia's renewable energy framework can be separated from PLN. As the state-owned electricity utility, PLN occupies a uniquely dominant position within Indonesia's power sector¹³⁴. It functions simultaneously as:

| | |
|-----------------------|-------------------------|
| Power system planner | Grid operator |
| Electricity off-taker | Transmission owner |
| Procurement authority | Electricity distributor |

¹²⁷ Badan Pemeriksa Keuangan. (2007). Undang-undang (UU) Nomor 30 Tahun 2007 tentang Energi. *Badan Pemeriksa Keuangan*. <https://peraturan.bpk.go.id/Details/39928/uu-no-30-tahun-2007>

¹²⁸ Badan Pemeriksa Keuangan. (2009). Undang-undang (UU) Nomor 30 Tahun 2009 tentang Ketenagalistrikan. *Badan Pemeriksa Keuangan*. <https://peraturan.bpk.go.id/Details/38767>

¹²⁹ Badan Pemeriksa Keuangan. (2014). Peraturan Pemerintah RI Nomor 79 Tahun 2014 Tentang Kebijakan Energi Nasional. *Badan Pemeriksa Keuangan*. <https://jdih.esdm.go.id/common/dokumen-external/PP%20No.%2079%20Thn%202014.pdf>

¹³⁰ Kementerian ESDM. (2016). Rencana Umum Energi Nasional. *Kementerian ESDM*. <https://www.esdm.go.id/assets/media/content/content-rencana-umum-energi-nasional-ruen.pdf>

¹³¹ Kementerian ESDM. (n.d.). Rencana Umum Ketenagalistrikan Nasional. *Kementerian ESDM*. https://gatrik.esdm.go.id/frontend/download_index/?kode_category=rukn

¹³² Kementerian ESDM. (2025). Rencana Usaha Penyediaan Tenaga Listrik. *Kementerian ESDM*. https://gatrik.esdm.go.id/assets/uploads/download_index/files/b967d-ruptl-pln-2025-2034-pub-.pdf

¹³³ Badan Pemeriksa Keuangan. (2022). Peraturan Presiden (Perpres) Nomor 112 Tahun 2022 tentang Percepatan Pengembangan Energi Terbarukan untuk Penyediaan Tenaga Listrik.

¹³⁴ OECD. (June, 2021). Clean Energy Finance and Investment Policy Review of Indonesia.

As a result, the success of renewable energy deployment depends heavily on PLN's planning assumptions, procurement decisions, grid readiness, and contractual frameworks.

For investors, this concentration creates both advantages and risks. On one hand, PLN provides a centralized counterpart capable of coordinating large-scale electricity procurement. On the other hand, renewable energy investment becomes highly dependent on PLN's internal planning processes and financial position.

Many investors continue to identify PLN-related procurement timelines, project selection processes, grid access uncertainty, and contract negotiations as major areas affecting project bankability¹³⁵. This issue becomes particularly important for the first 17 GW deployment phase because large-scale solar expansion cannot occur without simultaneous PLN readiness in transmission planning and system integration.

Recent Progress: MEMR Regulation No. 5/2025

One of the most important recent regulatory developments was the issuance of MEMR Regulation No. 5/2025 on Guidelines for Renewable Energy PPAs¹³⁶. The regulation replaced earlier PPA guidelines and was intended to improve legal certainty for renewable energy developers. Key reforms include:

| | |
|---|---|
| PPA durations of up to 30 years | Clearer risk allocation mechanisms |
| Carbon credit and renewable energy certificate provisions | Refinancing provisions |
| Structured dispute resolution mechanisms | Recognition of intermittent renewable energy generation |
| Improved contractual standardization | |

From an investor perspective, these reforms represent important progress. The regulation attempts to address longstanding concerns regarding contractual uncertainty, prolonged negotiations, and inconsistent PPA structures. Several legal and energy sector assessments have noted that MEMR Regulation No. 5/2025 provides stronger legal clarity compared to previous frameworks and could improve renewable project bankability¹³⁷.

¹³⁵ BAPPENAS Republic of Indonesia. (2025, May). Solar PV Mapping And Development Plan (Indonesia): Review And Recommend Solutions Of The Impediments Of Solar PV Development, Report 1: Solar PV Procurement In Indonesia In JAMALI Region. *BAPPENAS Republic of Indonesia*. <https://www.energytransitionpartnership.org/wp-content/uploads/2025/10/Phase-3-Report-1-Challenges-on-Procurement-ENG.pdf>

¹³⁶ Badan Pemeriksa Keuangan. (2025). Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 5 Tahun 2025 tentang Pedoman Perjanjian Jual Beli Tenaga Listrik dari Pembangkit Tenaga Listrik yang Memanfaatkan Sumber Energi Terbarukan. *Badan Pemeriksa Keuangan*. <https://peraturan.bpk.go.id/Details/317619/permen-esdm-no-5-tahun-2025>

¹³⁷ Muryanti, S., Sasongko, M., Sepasthika, A., Poltak, K., and Edgar, J. D. (2025, May). Unveiling MEMR 5/2025 - A Comprehensive Guide to Indonesia's Renewable Energy Future. *Counsellor At Law*. <https://www.abnrlaw.com/news/unveiling-memr-52025-a-comprehensive-guide-to-indonesias-renewable-energy-future>

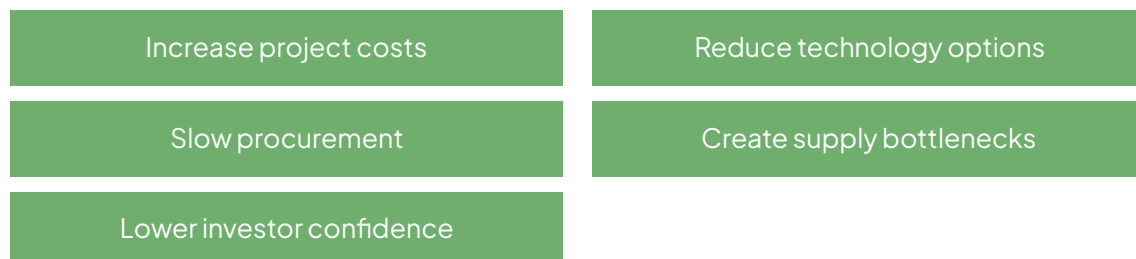
However, implementation questions remain. Many provisions still depend on PLN interpretation during procurement and contract negotiations. Some analysts have noted that despite being framed as guidelines, the practical flexibility available to developers remains uncertain because PLN procurement documents typically adopt conservative interpretations of ministerial regulations¹³⁸. Consequently, improvements in formal regulations do not automatically eliminate negotiation risks.

The Local Content (TKDN) Dilemma

One of the most sensitive regulatory issues involves local content requirements (Tingkat Komponen Dalam Negeri or TKDN)¹³⁹. Indonesia's industrial policy increasingly seeks to ensure that renewable energy deployment contributes to domestic manufacturing development¹⁴⁰. This objective aligns closely with broader government ambitions involving downstream industrialization, battery production, solar manufacturing, and green industrial ecosystems.

From a policy standpoint, the logic is understandable. A 100 GW renewable energy program represents a massive industrial opportunity. Policymakers naturally want deployment to generate employment, manufacturing investment, and technology transfer rather than relying entirely on imported equipment. However, TKDN requirements also create tensions. Many renewable energy technologies—particularly solar modules, advanced inverters, battery systems, and grid technologies—remain heavily dependent on global supply chains.

When local manufacturing capacity is insufficient, strict TKDN requirements can:



For investors, the issue is not opposition to localization itself but uncertainty regarding how localization requirements will evolve over time. The challenge for Indonesia is therefore balancing industrial development objectives with deployment speed. For the first 17 GW phase, this balance becomes especially important because delays in manufacturing readiness could slow overall project execution.

¹³⁸ Bisset, N. S., and Soraya, N. (2025, April). Indonesia: MEMR Regulation No.5 of 2025: Challenges and Insights for New Renewable PPAs in Indonesia. *HHP Law Firm*. https://www.hhp.co.id/-/media/minisites/hhp/files/legal-alerts/2025/hhp-law-firm-memr-regulation-no-5-of-2025.pdf?rev=fdb4a7c0b9c741ba88c043273f17185a&sc_lang=en&hash=8AF5204F46BBE9C23C039D93E900774E

¹³⁹ BAPPENAS. (n.d.). Rencana Pembangunan Jangka Panjang Nasional (RPJPN) 2025–2045. *BAPPENAS*. <https://indonesia2045.go.id/>

¹⁴⁰ SUCOFINDO. (2023, December). How TKDN Helps Businesses in Indonesia. *SUCOFINDO*. <https://www.sucofindo.co.id/en/articles/how-tkdn-helps-businesses-in-indonesia/>

Battery Storage: Regulatory Progress but Remaining Gaps

BESS are increasingly recognized as critical infrastructure for large-scale renewable energy integration. Historically, Indonesia's regulatory framework focused primarily on power generation assets¹⁴¹. Battery storage occupied an ambiguous position because it did not fit neatly into traditional generation, transmission, or distribution categories.

Recent reforms have attempted to address this gap. MEMR Regulation No. 5/2025 explicitly recognizes renewable energy projects integrated with battery storage systems¹⁴². In addition, MEMR Regulation No. 19/2025 introduced a framework for Hybrid Power Plants (PLTH), formally incorporating Battery Energy Storage Systems as part of integrated electricity supply systems¹⁴³. These developments are important because they signal growing regulatory recognition of storage technologies.

However, important uncertainties remain regarding:

| | |
|----------------------|----------------------------|
| Ownership structures | Market participation rules |
| Revenue mechanisms | Dispatch authority |
| Storage tariffs | Investment incentives |

For investors considering large-scale BESS deployment, these unresolved issues continue to create uncertainty.

Transmission: The Regulatory Blind Spot

Perhaps the most significant challenge within Indonesia's renewable energy framework involves transmission infrastructure. Historically, renewable energy policy discussions have focused heavily on generation capacity targets. Transmission expansion has often received less attention despite being essential for integrating renewable energy into the power system. This imbalance is increasingly problematic.

Large-scale solar deployment requires¹⁴⁴:

| | |
|----------------------------------|---------------------------------|
| New transmission corridors | Inter-island interconnections |
| Grid reinforcement | Digital grid management systems |
| Flexible dispatch infrastructure | |

¹⁴¹ Yustika, M. (2026, April). Advancing Indonesia's 100GW Solar Program Through De-dieselization for Energy Security. *IEEFA*. <https://ieefa.org/resources/advancing-indonesias-100gw-solar-program-through-de-dieselization-energy-security>

¹⁴² Counsellors At Law. (2026, March). New Regulation on Hybrid Power Plants: Accelerating the De-Dieselization Agenda in Small Islands and Isolated areas. *Counsellors At Law*. <https://www.abnrlaw.com/news/new-regulation-on-hybrid-power-plantsaccelerating-the-de-dieselization-agenda-in-small-islands-and-isolated-areas>

¹⁴³ Ibid.

¹⁴⁴ Kementerian ESDM. (2025). Rencana Usaha Penyediaan Tenaga Listrik. *Kementerian ESDM*.

Yet transmission development remains constrained by complex planning processes, land acquisition challenges, financing limitations, and institutional coordination issues. Many investors increasingly view transmission readiness—not generation capacity—as the principal bottleneck facing Indonesia's renewable energy expansion¹⁴⁵. For the first 17 GW phase, transmission may ultimately become the most critical enabling infrastructure.

The Core Diagnosis: Progress Without Full Alignment

Overall, Indonesia's renewable energy regulatory framework has improved significantly over the past several years. The government has introduced stronger renewable energy planning mechanisms, more sophisticated PPA regulations, new battery integration frameworks, and expanded energy transition policies¹⁴⁶.

Yet the regulatory system still suffers from a fundamental problem: individual reforms have often progressed faster than overall system alignment¹⁴⁷. Procurement regulations, industrial policy objectives, transmission planning, storage frameworks, grid readiness, and investment incentives are frequently developed in parallel rather than through a fully integrated deployment strategy.

