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Financial Feasibility of Solar Photovoltaic Investments: A Comparative Analysis of Tariff Policies and Local Content Rules

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Abstract. *This study examines the financial challenges of building large-scale solar power plants in Indonesia. While the country is urgently pushing to transition toward clean energy, strict government limits on the price of electricity make it difficult for private investors to achieve a profitable return. The primary objective of this research is to evaluate whether investing in solar energy is financially viable across different Indonesian regions under current pricing policies. To answer this, we used financial forecasting models (Discounted Cash Flow) to analyze four distinct regions: Java, Sumatra, Maluku, and Papua. We tested how specific obstacles, such as the legal requirement to use expensive locally manufactured materials and the high costs of buying private land can affect project profitability. Our findings reveal a major viability gap: under current price limits, solar projects are not financially sustainable if developers must bear both local material mandates and private land costs. The investments only become profitable when the government assists by providing land or relaxing manufacturing rules. Ultimately, to successfully attract the private investment needed for the energy transition, policymakers must offer fairer, region-specific electricity prices, align local manufacturing rules with market realities, and actively help secure land to reduce investment risks.*

Keywords: Capital Budgeting, Discounted Cash Flow, Energy Transition, Project Finance, Renewable Energy, Tariff Policy.

INTRODUCTION

Global climate change has evolved from a localized ecological concern into a highly influential determinant shaping global macroeconomic landscapes and long-term capital allocation decisions within the energy sector (Charoenwong, Kimura, Kwan, & Tan, 2024). Through the Paris Agreement, the international community established binding commitments to restrict the escalation of the global average temperature. The overwhelming scientific consensus necessitates a radical energy transition, given that the conventional fossil-fuel-reliant energy sector contributes the most dominant proportion of global greenhouse gas emissions (Sani, Khatiwada, Harahap, & Silveira, 2021). Consequently, global commitments are operationalized through Nationally Determined Contributions (NDCs), which actively reshape risk expectations, alter fundamental cost structures, and dictate acceptable investment yield profiles for long-lived capital infrastructure (Paradongan et al., 2024).

As a prominent economic power and G20 member, the Government of Indonesia ratified the Paris Agreement, formally integrating carbon emission reduction commitments into its national jurisprudence.

Indonesia further elevated its unconditional emission reduction target to 31.89%, crystallized into a comprehensive vision to achieve Net Zero Emissions (NZE) by 2060 (Sani et al., 2021). This decarbonization mandate requires a systemic restructuring of the national power generation mix, meticulously delineated in the Electricity Supply Business Plan (RUPTL) 2025–2034 (PT PLN (Persero), 2024). This iteration outlines an unprecedented capacity addition for New and Renewable Energy totaling an ambitious 42.6 Gigawatts (GW), strongly prioritizing utility-scale Solar Photovoltaic (PLTS) due to its scalable deployment and abundant solar insolation across the archipelago (International Renewable Energy Agency, 2024).

However, the restricted fiscal space of the State Budget and the constrained balance sheet of the state utility (PT PLN) compel the government to amplify private capital involvement through Independent Power Producers (IPPs) (Hatomi, 2024). Through this contracting mechanism, massive investment risks and capital expenditure (CAPEX) obligations are substantially transferred to the private sector (Gatti, 2024). The allocation of renewable capacity is managed through a distributed quota mechanism, fostering a highly competitive arena where private entities must propose power sales pricing that adheres strictly to the regulatory ceiling tariffs established by the Ministry of Energy (PT PLN (Persero), 2024).

To stimulate investor interest and provide legal certainty, the government enacted Presidential Regulation (PR) Number 112 of 2022, establishing a Highest Benchmark Price (HPT) ceiling tariff mechanism (Peraturan Presiden Republik Indonesia Nomor 112 Tahun 2022, 2022). This regulation incorporates a Location Factor (F) to compensate for logistical disparities, regional price inflations, and inadequate port infrastructure across the Indonesian archipelago. Despite this progressive intention, empirical evaluations reveal a widening chasm between legally permitted ceiling tariffs and actual economic viability thresholds demanded by private developers (Paradongan et al., 2024).

IPPs face severe structural constraints that radically alter the CAPEX posture. Firstly, the strict legal mandate to comply with the Domestic Component Level (TKDN) policy artificially inflates CAPEX because the domestic solar module manufacturing ecosystem lacks mature economies of scale (Peraturan Menteri Perindustrian Republik Indonesia Nomor 34 Tahun 2024, 2024). Secondly, PLTS is an inherently land-intensive technology. When IPPs are forced to acquire land independently on the open commercial market, they are exposed to localized real estate volatility and exorbitant acquisition costs (Siagian & Saputra, 2021; Kementerian Agraria dan Tata Ruang/Badan Pertanahan Nasional, 2024). Combined with extreme regional Construction Cost Indices (IKK) in remote areas like Eastern Indonesia, these frictions severely threaten project bankability (Badan Pusat Statistik, 2025).