For investors, this creates uncertainty even when individual regulations appear favorable. The result is a regulatory environment that increasingly supports renewable energy in principle, but still struggles to provide the level of predictability, coordination, and implementation certainty required for deployment at the scale of the first 17 GW phase. This diagnosis is important because it suggests that Indonesia's primary challenge is no longer establishing renewable energy policy direction. The challenge is ensuring that the regulatory ecosystem functions coherently enough to convert ambition into infrastructure. Understanding where this coherence breaks down requires a closer examination of the specific bottlenecks affecting renewable power generation, transmission infrastructure, and battery energy storage systems. These sector-specific constraints form the next layer of analysis.

¹⁴⁵ Larasati, L., Putri, T., Mafira, T., and Khalifa. (2026, May). Alternative Models for Transmission Financing in Indonesia. *Climate Policy Initiative*.

¹⁴⁶ Badan Pemeriksa Keuangan. (2025). Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 5 Tahun 2025 tentang Pedoman Perjanjian Jual Beli Tenaga Listrik dari Pembangkit Tenaga Listrik yang Memanfaatkan Sumber Energi Terbarukan.

¹⁴⁷ BAPPENAS Republic of Indonesia. (2025, May). Solar PV Mapping And Development Plan (Indonesia): Review And Recommend Solutions Of The Impediments Of Solar PV Development, Report 1: Solar PV Procurement In Indonesia In JAMALI Region.

REGULATORY BOTTLENECKS BY SUB-SECTOR

Indonesia's renewable energy transition is increasingly constrained not by a lack of ambition, resource potential, or investor interest, but by a series of regulatory and institutional bottlenecks that continue to impede project development and infrastructure deployment.

While recent reforms—including Presidential Regulation No. 112/2022 and MEMR Regulation No. 5/2025—have improved parts of the regulatory framework, significant challenges remain across renewable power generation, transmission infrastructure, and BESS¹⁴⁸¹⁴⁹.

These bottlenecks are particularly important because the first 17 GW deployment phase of the 100 GW ambition requires a pace of execution far beyond Indonesia's historical renewable energy development trajectory. Regulatory inefficiencies that may have been manageable under smaller deployment targets become major obstacles when scaled across multi-gigawatt infrastructure programs. Understanding these constraints is therefore essential for designing an effective regulatory unlock agenda.

Power Generation

1 Bankability of Power Purchase Agreements (PPAs)

For renewable energy investors, the PPA remains the single most important document determining project bankability. Although MEMR Regulation No. 5/2025 introduced significant improvements—including longer contract durations, clearer risk allocation provisions, refinancing mechanisms, and stronger treatment of intermittent renewable energy generation—many investors remain cautious regarding implementation¹⁵⁰. Several legal and energy sector assessments note that while the regulation improves formal contractual certainty, project bankability ultimately depends on how PLN incorporates these provisions into actual procurement processes and negotiated PPAs¹⁵¹.

¹⁴⁸ Badan Pemeriksa Keuangan. (2025). Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 5 Tahun 2025 tentang Pedoman Perjanjian Jual Beli Tenaga Listrik dari Pembangkit Tenaga Listrik yang Memanfaatkan Sumber Energi Terbarukan.

¹⁴⁹ Counsellors At Law. (2026, March). New Regulation on Hybrid Power Plants: Accelerating the De-Dieselization Agenda in Small Islands and Isolated areas.

¹⁵⁰ Badan Pemeriksa Keuangan. (2025). Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 5 Tahun 2025 tentang Pedoman Perjanjian Jual Beli Tenaga Listrik dari Pembangkit Tenaga Listrik yang Memanfaatkan Sumber Energi Terbarukan.

¹⁵¹ Bisset, N. S., and Soraya, N. (2025, April). Indonesia: MEMR Regulation No. 5 of 2025: Challenges and Insights for New Renewable PPAs in Indonesia.

Historically, renewable energy developers have raised concerns regarding:

| | |
|--|--|
| Limited flexibility during contract negotiations | Unclear risk allocation |
| Currency exposure | Delayed procurement timelines |
| Uncertainty regarding deemed dispatch provisions | Inconsistent contractual interpretations |

As renewable energy projects are highly capital-intensive, even relatively small contractual uncertainties can significantly increase financing costs. For the first 17 GW phase, improving PPA bankability is not simply a legal issue—it is a financing imperative.

2 PLN Oversupply and Demand Uncertainty

A second challenge involves PLN's longstanding oversupply problem in several electricity systems, particularly within Java-Bali^{152,153}. The expansion of coal-fired power plants under previous electricity planning frameworks created reserve margins that remain relatively high in some regions. As a result, renewable energy projects often face difficulties securing procurement opportunities because PLN prioritizes maintaining system stability and managing existing generation commitments¹⁵⁴.

Several renewable energy developers continue to identify PLN's excess generation capacity as a major factor slowing procurement expansion¹⁵⁵. The issue becomes particularly sensitive because many coal-related obligations remain embedded within long-term contractual arrangements¹⁵⁶. For the first 17 GW deployment phase, this creates a structural challenge: renewable capacity cannot scale rapidly if procurement remains constrained by legacy system planning assumptions.

3 Local Content Requirements

Indonesia's local content policy reflects legitimate industrial policy objectives. The government seeks to ensure that renewable energy deployment contributes to domestic manufacturing development, employment creation, technology transfer, and industrial upgrading¹⁵⁷. Given the scale of the 100 GW ambition, policymakers

¹⁵² Purnama, A. Y. (2026, June). Ironi Listrik Jawa: Kapasitas Berlebi, Arus Bahan Bakar Merintih. *Bloomberg Technoz*. <https://www.bloombergtechnoz.com/detail-news/112884/ironi-listrik-jawa-kapasitas-berlebi-arus-bahan-bakar-merintih>

¹⁵³ IEA. (2022, September). An Energy Sector Roadmap to Net Zero Emissions in Indonesia. *IEA*. <https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia>

¹⁵⁴ Hamdi, E., and Adhiguna, P. (2021, November). Indonesia Wants to Go Greener, but PLN Is Stuck With Excess Capacity From Coal-Fired Power Plants. *IEEFA*. https://ieefa.org/wp-content/uploads/2021/11/Indonesia-Wants-to-Go-Greener-but-PLN-Is-Stuck-With-Excess-Capacity_November-2021.pdf

¹⁵⁵ Ibid.

¹⁵⁶ Ibid.

¹⁵⁷ JETP Indonesia. (2023). The Government of Indonesia (GoI) has adopted the policy of Local Content Requirements (LCR). *JETP Indonesia*. <https://jetp-id.org/about/lcr-the-government-of-indonesia-go-has-adopted-the-policy-of-local-content-requirements-lcr-to>

view renewable energy as a strategic opportunity to strengthen national industrial capacity.

However, implementation remains challenging. Indonesia's solar manufacturing ecosystem is still developing and remains dependent on imported upstream components, particularly wafers, cells, advanced inverters, and battery technologies. When local content requirements exceed existing industrial capacity, developers often face higher procurement costs, supply limitations, and project delays.

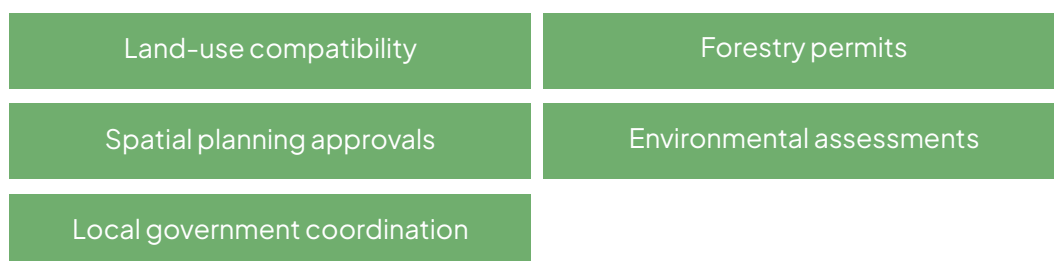
Several industry assessments note that rigid TKDN requirements risk reducing project competitiveness and slowing deployment if domestic manufacturing readiness does not expand at a comparable pace¹⁵⁸. The challenge for policymakers is therefore balancing two objectives that are both strategically important:



For the first 17 GW phase, excessive rigidity could undermine deployment speed, while excessive liberalization could weaken industrial development goals.

4 Permitting and Land Acquisition

Renewable energy projects continue to face complex permitting requirements involving multiple institutions across national and local levels¹⁵⁹. Developers frequently encounter challenges related to:



While many reforms have reduced procedural complexity, permitting timelines remain difficult to predict. This uncertainty affects project financing because lenders generally require clear land rights and permitting certainty before reaching financial close. As deployment scales toward 17 GW, permitting inefficiencies that affect individual projects today could become systemic bottlenecks affecting the broader program.

¹⁵⁸ Aswicahyono, H., Titiheruw, S. I., Damuri, Y. R., F. D., Faur, Ai., Mangunsong, C., and Ngadiman, J. S. (2022). Economic Impacts of Local Content Requirements in Indonesia. *Centre for Strategic and International Studies*, <https://www.csis.or.id/publication/economic-impacts-of-local-content-requirements-in-indonesia/>

¹⁵⁹ Kennedy, S. F. (2020, June). Research: land use challenges for Indonesia's transition to renewable energy. *The Conversation*. <https://theconversation.com/research-land-use-challenges-for-indonesias-transition-to-renewable-energy-131767>

Grid Transmission

1 Transmission as the Largest Structural Constraint

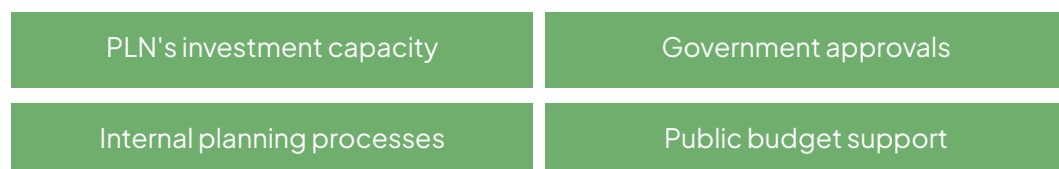
While public discussion often focuses on renewable power generation, many investors increasingly identify transmission infrastructure as Indonesia's most significant renewable energy bottleneck¹⁶⁰. Large-scale solar deployment requires the ability to move electricity from generation sites to demand centers¹⁶¹. Without adequate transmission infrastructure, renewable generation assets risk becoming underutilized regardless of how quickly new projects are constructed.

Indonesia's geography makes this challenge particularly severe. Unlike continental electricity systems, Indonesia operates multiple isolated and semi-isolated grids spread across thousands of islands¹⁶². Renewable integration therefore requires not only new transmission lines but also improved interconnections, digital grid systems, and stronger system flexibility. Several energy transition studies have concluded that transmission readiness may become the decisive factor determining whether Indonesia can achieve its long-term renewable energy ambition¹⁶³.

2 PLN's Dominant Position

Transmission infrastructure remains largely concentrated under PLN's control. While centralized planning provides coordination advantages, it also creates financing and execution limitations.

Transmission expansion depends heavily on:



As renewable deployment accelerates, transmission investment requirements may exceed the pace that PLN can finance independently. Several international investors and development institutions have increasingly argued that Indonesia needs more innovative financing models for transmission infrastructure, including public-private partnerships, blended finance mechanisms, and sovereign investment participation^{164,165}. Without accelerated transmission financing, generation deployment risks outpacing grid readiness.

¹⁶⁰ Luthfyana Larasati., Tunjung Putri., Tiza Mafra., and Khalifa. (May, 2026). Alternative Models for Transmission Financing in Indonesia. *Climate Policy Initiative*. <https://www.climatepolicyinitiative.org/wp-content/uploads/2026/05/Alternative-Models-for-Transmission-Financing.pdf>

¹⁶¹ Putra, N. (2026, April). PLN: 48,000 km Transmission Network Needed for Clean Energy Shift. *Tempo English*. <https://en.tempo.co/read/2098083/pln-48000-km-transmission-network-needed-for-clean-energy-shift>

¹⁶² Ibid.

¹⁶³ Global Transmission Report. (2026). Indonesia Electricity Grid In Transition. *Global Transmission Report*. https://globaltransmission.info/wp-content/uploads/2026/04/GTR_Indonesia_Final.pdf

¹⁶⁴ Larasati, L., Putri, T., Mafra, T., and Khalifa. (2026, May). Alternative Models for Transmission Financing in Indonesia. *Climate Policy Initiative*.

¹⁶⁵ Trend Asia. (2024, June). Belenggu Oversupply Listrik Atas PLN. *Trend Asia*. <https://trendasia.org/belenggu-oversupply-listrik-atas-pln/>

3 Right-of-Way and Land Challenges

Transmission projects often face more complex land acquisition issues than renewable generation facilities. High-voltage transmission corridors typically cross multiple jurisdictions and land ownership structures, creating lengthy negotiations and permitting processes.

Even when financing is available, transmission projects can experience delays due to:

| | |
|----------------------------|--|
| Land compensation disputes | Local government coordination challenges |
| Environmental approvals | Community opposition |

These issues are particularly important because transmission delays frequently affect multiple renewable projects simultaneously. For the first 17 GW phase, transmission permitting may therefore become a critical implementation risk.

4 Lack of Independent Transmission Investment Frameworks

Unlike some international markets that allow private participation in transmission development, Indonesia's framework remains heavily centralized¹⁶⁶. As renewable energy deployment expands, questions increasingly emerge regarding whether existing financing structures are sufficient to support the scale of transmission investment required.

The absence of robust mechanisms for independent transmission investment limits opportunities to mobilize private capital into one of the most important components of the energy transition. This creates a paradox: substantial capital may be available internationally, but regulatory structures prevent it from fully participating in transmission expansion.

Battery Energy Storage Systems (BESS)

1 Regulatory Ambiguity

Battery Energy Storage Systems are rapidly becoming essential components of modern electricity systems. As renewable penetration increases, storage plays a critical role in:

| | |
|------------------------|-----------------------------------|
| Managing intermittency | Stabilizing grids |
| Improving reliability | Supporting peak demand management |

¹⁶⁶ Ibid.

Indonesia has made important progress through MEMR Regulation No. 5/2025 and MEMR Regulation No. 19/2025, both of which formally recognize battery storage as part of renewable energy and hybrid generation systems^{167,168}. However, major regulatory uncertainties remain. Battery storage does not fit neatly within traditional electricity categories such as generation, transmission, or distribution.

As a result, important questions remain unresolved regarding:

| | |
|------------------------------|----------------------|
| Asset classification | Ownership structures |
| Operational responsibilities | Revenue mechanisms |

These uncertainties continue to affect investment decisions.

2 Lack of Revenue Certainty

One of the largest challenges facing BESS deployment involves monetization. Unlike conventional power plants, batteries often generate value through multiple services simultaneously, including:

| | |
|---------------------|----------------------|
| Energy arbitrage | Frequency regulation |
| Grid balancing | Reserve capacity |
| Reliability support | |

Indonesia's electricity market currently lacks fully developed frameworks allowing storage operators to monetize these services independently¹⁶⁹. Without clear revenue streams, investors face difficulties assessing long-term returns. Consequently, many battery projects remain dependent on integration with larger renewable generation facilities rather than operating as standalone assets.

3 Domestic Manufacturing Readiness

Indonesia possesses significant strategic advantages in battery-related industries due to its nickel reserves and growing EV ecosystem. However, scaling BESS deployment requires more than raw material availability.

¹⁶⁷ Badan Pemeriksa Keuangan. (2025). Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 5 Tahun 2025 tentang Pedoman Perjanjian Jual Beli Tenaga Listrik dari Pembangkit Tenaga Listrik yang Memanfaatkan Sumber Energi Terbarukan.

¹⁶⁸ Counsellors At Law. (2026, March). New Regulation on Hybrid Power Plants: Accelerating the De-Dieselization Agenda in Small Islands and Isolated areas.

¹⁶⁹ CESC. (2025, February). Southeast Asia's Policy Dividends: Indonesia's Energy Storage Market Access Guide. CESC. <https://www.cescexpo.com/southeast-asia-s-policy-dividends-indonesia-s-energy-storage-market-access-guide>

Challenges remain regarding:

| | |
|---|---------------------|
| Advanced battery manufacturing capacity | Technology transfer |
| Grid-scale storage expertise | Safety standards |
| Certification systems | |

For Indonesia, battery policy increasingly sits at the intersection of energy transition and industrial strategy. The challenge is not only deploying storage systems but also ensuring that deployment contributes to long-term industrial competitiveness.

4 Absence of Dedicated Storage Incentives

Many countries accelerating storage deployment provide targeted incentives including:

| | |
|------------------------------|--------------------------------------|
| Capacity payments | Investment tax credits |
| Storage procurement mandates | Grid service compensation mechanisms |

Indonesia currently lacks a comprehensive storage-specific incentive framework¹⁷⁰. As a result, investors often perceive storage as an additional cost rather than a standalone investment opportunity¹⁷¹. This becomes increasingly problematic because the first 17 GW deployment phase will likely require substantial battery integration to maintain grid stability and support large-scale solar deployment.

A Systemic Challenge Rather Than Isolated Problems

Viewed individually, each bottleneck appears manageable. However, the real challenge lies in their interaction. A solar project may secure financing but face transmission delays. A battery project may possess strong technical fundamentals but lack revenue certainty. A transmission corridor may obtain planning approval but face land acquisition obstacles. Together, these constraints create a cumulative investment environment that increases costs, slows deployment, and weakens investor confidence. The first 17 GW phase therefore does not require isolated regulatory reforms. It requires a coordinated regulatory unlock strategy capable of addressing generation, transmission, and storage simultaneously. Only through such an integrated approach can Indonesia transform renewable energy ambition into infrastructure deployment at the scale required for the broader 100 GW vision.

¹⁷⁰ Energy Transition Partnership. (2025, March). Innovating New Incentive Mechanisms for Energy Transition Projects. Energy Transition Partnership. https://www.energytransitionpartnership.org/wp-content/uploads/2025/07/20250328_Comprehensive-Analysis_EN.pdf

¹⁷¹ Ibid.

PROPOSED REGULATORY UNLOCK AGENDA

The success of Indonesia's first 17 GW deployment phase will depend not only on identifying regulatory bottlenecks but also on implementing a coherent reform strategy capable of addressing them. While Indonesia has already introduced important renewable energy regulations, the next stage of reform requires moving beyond incremental adjustments toward a more integrated regulatory framework that aligns investment incentives, infrastructure planning, industrial policy, and energy transition objectives.

This challenge is particularly urgent because the 17 GW phase represents a narrow implementation window. Delays in project development, transmission expansion, or battery deployment during the initial stage could undermine investor confidence in the broader 100 GW ambition. Regulatory reform should therefore be treated not as a long-term institutional exercise but as an immediate economic and infrastructure priority.

The objective of a regulatory unlock agenda is not to eliminate state involvement or weaken national industrial objectives. Rather, it is to create a predictable investment environment that allows Indonesia to mobilize capital, accelerate deployment, strengthen domestic manufacturing, and maintain strategic control over the direction of its energy transition.

Establishing a Fast-Track Renewable Energy Deployment Framework

One of the most immediate priorities should be the establishment of a fast-track framework for projects included within the first 17 GW deployment phase. At present, renewable energy projects continue to face multiple layers of permitting, land-use approvals, environmental reviews, and institutional coordination requirements. While many of these processes are justified individually, their cumulative effect often creates lengthy and unpredictable development timelines. Such delays increase financing costs because project developers must absorb additional pre-construction risks while lenders remain reluctant to commit capital until permitting certainty is achieved.

The government should therefore designate projects within the first 17 GW phase as strategic national energy transition projects eligible for accelerated permitting procedures. This framework could integrate approvals across ministries, provincial governments, forestry agencies, and environmental authorities through a centralized coordination mechanism. Similar approaches have been used in infrastructure

development programs where strategic national projects receive streamlined administrative treatment.

Accelerated permitting would not necessarily require lowering environmental or social safeguards. Instead, the objective would be to improve institutional coordination, reduce duplication, and provide clearer timelines for project approvals. Predictability is often as important to investors as speed because it allows financing and construction schedules to be planned more effectively.

Strengthening Renewable Energy Procurement and PPA Bankability

Improving project bankability should remain a central pillar of the regulatory unlock agenda. Although MEMR Regulation No. 5/2025 introduced important improvements to renewable energy PPAs, investor concerns regarding implementation consistency remain¹⁷². In practice, financing decisions are often based less on the wording of ministerial regulations and more on how procurement processes are conducted and how contractual provisions are applied during negotiations.

Indonesia should therefore move toward greater standardization of renewable energy procurement frameworks. Standardized procurement mechanisms reduce transaction costs, shorten negotiation periods, and improve investor confidence because developers can evaluate risks more consistently across projects. Several mature renewable energy markets have successfully used standardized contracts to accelerate deployment while maintaining regulatory oversight.

The government should also consider strengthening mechanisms that improve revenue certainty for renewable energy developers. These may include clearer dispatch rules, more transparent tariff methodologies, and stronger protections against regulatory changes affecting project economics after financial close. Such measures are particularly important because renewable energy projects depend heavily on long-term revenue predictability. Reducing perceived contractual risks would help lower financing costs, making projects more attractive to both domestic and international investors.

Reforming the TKDN Framework Through a Transitional Approach

TKDN remains one of the most sensitive policy issues within Indonesia's renewable energy sector. The government's objective of building domestic manufacturing capacity is strategically important and aligns with broader industrial transformation goals. A 100 GW renewable energy program should ideally support national industry rather than function solely as an import-driven deployment strategy.

¹⁷² Badan Pemeriksa Keuangan. (2025). Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 5 Tahun 2025 tentang Pedoman Perjanjian Jual Beli Tenaga Listrik dari Pembangkit Tenaga Listrik yang Memanfaatkan Sumber Energi Terbarukan.

However, the pace of renewable energy deployment required during the first 17 GW phase may exceed current manufacturing readiness in several segments of the solar and battery supply chain. Maintaining highly rigid localization requirements before domestic capacity reaches sufficient scale risks increasing costs and slowing deployment.

A more effective approach may involve a phased TKDN strategy. Under such a framework, localization targets could be linked to measurable industrial development milestones rather than applied uniformly across all project stages. This would allow deployment to proceed while creating clear incentives for manufacturers to expand domestic production capacity over time. Priority could be placed on gradually increasing local participation in areas where Indonesian firms possess realistic competitive potential, including module assembly, mounting structures, balance-of-system components, and selected battery segments. This approach would better balance the dual objectives of industrial development and deployment acceleration.

Creating a Dedicated Transmission Acceleration Framework

Transmission infrastructure requires a regulatory strategy that is distinct from renewable power generation. Historically, transmission development has often been treated as a supporting component of electricity planning rather than a strategic investment priority in its own right. Under the first 17 GW phase, however, transmission readiness will become a decisive factor determining whether renewable generation assets can be integrated into the power system efficiently.

Indonesia should therefore establish a dedicated transmission acceleration framework focused on financing, permitting, and institutional coordination. One priority involves improving long-term transmission planning transparency. Investors require visibility regarding future transmission corridors, interconnection priorities, and grid expansion schedules. Greater transparency would allow renewable energy developers to align project planning with future transmission availability.

A second priority involves accelerating land acquisition and right-of-way procedures for strategic transmission projects. Because transmission delays often affect multiple renewable energy facilities simultaneously, improving transmission permitting can generate system-wide benefits.

The government should also explore opportunities for blended finance structures involving development finance institutions, sovereign wealth funds, export credit agencies, and strategic investors. Such mechanisms could help mobilize capital into transmission projects that may otherwise struggle to attract commercial financing.