This study focuses on analyzing the dynamic interactions among regulatory tariff ceilings, TKDN burdens, land acquisition complexities, and regional construction cost indices. By conducting an exhaustive investment decision analysis across four highly diverse regional topologies (Karimun Jawa, Nias, Maluku, and Papua), this research aims to critically evaluate the effectiveness of PR 112/2022 and RUPTL 2025–2034 in guaranteeing financial feasibility, and to formulate scientifically derived equilibrium tariffs that remain affordable for the national utility while remaining highly attractive for sustainable private investment.

LITERATURE REVIEW

Investment decisions represent the most crucial strategic choices within corporate financial management, involving massive, long-term commitments of scarce financial resources to highly illiquid assets (Brealey, Myers, & Allen, 2020). The fundamental essence of an investment decision is the deliberate creation of future economic value, with the primary objective of maximizing shareholder wealth (Ross, Westerfield, & Jaffe, 2022). Every proposed investment must be rigorously tested mathematically to ensure the generated rate of return significantly surpasses the required rate of return, adjusted meticulously for the specific risk profile (Damodaran, 2012).

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Within the power industry, investment decisions possess a significantly higher degree of complexity. Power generation projects are uniquely capital-intensive, feature extensively prolonged planning horizons, and carry a high degree of capital irreversibility (Sureka, Kumar, Colombage, & Abedin, 2022). The critical urgency of rigorous capital budgeting is profoundly altered when applied specifically to PLTS. Unlike fossil fuel plants burdened by future fuel price volatility, PLTS projects are characterized by an asymmetrical, front-loaded cost posture (International Energy Agency & Nuclear Energy Agency, 2020). Almost the entirety of the plant's total lifecycle cost is accumulated as initial CAPEX during the pre-construction phase. This extreme financial sensitivity implies that externally enforced cost premiums will immediately escalate the total cost basis and non-linearly degrade capital efficiency over the 25-year investment horizon (Pillai et al., 2026).

Utility-scale PLTS development by IPPs is generally intricately structured within a specialized project finance framework utilizing a Special Purpose Vehicle (SPV) (Gatti, 2024; Hatomi, 2024). The core operating principle is limited-recourse debt financing, where lenders evaluate creditworthiness based purely on the standalone cash flow generation capacity of the SPV (Transmisiyanti, 2012). Consequently, financial feasibility testing requires a strict bifurcation: Project Internal Rate of Return (Project IRR) and Equity Internal Rate of Return (Equity IRR) (Sinaga, Nonce, & Fointuna, 2019). Project IRR measures the intrinsic capacity of the physical asset independent of debt leverage, whereas Equity IRR measures the financial return exclusively received by equity sponsors after fulfilling senior debt servicing obligations (Gatti, 2024).

The Net Present Value (NPV) mathematically measures absolute economic value creation. If the Project IRR falls below the sectoral Weighted Average Cost of Capital (WACC) due to rigid regulatory price ceilings or inflated CAPEX, the project unequivocally fails the fundamental test of commercial viability and becomes structurally unbankable (Ross et al., 2022; Damodaran, 2012).

Recent empirical literature provides a robust foundation for this analysis. Paradongan et al. (2024) definitively proved that current PV tariffs in Indonesia are fundamentally unattractive to IPPs without explicit carbon incentives. Furthermore, integrating Battery Energy Storage Systems (BESS) introduces high upfront costs that require careful capacity evaluation (Tejero-Gómez & Bayod-Rújula, 2024). Spatial constraints and land acquisition costs also heavily dictate IPP strategic planning and feasibility (Siagian & Saputra, 2021). This current study builds substantially upon these foundational findings by uniquely integrating the RUPTL 2025–2034 framework, the 2025 regional construction cost indices (IKK), and the dual-friction of TKDN mandates and private land acquisition into a unified, dynamic DCF investment model.

METHODS

This study employs a structured quantitative approach utilizing an evaluative and comparative design, specifically tailored to assess the financial feasibility of PLTS investments across diverse Indonesian regions. The methodological core is a comprehensive, dynamic financial simulation model built upon the architecture of project finance. This model utilizes advanced Discounted Cash Flow (DCF) techniques to trace the direct transmission of macroeconomic policies and rigid operational constraints into the IPP's projected cash flows (Sureka et al., 2022).