Expanding Private Participation in Transmission Investment

As renewable deployment scales, Indonesia may eventually need to reconsider the existing boundaries of transmission investment participation. PLN's central role provides important coordination benefits, but financing requirements associated with large-scale renewable integration may exceed what can be supported through traditional funding

models alone. International experience suggests that carefully designed private participation frameworks can help accelerate transmission expansion without necessarily weakening state oversight.

Indonesia does not need to fully liberalize transmission ownership. However, it could explore selective models allowing private participation in transmission construction, financing, or operation under regulated conditions. Public-private partnership schemes, availability-payment structures, and concession-based models may offer additional options for mobilizing capital while maintaining regulatory control.

Such reforms would be particularly valuable if transmission investment requirements continue growing alongside renewable energy deployment targets.

Establishing a Comprehensive BESS Regulatory Framework

BESS represents one of the most important regulatory frontiers in Indonesia's energy transition. While recent regulations have formally recognized storage technologies, the market framework remains incomplete. Investors continue to face uncertainty regarding asset classification, ownership models, operational responsibilities, and revenue generation mechanisms.

Indonesia should therefore establish a dedicated BESS regulatory framework rather than treating storage as a secondary component of renewable generation projects. The framework should clearly define how storage assets participate within the electricity system, including rules governing dispatch, market participation, grid services, and revenue streams. Investors require clarity regarding how batteries can generate returns beyond simple energy storage functions.

International experience increasingly demonstrates that battery systems provide multiple forms of value, including frequency regulation, reserve capacity, voltage support, peak shaving, and reliability services. Regulatory frameworks should recognize and compensate these functions accordingly. Providing clearer monetization pathways would significantly improve investment attractiveness for storage projects.

Introducing Storage-Specific Incentives

In addition to regulatory clarification, Indonesia should consider introducing targeted incentives for storage deployment. The first 17 GW phase is likely to require substantial battery integration to maintain grid stability and support solar expansion. Yet current investment frameworks often treat storage as an additional cost burden rather than strategic infrastructure.

Several countries have successfully accelerated storage deployment through capacity payments, investment tax incentives, dedicated procurement programs, and storage mandates linked to renewable energy development.

Indonesia does not necessarily need to replicate these models directly. However, creating targeted incentives for early-stage deployment could help establish market confidence, attract investment, and accelerate technological learning. Over time, a stronger domestic storage market would also support Indonesia's broader battery manufacturing ambitions.

Strengthening Institutional Coordination Through a Renewable Energy Delivery Unit

One of the recurring challenges across Indonesia's renewable energy sector involves fragmented institutional coordination. Project development often requires engagement with multiple ministries, regulators, state-owned enterprises, local governments, financing institutions, and permitting agencies. While each institution operates within its respective mandate, coordination gaps frequently create delays and uncertainty.

The government should therefore consider establishing a dedicated Renewable Energy Delivery Unit responsible for overseeing implementation of the first 17 GW phase. The unit could function as a coordination platform responsible for monitoring project progress, resolving regulatory bottlenecks, facilitating inter-agency cooperation, and reporting directly to senior government leadership. Similar delivery-unit models have been used successfully in several countries to accelerate strategic infrastructure programs. Given the scale and urgency of the first deployment phase, stronger coordination mechanisms may prove as important as regulatory reforms themselves.

Aligning Regulation With Investment Strategy

Ultimately, the effectiveness of Indonesia's regulatory unlock agenda will depend on whether reforms are aligned with broader investment realities. The country is attempting to mobilize capital simultaneously from G7 partners, Chinese investors, Gulf sovereign wealth funds, multilateral institutions, domestic financial actors, and strategic industrial investors. Each of these groups possesses different investment preferences, risk assessments, and financing models.

Regulatory frameworks should therefore be designed not only to satisfy administrative requirements but also to support capital mobilization across multiple investor ecosystems. Predictability, transparency, and implementation consistency remain the common factors that all investors prioritize regardless of origin. For this reason, regulatory reform should be viewed as an investment strategy rather than merely a governance exercise.

The first 17 GW deployment phase represents the most important credibility test of Indonesia's broader 100 GW ambition. Success will depend less on the scale of announced targets than on the government's ability to create a regulatory environment capable of converting capital availability into infrastructure deployment. A well-designed regulatory unlock agenda is therefore not simply supportive of the energy transition—it is the central mechanism through which the transition can occur at scale.

ENABLING CONDITIONS FOR DOMESTIC MANUFACTURING CAPACITY IN RENEWABLE ENERGY

Indonesia's 100 renewable energy ambition represents more than an electricity sector transformation. It also presents one of the largest industrial opportunities in the country's modern economic history. If managed effectively, the scale of renewable energy deployment required under the first 17 GW phase could support the development of domestic manufacturing ecosystems across solar PV components, battery systems, electrical equipment, transmission infrastructure, and supporting clean technology industries.

This industrial dimension is particularly important because Indonesia's energy transition strategy increasingly intersects with broader national objectives involving downstream industrialization, technological upgrading, employment generation, and export competitiveness. Renewable energy is no longer viewed solely as a climate or electricity policy issue. It is increasingly being positioned as part of a wider industrial transformation agenda.

However, realizing these opportunities requires more than local content requirements or investment promotion efforts. Building competitive manufacturing capacity depends on creating the enabling conditions necessary for firms to invest, expand production, develop technological capabilities, and integrate into regional and global supply chains. The challenge for Indonesia is therefore not simply attracting renewable energy investment, but ensuring that renewable deployment contributes to long-term industrial development.

The Scale of the Industrial Opportunity

The first 17 GW deployment phase alone will require substantial quantities of solar modules, mounting structures, inverters, transformers, battery systems, cables, grid equipment, and supporting infrastructure components. At the scale envisioned under the broader 100 GW ambition, demand for renewable energy equipment could reach levels capable of supporting major manufacturing expansion within Indonesia. Several energy transition studies have noted that large-scale solar deployment could stimulate domestic industries if deployment policies are aligned with industrial development strategies. The IESR has argued that Indonesia's solar ambitions create opportunities to strengthen local manufacturing ecosystems while supporting broader economic transformation¹⁷³.

¹⁷³ Hasjanah, K. (2026, February). Advancing Energy Resilience and Self-Sufficiency, as well as Providing Reliable Electricity Access for Equitable Development through the Implementation of the 100 GW Solar Power Program. IESR. <https://iesr.or.id/en/advancing-energy-resilience-and-self-sufficiency-as-well-as-providing-reliable-electricity-access-for-equitable-development-through-the-implementation-of-the-100-gw-solar-power-program/>

This opportunity is particularly significant because renewable energy industries increasingly sit at the center of global economic competition. Countries are no longer competing solely to deploy clean energy but also to capture manufacturing value chains associated with the energy transition. Indonesia therefore faces a strategic choice. It can remain primarily a market for imported renewable energy technologies, or it can leverage deployment demand to build domestic industrial capabilities.

Moving Beyond Assembly Toward Industrial Depth

One of the recurring challenges facing renewable energy industrialization strategies in emerging economies is that domestic participation often remains concentrated in low-value assembly activities. While assembly operations can create employment and support initial industrial development, they generally capture only a limited portion of the value generated across renewable energy supply chains. Higher-value activities—including advanced component production, engineering services, technology development, battery chemistry, power electronics, and systems integration—often remain concentrated elsewhere.

For Indonesia, the long-term objective should therefore extend beyond increasing local content percentages. Instead, industrial policy should focus on gradually expanding domestic participation across more technologically sophisticated segments of renewable energy supply chains. This requires investment not only in manufacturing facilities but also in workforce development, engineering capabilities, research partnerships, standards systems, and technological upgrading. A successful industrial strategy should measure progress through increases in domestic value creation rather than solely through localization ratios.

Building a Competitive Solar Manufacturing Ecosystem

Solar manufacturing presents one of the most immediate industrial opportunities associated with the 100 GW ambition. Indonesia already possesses several solar manufacturing facilities, but domestic production remains relatively limited compared with major international producers. Much of the global solar value chain continues to be dominated by Chinese firms, particularly in upstream segments such as polysilicon, wafers, and solar cells.

Attempting to replicate the entire solar value chain domestically in the short term may not be economically realistic. However, Indonesia can still strengthen its position within selected segments where competitive advantages are achievable.

Policy support could prioritize areas including:

| | |
|--|--|
| Solar module assembly | Mounting structures and balance-of-system components |
| Electrical equipment manufacturing | Engineering and installation services |
| Selected cell manufacturing partnerships | Regional export-oriented production hubs |

Several policy assessments have suggested that Indonesia should pursue targeted manufacturing strategies linked to realistic industrial capabilities rather than attempting to localize all segments simultaneously¹⁷⁴. This approach would allow industrial expansion to proceed alongside renewable deployment rather than becoming a constraint on deployment speed.

Leveraging Indonesia's Battery Advantage

Battery manufacturing represents another major opportunity. Indonesia possesses one of the world's largest nickel reserves and has already attracted significant investment into battery and electric vehicle ecosystems. Successive administrations have promoted downstream industrialization strategies designed to move Indonesia beyond raw material exports toward higher-value manufacturing activities.

The expansion of BESS under the first 17 GW phase could strengthen this strategy. Rather than viewing battery deployment solely through the lens of grid stability, policymakers can also use growing domestic storage demand to support manufacturing development. Increasing local deployment creates opportunities for firms to scale production, improve technical capabilities, and develop domestic supply chains.

Recent developments involving IBC, CATL, and other strategic battery partnerships suggest that Indonesia is already positioning itself as a regional battery production hub¹⁷⁵. Expanding BESS deployment could reinforce these ambitions by creating stronger domestic demand foundations. The challenge is ensuring that battery industrialization generates meaningful domestic technological upgrading rather than remaining limited to resource extraction and basic processing.

Developing Human Capital and Technical Capabilities

Manufacturing competitiveness depends not only on physical investment but also on human capital. Renewable energy industries increasingly require skilled engineers, technicians, system integrators, software specialists, battery experts, grid planners, and advanced manufacturing workers. Without sufficient technical capacity, industrial expansion may remain dependent on imported expertise.

¹⁷⁴ Setyawati, D., and Setiawan, D. (2025, November). Response to Indonesia's Just Energy Transition Partnership (JETP) Progress Report 2025. EMBER. <https://ember-energy.org/app/uploads/2025/11/Policy-paper-%E2%80%93-Indonesia-JETP-2025.pdf>

¹⁷⁵ Setiawan, V. N. (2026, June). Pabrik Baterai EV Raksasa Berdiri di RI Juli 2026, Segini Produksinya. CNBC. <https://www.cnbcindonesia.com/news/20260624080347-4-745207/pabrik-baterai-ev-raksasa-berdiri-di-ri-juli-2026-segini-produksinya>

Indonesia therefore needs stronger linkages between renewable energy deployment and workforce development. Universities, vocational institutions, research centers, and industrial training programs should increasingly align with renewable energy and storage industries. Public-private partnerships involving manufacturers, state-owned enterprises, and educational institutions could help accelerate workforce preparation. Developing domestic technical expertise is particularly important because the 100 GW ambition is not a short-term infrastructure program. It represents a multi-decade industrial transformation process.

Reforming TKDN Toward Industrial Competitiveness

The future of local content policy should also be reconsidered within a broader industrial competitiveness framework. Historically, TKDN has often been implemented primarily as a compliance requirement. While localization targets can support domestic industry, overly rigid requirements may also increase costs and reduce deployment speed when industrial capacity remains insufficient. A more effective approach may involve shifting from static localization requirements toward performance-based industrial development frameworks.

Under such a model, incentives could reward:

| | |
|------------------------|-------------------------|
| Technology transfer | Domestic value creation |
| Workforce development | Research collaboration |
| Export competitiveness | Supply chain upgrading |

This would encourage firms to deepen industrial participation rather than focusing solely on compliance metrics. Importantly, such reforms would not weaken Indonesia's industrial ambitions. Instead, they would align industrial policy more closely with long-term competitiveness objectives.

Attracting Manufacturing Through Strategic Investment Partnerships

Indonesia's manufacturing ambitions will also depend heavily on international partnerships. Different investor groups bring different strengths. China offers manufacturing scale, supply chain integration, and technological capabilities. G7 partners provide advanced engineering, technology cooperation, and industrial financing support. Gulf investors increasingly offer long-term infrastructure capital and strategic industrial partnerships. Indonesia's objective should not be choosing between these partners but leveraging each according to national development priorities.

The first 17 GW phase can serve as a catalyst for such partnerships if procurement frameworks, industrial incentives, and investment regulations are designed to encourage domestic manufacturing participation. This requires regulatory predictability because manufacturers typically make investment decisions based on long-term demand expectations. Companies are unlikely to establish large-scale production facilities if deployment pipelines remain uncertain. For this reason, renewable energy deployment targets and industrial policy must be closely integrated.

Manufacturing as a Strategic Outcome of the 100 GW Ambition

Ultimately, the success of Indonesia's renewable energy strategy should not be measured solely by installed capacity. A 100 GW program of this scale has the potential to reshape industrial structures, strengthen technological capabilities, create employment, and improve Indonesia's position within emerging clean energy supply chains.

However, these outcomes are not automatic. They require coordinated policies involving deployment planning, industrial incentives, workforce development, investment attraction, technology partnerships, and regulatory reform. The first 17 GW deployment phase provides a critical opportunity to establish these foundations. If industrial policy and renewable energy deployment can be aligned effectively, Indonesia's energy transition may become not only a decarbonization strategy but also a major driver of long-term economic transformation.

For this reason, enabling domestic manufacturing capacity should be viewed as a central pillar of the regulatory unlock agenda rather than a secondary policy objective. The long-term credibility of Indonesia's renewable energy ambitions will depend not only on how much energy is generated, but also on how much national industrial capability is built along the way.

HOW INDONESIA CAN USE DANANTARA'S LEVERAGE TO ACCELERATE THE FIRST 17 GW PHASE

The establishment of Danantara represents one of the most consequential institutional developments shaping Indonesia's economic strategy under President Prabowo Subianto. While the fund was initially presented as a vehicle for optimizing state-owned enterprise (SOE) assets and strengthening national competitiveness, its potential role extends far beyond conventional sovereign wealth management. For Indonesia's renewable energy transition, Danantara could become one of the most important instruments for mobilizing capital, de-risking strategic infrastructure projects, and accelerating implementation of the first 17 GW phase of the country's broader 100 GW renewable energy ambition.

This potential is particularly significant because the challenge facing Indonesia is not simply attracting investor interest. As demonstrated by growing engagement from G7 countries, China, Gulf sovereign wealth funds, and multilateral institutions, substantial capital is already available for renewable energy investment. The more difficult challenge involves creating mechanisms capable of converting investment interest into deployable projects. Danantara is uniquely positioned to help bridge this gap because it sits at the intersection of state assets, infrastructure financing, industrial policy, and international investment partnerships.

With assets estimated at approximately USD900 billion, Danantara has emerged as one of the largest sovereign investment institutions globally¹⁷⁶. Its mandate includes supporting economic transformation, strengthening strategic industries, and improving long-term national competitiveness¹⁷⁷. Renewable energy and energy transition projects have already been identified among the fund's major investment priorities¹⁷⁸.

Moving Beyond Traditional Public Financing Constraints

Historically, one of the major constraints facing Indonesia's energy transition has been the limited ability of public financing mechanisms to support infrastructure deployment at the scale required¹⁷⁹. Renewable energy expansion requires large upfront investments in

¹⁷⁶ Lundgreen's Investor Insights. (2026, February). Indonesia's lofty plans with Danantara. *Lundgreen's Investor Insights*. <https://www.lundgreensinvestorinsights.com/indonesias-lofty-plans-with-danantara/>

¹⁷⁷ Danantara Indonesia. (2026, June). Danantara Government Strategic Forum Encourages Strategic Collaboration to Strengthen National Economic Growth. *Danantara Indonesia*. <https://www.danantaraindonesia.co.id/media-center/press-releases/danantara-government-strategic-forum>

¹⁷⁸ Danantara Indonesia. (2025, July). Danantara Indonesia Undertakes Several International Collaborations To Reform Global Assets And Investment Standards. *Danantara Indonesia*. <https://www.danantaraindonesia.co.id/media-center/press-releases/danantara-indonesia-undertakes-several-international-collaborations-to-reform-global-assets-and-investment-standards>

¹⁷⁹ Rizqia, A. M., and Wulansari, I. (2026). Implementation of Just Energy Transition Partnership (JETP) Indonesia. *Jurnal Manajemen dan Bisnis Madani*, Vol. 8, No. 1. Hlm 1-10. <https://doi.org/10.51353/Odhvhf66>

generation assets, transmission networks, battery storage systems, grid modernization, and supporting infrastructure. At the same time, fiscal resources must be allocated across multiple national priorities including food security, industrial development, healthcare, education, and defense modernization. As a result, relying solely on state budgets or PLN financing capacity is unlikely to be sufficient for the first 17 GW phase.

Danantara offers an alternative model. Rather than functioning as a direct subsidy provider, the fund can operate as a strategic investment platform capable of crowding in additional capital from domestic and international investors. This distinction is important because the scale of financing required for renewable energy deployment increasingly depends on leverage rather than public expenditure alone.

Several energy policy analyses have argued that Danantara's long-term significance lies in its ability to redirect sovereign capital toward renewable energy, climate finance platforms, and strategic transition investments while simultaneously generating sustainable returns¹⁸⁰. In practice, this means Danantara can potentially act as a catalytic investor whose participation reduces perceived project risk and encourages broader co-investment.

Acting as a Strategic Co-Investment Platform

One of Danantara's most important potential functions is serving as a co-investment platform for international partners. Indonesia's renewable energy transition increasingly attracts interest from multiple investment ecosystems. G7 countries offer concessional financing, blended finance structures, and infrastructure expertise. China contributes manufacturing capabilities, battery ecosystems, and renewable energy supply chains. Gulf sovereign wealth funds provide large-scale infrastructure capital and long-term investment horizons.

However, coordinating these different investment sources remains challenging. Danantara can help address this challenge by functioning as a domestic anchor institution capable of partnering with multiple investor groups simultaneously. Rather than requiring foreign investors to navigate fragmented institutional arrangements, the fund can provide a centralized platform for strategic co-investment.

This model is already beginning to emerge. Danantara has signed cooperation agreements with PLN to explore renewable energy investments and has also entered partnerships with international institutions such as the JBIC to jointly finance renewable energy, power transmission, and sustainable infrastructure projects. Such arrangements are important because they allow international capital to be mobilized through a domestically anchored investment structure rather than relying solely on external financing mechanisms.

¹⁸⁰ Yustika, M., and Kresna, Y. (2026, May). Redirecting Sovereign Capital to Accelerate Indonesia's Energy Transition. *IEEFA*. https://ieefa.org/sites/default/files/2026-05/IEEFA%20Report_Redirecting%20sovereign%20capital%20to%20accelerate%20Indonesia%27s%20energy%20transition_May2027.pdf

Supporting Transmission and Grid Infrastructure

Danantara's role may be especially important in transmission infrastructure. Throughout this paper, transmission has been identified as one of the largest structural bottlenecks facing Indonesia's renewable energy expansion. While generation projects often attract investor attention, transmission infrastructure frequently struggles to secure financing because returns are generally less immediate and project development timelines are longer.

This creates a financing gap precisely in the segment that may be most critical for integrating large volumes of renewable energy into the electricity system. Danantara can help address this challenge by investing in transmission projects that are strategically important but may not initially attract sufficient commercial financing. By taking early-stage positions in transmission infrastructure, the fund could reduce investment risks and create opportunities for additional participation from development finance institutions, export credit agencies, and infrastructure investors.

This approach aligns closely with international experience, where sovereign wealth funds increasingly participate in grid infrastructure because of its long-term and relatively stable investment profile. For Indonesia's first 17 GW phase, such participation could help ensure that transmission expansion keeps pace with renewable generation deployment.

Accelerating Battery Energy Storage Systems (BESS)

Battery Energy Storage Systems represent another area where Danantara can play a transformative role. Storage projects frequently face financing challenges because revenue models remain less established than those of conventional generation assets. Regulatory uncertainty surrounding storage monetization further increases investor caution. As a result, many battery projects struggle to secure financing despite being strategically important for renewable integration.

Danantara can help overcome this challenge by acting as an early-stage investor in storage infrastructure. Such investments would generate benefits beyond individual projects. By supporting battery deployment, Danantara could help create domestic demand for Indonesia's growing battery manufacturing ecosystem. This would strengthen linkages between energy transition objectives and industrial development goals.

Recent policy discussions involving Gulf investors and Danantara have already explored battery storage cooperation as part of broader renewable energy investment frameworks¹⁸¹. Several reports indicate growing interest from Saudi and UAE partners in supporting storage infrastructure alongside renewable generation projects^{182,183}. This creates opportunities for Danantara to position storage deployment as both an energy transition priority and an industrial strategy.

¹⁸¹ Danantara Indonesia. (2025, June). Danantara Indonesia Forges Strategic Partnership with ACWA Power to Drive Sustainable Energy Future. *Danantara Indonesia*. <https://www.danantaraindonesia.co.id/media-center/press-releases/danantara-indonesia-forges-strategic-partnership-with-acwa-power-to-drive-sustainable-energy-future>

¹⁸² Nugraha, D. W. (2025, July). Danantara and Saudi Arabian Companies Bring in IDR 162 Trillion in Green Energy Investment. *Kompas.id*. <https://www.kompas.id/artikel/en-danantara-dan-perusahaan-energi-terbarukan-arab-saudi-bawa-investasi-rp-162-triliun>

¹⁸³ Simanjuntak, R. (2025, February). Danantara to Partner with UAE for 10 GW Renewable Energy Project. *Petromindo.Com*. <https://www.petromindo.com/news/article/danantara-to-partner-with-uae-for-10-gw-renewable-energy-project>

Creating a Renewable Energy Investment Platform

One of the most ambitious options would be the creation of a dedicated Renewable Energy Investment Platform under Danantara. Rather than evaluating projects individually, the platform could aggregate renewable generation, transmission, storage, and manufacturing investments into a larger portfolio framework. This would allow risks to be diversified across multiple assets while providing investors with greater scale and visibility.

Such a platform could also coordinate participation from different investor groups. For example, Gulf sovereign wealth funds may be more interested in large infrastructure portfolios, while development finance institutions may prioritize transmission or grid modernization. Chinese investors may focus on manufacturing partnerships, while G7 institutions may support blended finance structures. A centralized investment platform could align these interests more effectively. The advantage of this approach is that it moves beyond fragmented project-by-project financing toward a portfolio-based investment strategy.

Enhancing Project Preparation and Bankability

Many renewable energy projects fail to reach financial close not because financing is unavailable but because project preparation remains insufficient¹⁸⁴. Land acquisition issues, permitting uncertainties, transmission readiness concerns, environmental assessments, and contractual complexities often delay project development long before financing decisions occur.

Danantara can help address this problem by supporting project preparation activities directly. International infrastructure investors frequently emphasize that one of the largest bottlenecks in emerging markets is the shortage of well-prepared, bankable projects. By financing feasibility studies, environmental assessments, transmission planning, and early-stage development activities, Danantara could significantly expand Indonesia's pipeline of investable renewable energy projects. This function may ultimately prove as important as direct project financing itself.

Strengthening Indonesia's Investment Credibility

Beyond financing, Danantara also performs an important signaling role. Large-scale infrastructure investors often evaluate not only individual projects but also the credibility of the institutions supporting them. The existence of a sovereign investment platform dedicated to long-term infrastructure development can strengthen perceptions of policy commitment and reduce concerns regarding implementation continuity.

This is particularly important because the first 17 GW phase represents a credibility test for Indonesia's broader 100 GW ambition. If Danantara becomes actively involved in renewable energy deployment, transmission financing, storage investment, and manufacturing development, it can help demonstrate that the energy transition is being

¹⁸⁴ Halimatussadiyah, A., Kruger, W., Wagner, F., Afifi, F. A. R., Lufti, R. E. G., and Kitzing, L. The country of perpetual potential: Why is it so difficult to procure renewable energy in Indonesia? *Renewable and Sustainable Energy Reviews*, Vol. 201, No. 114627. <https://scholar.ui.ac.id/en/publications/the-country-of-perpetual-potential-why-is-it-so-difficult-to-proc/>

treated as a strategic national priority rather than solely a sectoral policy objective. Recent statements from Danantara leadership repeatedly emphasize renewable energy, energy security, and long-term sustainability as central investment priorities¹⁸⁵. Such signals are important because they shape investor expectations regarding future policy direction.

Danantara as the Financial Backbone of the 17 GW Phase

Ultimately, the significance of Danantara lies not in the size of its assets alone but in its ability to function as a strategic bridge between capital and implementation. Indonesia's renewable energy challenge is increasingly one of coordination. Capital exists. Technology exists. Investor interest exists. Yet deployment remains constrained by financing gaps, transmission bottlenecks, project preparation weaknesses, and institutional fragmentation.

Danantara has the potential to address several of these constraints simultaneously. By acting as a co-investment platform, transmission investor, storage catalyst, manufacturing partner, and project preparation institution, the fund can help align renewable energy deployment with broader national development objectives. This would allow Indonesia to move beyond a model where energy transition depends primarily on external financing and toward a more proactive strategy anchored by domestic institutional capacity.

For the first 17 GW phase, Danantara may therefore become more than a sovereign wealth fund. It could emerge as the financial backbone of Indonesia's renewable energy transition, helping transform long-term ambition into executable infrastructure at the scale required for the broader 100 GW vision.

¹⁸⁵ Danantara Indonesia. (2025, December). Danantara Indonesia and PLN Explore Renewable Energy Investment Opportunities to Create Green Jobs and Clean Energy. *Danantara Indonesia*. <https://www.danantaraindonesia.co.id/media-center/press-releases/danantara-pln-renewable-energy-investment-partnership-2025>

BILATERAL MECHANISMS AND DIPLOMATIC LEVERAGE

Indonesia's renewable energy transition is often discussed primarily through the lenses of regulation, infrastructure, and financing. While these dimensions are critical, the scale of the country's 100 GW ambition increasingly places energy transition within the realm of strategic diplomacy. The first 17 GW deployment phase is not only an infrastructure challenge but also a geopolitical opportunity. As competition intensifies among major powers, development finance institutions, sovereign wealth funds, and clean technology providers, Indonesia possesses growing leverage to shape the terms of international energy cooperation.

This leverage stems from several factors. Indonesia is Southeast Asia's largest economy, one of the world's largest emerging energy markets, a major producer of critical minerals, and a key actor in regional industrial supply chains. The country's renewable energy potential, combined with its ambitions in batteries, electric vehicles, critical minerals, and green industrial development, makes it an increasingly important partner for multiple external actors.

As a result, Indonesia's energy transition should not be viewed merely as a domestic policy agenda. It is increasingly a platform through which the country can negotiate financing, technology transfer, industrial partnerships, and infrastructure investment from a diverse set of international partners. For the first 17 GW phase, diplomatic strategy can therefore function as an important complement to regulatory reform.

Moving Beyond a Financing-Centered Approach

Much of the discussion surrounding international energy cooperation focuses on financing commitments¹⁸⁶. However, large-scale renewable energy partnerships increasingly involve a wider set of strategic interests.

Countries supporting Indonesia's energy transition are not solely motivated by climate objectives. They are also pursuing industrial, geopolitical, technological, and economic interests. Japan seeks to strengthen regional decarbonization partnerships through the AZEC. China aims to expand renewable energy manufacturing ecosystems and clean technology exports. Gulf countries are pursuing international infrastructure investments as

¹⁸⁶ Nam Do, T. (2024). International Cooperation is Critical to Southeast Asia's Clean Energy Transition. *Energy Transition Partnership*. <https://www.energytransitionpartnership.org/2024/06/28/international-cooperation-is-critical-to-southeast-asias-clean-energy-transition/>

part of broader economic diversification strategies. European partners seek to support decarbonization while strengthening green industrial cooperation. Indonesia's objective should therefore be to approach energy diplomacy not as a process of receiving assistance but as a process of negotiating mutually beneficial partnerships.

The scale of the 100 GW ambition provides the government with significant bargaining power because the transition creates demand for capital, technology, manufacturing partnerships, engineering services, transmission infrastructure, and storage systems. Countries and firms seeking participation in these opportunities increasingly have incentives to offer financing packages, technology cooperation, and industrial partnerships. The challenge is ensuring that these partnerships support Indonesia's long-term development objectives rather than functioning solely as investment transactions.

Leveraging the Just Energy Transition Partnership (JETP)

The Just Energy Transition Partnership remains one of the most important diplomatic frameworks supporting Indonesia's energy transition. Although implementation challenges remain and financing deployment has progressed more slowly than initially expected, JETP continues to provide Indonesia with access to a network of G7 governments, development finance institutions, export credit agencies, and multilateral lenders. The initiative was originally launched with approximately USD20 billion in public and private financing commitments designed to support Indonesia's energy transition objectives.

Beyond financing, JETP provides diplomatic leverage by positioning Indonesia as one of the central countries within the global energy transition agenda. This status strengthens Indonesia's ability to negotiate additional support for transmission infrastructure, project preparation facilities, blended finance mechanisms, and renewable energy deployment programs.

For the first 17 GW phase, Indonesia should increasingly use JETP not merely as a financing framework but as a platform for regulatory cooperation, institutional capacity building, and investment mobilization. This requires shifting attention from headline financing announcements toward practical implementation mechanisms capable of accelerating project development.

Maximizing the Strategic Value of AZEC

Japan's AZEC represents another important diplomatic instrument. Since its launch, AZEC has evolved into one of the most significant regional energy transition frameworks involving Indonesia and Japan. Energy cooperation under AZEC includes renewable energy development, grid infrastructure, battery systems, industrial decarbonization, and technology cooperation. Indonesian and Japanese officials have repeatedly emphasized the importance of AZEC as a mechanism for supporting Indonesia's energy transition and green economy agenda. Importantly, AZEC differs from traditional development assistance models because it combines infrastructure financing, industrial cooperation, and technology partnerships.

For Indonesia, this creates opportunities to negotiate support not only for renewable energy projects but also for transmission expansion, battery deployment, workforce development, and manufacturing ecosystems. Several AZEC-related discussions have already included transmission infrastructure, renewable generation projects, and energy transition cooperation involving Japanese institutions such as JBIC and JICA.

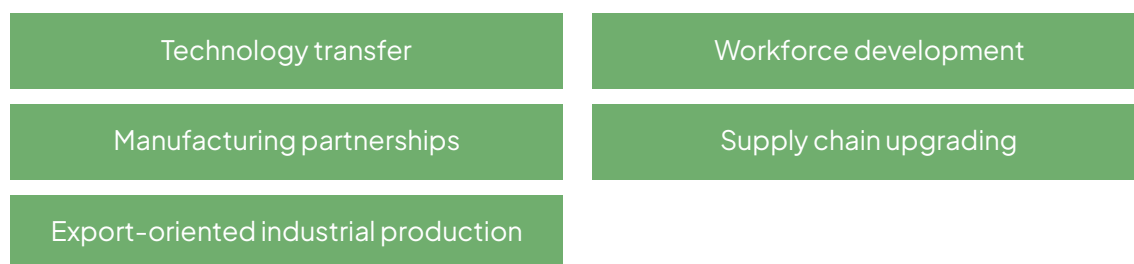
However, Indonesia should also approach AZEC strategically. Some policy assessments note that AZEC includes both renewable energy initiatives and fossil-fuel-related projects, including gas and ammonia-related cooperation. Analysts have therefore argued that Indonesia should ensure AZEC cooperation remains aligned with long-term renewable energy deployment objectives rather than creating new fossil fuel dependencies. For the first 17 GW phase, the most valuable components of AZEC are likely to be transmission financing, battery systems, renewable energy deployment support, and industrial cooperation.

Managing Strategic Cooperation with China

China's role in Indonesia's energy transition increasingly extends beyond financing. Chinese participation now spans solar manufacturing, battery production, electric vehicle ecosystems, critical mineral processing, and renewable energy supply chains. As a result, bilateral energy cooperation increasingly overlaps with industrial policy and economic transformation.

Indonesia should continue leveraging Chinese strengths in manufacturing scale, deployment experience, and technology ecosystems. However, cooperation should be structured in ways that maximize domestic value creation.

This means using bilateral mechanisms not only to attract investment but also to support:



The objective should be to ensure that renewable energy cooperation strengthens Indonesia's industrial competitiveness rather than increasing dependence on imported technologies. Diplomatic engagement therefore becomes an important tool for shaping the quality of investment outcomes.

Expanding Energy Transition Diplomacy with Gulf States

The growing involvement of Gulf countries creates another important diplomatic opportunity. The UAE, Saudi Arabia, Qatar, and other Gulf actors increasingly view Indonesia as a strategic destination for renewable energy and infrastructure investment.

Their participation reflects broader economic diversification strategies that seek to expand renewable energy portfolios and international infrastructure holdings.

For Indonesia, Gulf partnerships offer several advantages. First, sovereign wealth funds often possess long investment horizons well suited to transmission infrastructure and battery storage systems. Second, Gulf investors frequently operate through state-backed institutions capable of mobilizing large amounts of capital. Third, many Gulf countries increasingly seek strategic partnerships rather than purely transactional investments.

Recent cooperation involving Masdar, ACWA Power, Danantara, and various sovereign investment entities suggests that energy transition diplomacy with Gulf countries is gradually moving toward broader infrastructure and industrial partnerships. Projects involving solar power, storage systems, and strategic investment cooperation increasingly form part of bilateral economic discussions. For the first 17 GW phase, Indonesia should use these relationships to expand financing options for transmission infrastructure, battery deployment, and renewable energy manufacturing ecosystems.

Danantara as a Diplomatic Instrument

Danantara also introduces a new dimension to Indonesia's energy diplomacy. Traditionally, international energy cooperation was conducted primarily through ministries, state-owned enterprises, and development finance institutions. Danantara creates an additional channel by providing a sovereign investment platform capable of engaging directly with international investors and sovereign wealth funds.

This is particularly relevant because many of Indonesia's key partners—including the UAE, Saudi Arabia, Qatar, and Japan—possess state-backed investment institutions with mandates similar to Danantara's. Recent cooperation agreements between Danantara and JBIC demonstrate how sovereign investment platforms can become instruments of economic diplomacy¹⁸⁷. The partnership focuses on renewable energy, electricity transmission, decarbonization projects, and sustainable infrastructure development.

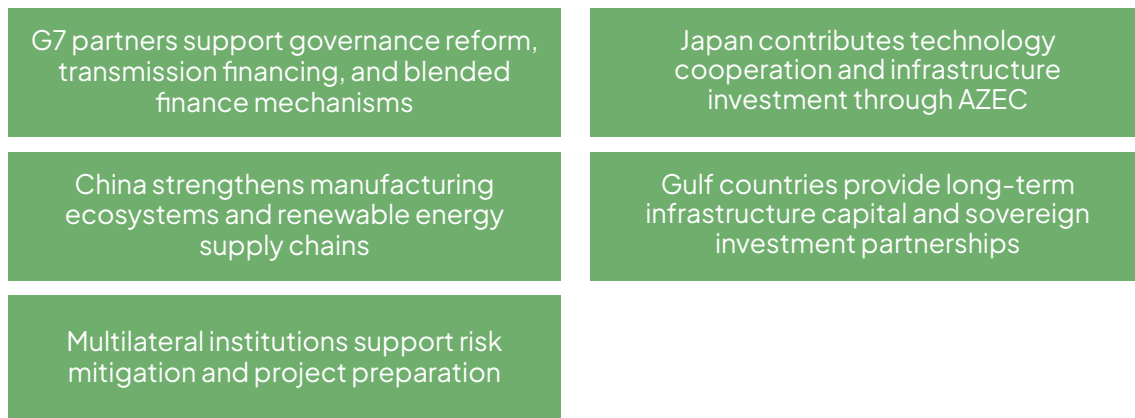
Such arrangements are strategically important because they create institutional relationships that extend beyond individual projects. Over time, Danantara could become one of Indonesia's primary vehicles for energy transition diplomacy by coordinating co-investment frameworks involving multiple international partners.

Avoiding Overdependence Through Multi-Alignment

One of Indonesia's greatest advantages is that it does not need to rely exclusively on any single external actor. Unlike countries whose energy transitions depend heavily on one financing source or geopolitical bloc, Indonesia possesses access to multiple investment ecosystems simultaneously. This creates opportunities to pursue what may be described as a multi-alignment strategy.

¹⁸⁷ Sulaiman, S., and Petty, M. (2025, July). Sovereign fund Danantara Indonesia, Japan's JBIC Agree to Jointly Finance Renewables, Power Projects. Reuters. <https://www.reuters.com/sustainability/climate-energy/sovereign-fund-danantara-indonesia-japans-jbic-agree-jointly-finance-renewables-2025-07-11/>

Under such an approach:



This diversification reduces strategic vulnerabilities while increasing Indonesia's bargaining power. Importantly, multi-alignment does not mean balancing partners against one another. Rather, it involves leveraging the comparative advantages of different actors to support national priorities.

Diplomacy as an Enabler of the Regulatory Unlock Agenda

Ultimately, diplomatic engagement cannot substitute for regulatory reform. Investors from the G7, China, the Gulf, and multilateral institutions all continue to prioritize project bankability, regulatory predictability, transmission readiness, and implementation certainty. No amount of diplomatic goodwill can fully compensate for weak investment frameworks.

However, diplomacy can significantly strengthen the effectiveness of regulatory reform. International partnerships can provide financing, technology transfer, institutional support, project preparation resources, workforce development programs, and industrial cooperation mechanisms that accelerate implementation. When combined with domestic regulatory improvements, these partnerships can help transform the first 17 GW phase from a policy ambition into an executable infrastructure program.

For this reason, bilateral mechanisms should not be treated as secondary components of Indonesia's renewable energy strategy. They are increasingly part of the implementation architecture itself. The first 17 GW phase will require not only regulatory coordination but also diplomatic coordination. Indonesia's ability to leverage international partnerships while maintaining strategic flexibility may ultimately become one of the most important factors determining whether the broader 100 GW ambition succeeds.

FINANCING ARCHITECTURE FOR THE FIRST 17 GW PHASE

The first 17 GW phase of Indonesia's 100 GW renewable energy ambition ultimately depends on one critical factor: the ability to mobilize financing at sufficient scale and speed. While discussions surrounding the energy transition often focus on investment volumes, the more important challenge is how capital is structured, coordinated, and deployed across different segments of the renewable energy ecosystem.

Indonesia does not face a situation where financing is entirely unavailable. International investors, development finance institutions, sovereign wealth funds, export credit agencies, climate funds, and private infrastructure investors have all demonstrated growing interest in the country's renewable energy sector. The challenge is that different parts of the transition require different forms of capital, different risk-sharing mechanisms, and different financing structures.

Generation assets, transmission infrastructure, BESS, manufacturing facilities, and project preparation activities each possess distinct risk profiles. Treating them as if they can all be financed through the same model risks creating bottlenecks that slow deployment and increase overall system costs.

For the first 17 GW phase, Indonesia therefore requires a financing architecture rather than a financing target. The objective should be to build an integrated framework capable of matching appropriate sources of capital with specific investment needs while reducing risks that continue to discourage large-scale deployment.

Matching Capital to Infrastructure Needs

One of the most important lessons from international energy transition experience is that not all infrastructure should be financed in the same way. Utility-scale solar projects with long-term PPAs often possess relatively predictable revenue streams and can attract commercial project finance once regulatory and contractual risks are sufficiently reduced. Transmission infrastructure, however, frequently requires longer investment horizons and stronger public participation because revenue generation is less direct. Battery storage systems occupy an intermediate position where technological viability is increasingly established but market structures remain underdeveloped.

As a result, financing frameworks should distinguish between infrastructure categories. Commercial and private-sector capital can play a larger role in mature renewable generation projects where bankability conditions are relatively clear. Transmission expansion, grid modernization, and early-stage storage deployment may require greater use of concessional finance, sovereign participation, blended finance structures, and risk-sharing mechanisms.

Several recent energy transition financing studies have emphasized that public and concessional capital should be used strategically to unlock larger volumes of private investment rather than attempting to finance the transition independently¹⁸⁸. Assessments of Indonesia's energy financing needs similarly conclude that transmission infrastructure and energy storage systems often require stronger public support because project readiness and commercial returns remain more challenging than conventional renewable generation assets. The financing architecture for the first 17 GW phase should therefore be designed around capital layering rather than relying on a single funding source.

Expanding the Role of Blended Finance

Blended finance will likely become one of the most important instruments supporting Indonesia's renewable energy expansion. The concept involves combining public, concessional, philanthropic, multilateral, and private capital within a single financing structure. By absorbing portions of project risk, public and concessional actors can improve the attractiveness of projects for commercial investors.

This approach is particularly relevant for renewable energy infrastructure because many projects are commercially viable in the long term but face elevated risks during development and early deployment stages. Regulatory uncertainty, permitting delays, transmission readiness concerns, and land acquisition risks often increase financing costs even when projects possess strong underlying fundamentals.

Indonesia already possesses experience with blended finance mechanisms through climate-related investment programs and energy transition initiatives. International financing frameworks such as the JETP explicitly incorporate blended finance approaches designed to mobilize private capital alongside public funding. The JETP Comprehensive Investment and Policy Plan estimates that the energy transition pathway requires nearly USD100 billion in power sector investment by 2030 and emphasizes blended financing mechanisms as a central implementation tool.

For the first 17 GW phase, blended finance can play a particularly important role in transmission infrastructure, battery storage deployment, and early-stage project development.

¹⁸⁸ Daley, F., and Lawrie, C. (2026). Country Platforms and Constrained States: the Indonesian JET-P and the Twilight of De-risking. *New Political Economy*. <https://doi.org/10.1080/13563467.2026.2666810>

Creating a Transmission Financing Facility

Transmission infrastructure remains one of the least developed areas of Indonesia's renewable energy financing ecosystem despite being one of the most important. Historically, transmission expansion has relied heavily on PLN financing and public sector support. However, the scale of grid investment required for large-scale renewable integration increasingly exceeds what traditional financing channels can comfortably support.

One solution would be the creation of a dedicated Transmission Financing Facility involving PLN, Danantara, development finance institutions, multilateral lenders, and strategic international investors. Such a facility could pool financing from multiple sources while prioritizing projects that support renewable energy integration. Rather than evaluating transmission investments as isolated infrastructure assets, the facility would treat them as enabling investments that unlock broader renewable energy deployment.

This distinction is important because transmission infrastructure often generates indirect system-wide benefits that are not fully reflected in conventional project-level financial assessments. International investors have repeatedly highlighted transmission as one of the most underfunded components of the energy transition. Recent assessments of global energy transition finance note that grid infrastructure and energy storage increasingly require dedicated financing strategies because they are essential for integrating renewable energy at scale¹⁸⁹.

Scaling Green and Islamic Finance Instruments

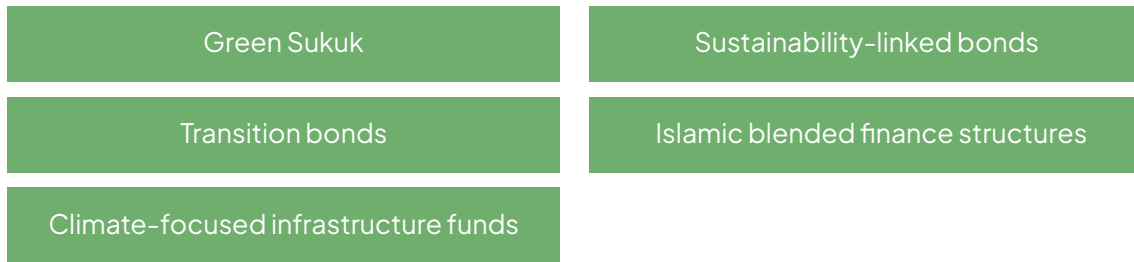
Indonesia possesses a unique advantage within the renewable energy financing landscape through its experience with sustainable and Islamic finance instruments. The country was among the first globally to issue sovereign Green Sukuk and has already demonstrated the ability to mobilize climate-related financing through Islamic financial mechanisms. Policymakers, financial institutions, and international organizations increasingly recognize that Islamic finance could become an important component of renewable energy funding in Muslim-majority economies.

Several international energy transition discussions involving Indonesia have highlighted the significant potential of Green Sukuk, blended Islamic finance structures, and sustainability-linked instruments to support renewable energy deployment¹⁹⁰. Indonesia's early Green Sukuk issuances raised billions of dollars while demonstrating strong investor demand for climate-related Islamic finance products.

¹⁸⁹ Enasel, E., and Dumitrascu, G. (2025). Storage solutions for renewable energy: A review. *Energy Nexus*. Vol. 17. <https://doi.org/10.1016/j.nexus.2025.100391>

¹⁹⁰ Latif, A., Husodo, Z. A., and Hendranastiti, N. D. (2026). Green Sukuk and Climate Finance: Evidence from Indonesia. *S&P Global Market Intelligence*. <http://dx.doi.org/10.2139/ssrn.6169811>

For the first 17 GW phase, Indonesia could expand the use of:

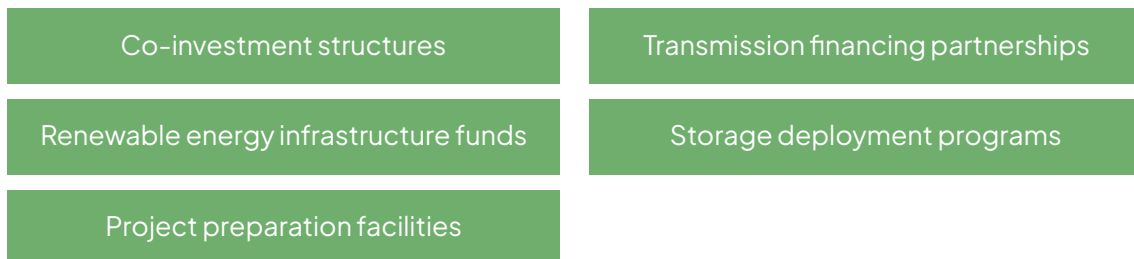


Such instruments would help diversify funding sources while reducing dependence on conventional infrastructure financing channels.

Using Danantara as a Capital Mobilization Platform

As discussed in the previous chapter, Danantara has the potential to become one of the most important financing institutions supporting the first 17 GW deployment phase. Its significance lies not only in the scale of assets under management but also in its ability to mobilize additional capital. Sovereign investment platforms frequently generate multiplier effects because their participation signals confidence and reduces perceived investment risk. Rather than functioning solely as a direct investor, Danantara should increasingly position itself as a capital mobilization platform.

This means prioritizing:



Recent cooperation agreements between Danantara, PLN, and international institutions such as JBIC indicate that this model is already beginning to emerge¹⁹¹. These partnerships focus on renewable energy, transmission infrastructure, and strategic transition projects designed to attract additional financing participation. For the first 17 GW phase, Danantara's most important contribution may not be how much it invests directly, but how much capital it helps attract.

Strengthening Project Preparation Financing

One of the most overlooked barriers to renewable energy financing is project readiness. Many projects fail to secure investment not because capital is unavailable but because preparation work remains incomplete. Environmental assessments, land acquisition planning, feasibility studies, transmission integration analysis, and permitting processes frequently require substantial resources before projects can reach financial close.

¹⁹¹ Sulaiman, S., and Petty, P. (2025, July). Sovereign fund Danantara Indonesia, Japan's JBIC Agree to Jointly Finance Renewables, Power Projects.

International investors consistently identify shortages of bankable project pipelines as one of the largest obstacles to renewable energy deployment in emerging markets. Indonesia should therefore establish stronger project preparation financing mechanisms involving Danantara, multilateral institutions, development finance institutions, and climate funds.

Supporting early-stage project development can generate disproportionately large benefits because it expands the pool of investable opportunities available to domestic and international financiers. In practice, improving project readiness may unlock more investment than introducing additional financing commitments alone.

Aligning International Capital With National Priorities

A major strength of Indonesia's current position is the diversity of financing partners available. The G7 contributes concessional financing, development finance, and risk mitigation mechanisms. Japan provides infrastructure financing, transmission support, and industrial cooperation through AZEC. China contributes manufacturing investment, renewable energy supply chains, and industrial ecosystems. Gulf sovereign wealth funds offer long-term infrastructure capital and strategic co-investment opportunities. Multilateral institutions provide guarantees, project preparation support, and blended finance structures.

The challenge is not attracting these actors individually but coordinating them within a coherent financing architecture. Different forms of capital should be directed toward different parts of the renewable energy ecosystem according to comparative advantages and risk profiles. Such coordination would improve financing efficiency while reducing duplication across investment programs.

Financing as a Coordination Challenge

Ultimately, Indonesia's renewable energy financing challenge is less about capital scarcity than institutional coordination. Global capital for clean energy continues to expand. International investors increasingly seek renewable infrastructure opportunities. Sovereign wealth funds, development finance institutions, and climate-focused investors all possess growing interest in energy transition projects. The question is whether Indonesia can build the structures necessary to absorb this capital effectively.

Recent global assessments of energy transition finance increasingly emphasize that financing flows depend not only on capital availability but also on project pipelines, regulatory certainty, institutional coordination, and risk-sharing frameworks¹⁹².

For the first 17 GW phase, financing architecture should therefore be viewed as part of the regulatory unlock agenda itself. Well-designed financing structures can reduce investment risk, accelerate project implementation, improve infrastructure coordination, and attract larger volumes of private capital. Poorly coordinated financing frameworks, by contrast, can create fragmentation even when substantial funding commitments exist.

¹⁹² OECD. (2025, September). Addressing Legal and Regulatory Barriers to Quality Infrastructure Investment in India, Indonesia and the Philippines. OECD. https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/09/addressing-legal-and-regulatory-barriers-to-quality-infrastructure-investment-in-india-indonesia-and-the-philippines_5da3c29b/fb81e1be-en.pdf

The success of the first 17 GW deployment phase will therefore depend not only on how much money Indonesia can mobilize, but also on how effectively it can align public capital, private investment, sovereign financing, and international partnerships into a coherent implementation framework. Financing, in this sense, is not simply a resource. It is an organizing mechanism that determines whether ambition can be translated into infrastructure at scale.



CONCLUSION AND POLICY RECOMMENDATIONS

Indonesia's 100% renewable energy ambition represents one of the most consequential economic and infrastructure initiatives in the country's modern history. While the target is often discussed primarily in terms of installed capacity, its significance extends far beyond electricity generation. The program sits at the intersection of energy security, industrial transformation, investment attraction, geopolitical positioning, and long-term economic competitiveness.

The first 17 GW deployment phase is particularly important because it represents the bridge between political ambition and implementation reality. Success during this phase would demonstrate that Indonesia possesses the institutional capacity, regulatory readiness, and investment environment necessary to execute large-scale energy transition projects. Failure, by contrast, would raise questions regarding the credibility of the broader 100 GW vision and could weaken investor confidence in future deployment phases.

This paper has argued that Indonesia's primary challenge is not the absence of renewable energy resources, technological options, or financing interest. International investors, sovereign wealth funds, development finance institutions, multilateral lenders, and strategic industrial partners have all demonstrated growing interest in Indonesia's renewable energy sector. The country's solar potential exceeds 3,000 GW, while recent government initiatives involving Danantara, JETP, AZEC, battery industrialization, and international investment partnerships indicate strong political commitment toward accelerating deployment.

The more fundamental challenge lies in the persistence of regulatory fragmentation, transmission bottlenecks, project preparation weaknesses, storage market uncertainty, and institutional coordination gaps that continue to slow investment and infrastructure development. These constraints increase project risk, raise financing costs, and reduce the speed at which renewable energy projects can move from planning to implementation.

For this reason, the first 17 GW phase should be understood not primarily as a generation target but as a system transformation challenge. Achieving it requires coordinated progress across renewable power generation, transmission infrastructure, battery energy storage systems, manufacturing ecosystems, financing mechanisms, and diplomatic partnerships.

The central conclusion of this paper is that Indonesia's energy transition will ultimately be determined less by the scale of announced targets than by the effectiveness of its regulatory and institutional architecture. The first 17 GW phase is therefore a credibility test for the broader 100 GW ambition.

Immediate Policy Priorities (1–3 Years)

1

Establish a Presidential-Level 17 GW Delivery Task Force

Given the scale and urgency of the first deployment phase, the government should establish a dedicated delivery mechanism reporting directly to the President or Coordinating Ministry for Economic Affairs. The task force should coordinate project implementation across MEMR, PLN, Danantara, local governments, investment agencies, and financing institutions.

Recent policy studies involving the 100 GW solar initiative similarly recommend the creation of a dedicated implementation body capable of accelerating project execution and reducing institutional fragmentation¹⁹³.

2

Introduce a Fast-Track Regulatory Framework for Strategic Renewable Projects

Projects included within the first 17 GW deployment phase should receive accelerated permitting, land-use approvals, environmental review coordination, and transmission planning support. The objective is not to weaken safeguards but to improve predictability and reduce administrative delays that continue to increase project development costs.

3

Standardize Renewable Energy Procurement and PPA Structures

The government should strengthen implementation of MEMR Regulation No. 5/2025 by introducing more standardized procurement frameworks and contract structures. Greater standardization would improve project bankability, reduce negotiation timelines, and strengthen investor confidence in long-term revenue certainty.

4

Establish a National Project Preparation Facility

One of the largest barriers to investment remains the shortage of bankable projects. Indonesia should create a dedicated project preparation facility involving Danantara, PT SMI, multilateral institutions, and development finance partners. The facility should support feasibility studies, environmental assessments, transmission integration analysis, and early-stage development activities.

¹⁹³ Hasjanah, K. (2026, May). IESR: Implementation of 100 GW of Solar Power Must Begin with Measurable and Sustainable Quick Wins. IESR. <https://iesr.or.id/en/iesr-implementation-of-100-gw-of-solar-power-must-begin-with-measurable-and-sustainable-quick-wins/>

5

Accelerate Transmission Planning and Financing

Transmission readiness should be treated as a strategic national priority equal to renewable generation itself. The government should establish a dedicated transmission acceleration framework focused on:

| | |
|-------------------------------|-----------------------------------|
| Grid expansion planning | Interconnection projects |
| Right-of-way facilitation | Transmission financing mechanisms |
| Blended finance participation | |

Without accelerated transmission development, renewable deployment risks significantly outpacing grid readiness.

6

Launch a Dedicated Battery Energy Storage Roadmap

BESS should be governed through a standalone regulatory framework rather than being treated solely as supporting components of renewable generation projects. The roadmap should clarify:

| | |
|-----------------------------|--------------------|
| Ownership structures | Revenue mechanisms |
| Grid service compensation | Dispatch rules |
| Storage procurement targets | |

Clearer storage regulation would improve investor confidence while supporting Indonesia's broader battery industrialization strategy.

Medium-Term Policy Priorities (3–10 Years)

7

Reform TKDN Toward Industrial Competitiveness

Indonesia should gradually transition from rigid localization requirements toward performance-based industrial development frameworks. Future incentives should prioritize:

| | |
|------------------------|-------------------------|
| Technology transfer | Domestic value creation |
| Workforce development | Research collaboration |
| Export competitiveness | |

This approach would strengthen industrial upgrading while reducing deployment constraints associated with insufficient manufacturing readiness.

8

Develop Renewable Energy Manufacturing Clusters

The scale of the 100 GW ambition creates opportunities for dedicated renewable energy industrial zones involving:

| | |
|--------------------------------|--------------------|
| Solar manufacturing | Battery production |
| Grid equipment manufacturing | Power electronics |
| Renewable engineering services | |

Industrial policy should focus on integrating deployment demand with manufacturing expansion rather than treating them as separate policy agendas.

9

Expand Private Participation in Strategic Infrastructure

Indonesia should explore carefully regulated mechanisms allowing greater private participation in transmission and energy storage infrastructure. Such reforms do not require full liberalization. However, selective public-private partnership frameworks could significantly improve financing capacity while maintaining state oversight.

10

Create a Renewable Energy Investment Platform Under Danantara

Danantara should establish a dedicated renewable energy investment platform capable of aggregating projects across:

| | |
|--------------------------------|-----------------------------|
| Solar generation | Transmission infrastructure |
| Battery storage | Manufacturing facilities |
| Project preparation activities | |

A portfolio-based approach would improve risk diversification while strengthening the attractiveness of Indonesia's renewable energy sector for large international investors.

International Partnership Priorities

11

Institutionalize a Multi-Alignment Energy Transition Strategy

Indonesia's greatest strategic advantage is that it can access multiple investment ecosystems simultaneously. The government should continue pursuing a diversified partnership model where:

G7 partners support transmission financing, governance reform, and blended finance

Japan contributes infrastructure investment and industrial cooperation through AZEC

China strengthens manufacturing ecosystems and supply chains

Gulf sovereign wealth funds provide long-term infrastructure capital

Multilateral institutions support risk mitigation and project preparation

Such diversification reduces strategic dependence while increasing financing flexibility.

12

Use Energy Transition as an Instrument of Economic Diplomacy

Indonesia should increasingly treat renewable energy deployment as part of its broader foreign economic strategy. The 100 GW ambition provides leverage for negotiating:

Technology partnerships

Industrial cooperation

Manufacturing investment

Workforce development programs

Infrastructure financing arrangements

The objective should be ensuring that energy transition partnerships contribute to long-term economic transformation rather than functioning solely as project financing relationships.

The Defining Test of Indonesia's Energy Transition

The broader significance of the first 17 GW phase lies in what it represents. Indonesia is attempting to achieve multiple objectives simultaneously: expanding renewable energy, strengthening energy security, building domestic manufacturing capacity, attracting international investment, reducing fossil fuel dependence, and improving long-term economic competitiveness. Few countries have attempted to pursue such an ambitious combination of goals within a single energy transition framework.

The scale of the challenge is substantial. Yet the opportunity may be even greater. The global energy transition is reshaping investment flows, industrial supply chains, infrastructure priorities, and geopolitical relationships. Countries that successfully position themselves within emerging clean energy ecosystems will likely gain long-term advantages in manufacturing, technology, industrial competitiveness, and strategic influence.

Indonesia possesses several advantages that few countries can match. It has abundant renewable energy resources, a large domestic market, critical mineral reserves, growing industrial capacity, expanding international partnerships, and increasing geopolitical relevance. Recent government commitments targeting 100 GW of solar deployment and an initial 17 GW implementation phase indicate growing recognition that renewable energy can function as a strategic driver of national development rather than merely an environmental objective. The decisive question is whether Indonesia can build the regulatory, financial, and institutional foundations necessary to translate this potential into executable infrastructure.

Ultimately, the first 17 GW phase is not only a renewable energy program. It is a test of Indonesia's ability to align regulation, investment, industry, diplomacy, and state capacity around a common national objective. If successful, it could establish the foundation for one of the most significant energy and industrial transformations in the Global South. If delayed by regulatory fragmentation and implementation bottlenecks, the broader 100 GW ambition may remain a political vision rather than an economic reality.

For this reason, regulatory unlock should be viewed not as a technical reform agenda but as a strategic national priority. The future of Indonesia's energy transition will depend on whether the country can transform ambition into execution—and the first 17 GW phase is where that transformation begins.

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