The primary object of this research comprises utility-scale PLTS projects with installed capacities strictly ranging from >3 MW up to 10 MW, aligning with the typical requirements for isolated regional grids (Peraturan Presiden Republik Indonesia Nomor 112 Tahun 2022, 2022). Four strategic regional topologies were selected to represent the full gradation of the Location Factor (F) multipliers and the realities of the Construction Cost Index (IKK) (Badan Pusat Statistik, 2025):

1. Karimun Jawa (Central Java): Represents an isolated island grid under the Java region. It faces the lowest baseline tariff multiplier (F=1.10) while bearing substantial maritime logistics costs.

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2. Nias Island (North Sumatra): Represents a medium-scale isolated island system in Sumatra (F=1.10), featuring constrained transmission capacities and unique local land economics.
3. Maluku Region: Represents an Eastern Indonesian transition zone with a high IKK (F=1.25) and chronic dependence on scattered, inefficient diesel mini-grids (Amba, 2022).
4. Papua Region: Represents the extreme of infrastructure development challenges, possessing the highest national IKK and the maximum regulatory Location Factor (F=1.50) (Badan Pusat Statistik, 2025).

To test financial sensitivities comprehensively, four distinct operational scenarios were established to isolate key variables:

1. Scenario A: Mandatory TKDN compliance combined with Independent Private Land Acquisition.
2. Scenario B: Non-TKDN (International module pricing) combined with Independent Private Land Acquisition.
3. Scenario C: Mandatory TKDN compliance combined with free Government-Provided Land.
4. Scenario D: Non-TKDN international pricing combined with free Government-Provided Land.

Strict ceteris paribus assumptions were applied to ensure comparative validity: a constant macroeconomic inflation projection, a Debt-to-Equity leverage Ratio of 70:30, a standardized Cost of Debt of 8.31% (Otoritas Jasa Keuangan, 2024), a WACC of 8.41%, and a Cost of Equity of 12.91% derived via the Capital Asset Pricing Model (CAPM) (Damodaran, 2012). Revenue projections are rigidly constrained by the fixed ceiling tariffs (HPT) mandated in PR 112/2022. The output variables critically assessed are Project NPV, Equity NPV, Project IRR, and Equity IRR (Ross et al., 2022).

RESULTS AND DISCUSSION

Baseline Expenditures and Model Assumptions

The investment decision analysis was calibrated using comprehensive baseline CAPEX assumptions reflecting both optimized global benchmarks and inefficient localized Indonesian market dynamics. The foundational EPC cost for a standard PLTS system in an accessible environment is estimated at USD 800–1,200/kW (International Renewable Energy Agency, 2024). Notably, integrating BESS for isolated grids can escalate CAPEX by 30% to 50%, yet PR 112/2022 does not differentiate tariffs for standalone PLTS versus BESS-integrated systems, inherently depressing baseline viability (Paradongan et al., 2024).

Table 1 presents the indicative capital expenditure (CAPEX) breakdown used as the baseline cost assumption for the financial feasibility model. The cost structure reflects the major components required for utility-scale solar PV development and serves as the foundation for the subsequent investment analysis.

TABLE 1. Indicative CAPEX Breakdown per Unit.

EPC Component	**Cost (Rupiah per kW)**
Solar PV System	6,545,128
Communication, Monitoring, Control System	1,450,812
Balance Of Plant (BOP)	4,143,600
Engineering, Construction, and Supervision	3,214,926
Contingency Cost	327,256
Total	**15,681,723**

Land acquisition aggressively differentiates regional viability. In Java, high population density pushes baseline commercial land prices to Rp 850,000/m2, severely inflating CAPEX (Kementerian Agraria dan Tata Ruang/Badan Pertanahan Nasional, 2024). Nias benefits from broader land availability, yielding a competitive cost of Rp 340,000/m2. In Eastern regions like Maluku and Papua, while land appears

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abundant, complex customary tenurial rights and lack of access roads drive the fully-cleared land prices back up to Rp 850,000/m2 (Kementerian Agraria dan Tata Ruang/Badan Pertanahan Nasional, 2024). Operating expenditures (OPEX) are standardized at 10 USD/kWh/year, with a 0.4% annual module degradation rate (Jordan & Kurtz, 2013).

Table 2 summarizes the land acquisition cost assumptions applied across the four study regions. These assumptions reflect regional differences in land availability, accessibility, and market conditions that significantly influence overall project economics.

TABLE 2. Standardized Land Acquisition Costs by Region.

Region	**Indicative Land Price (Rp/m2)**
Karimun Jawa (Java)	850,000
Nias (Sumatra)	340,000
Ambon (Maluku)	850,000
Jayapura (Papua)	850,000

Financial Evaluation: Java Region (Karimun Jawa)

Under the heavily constrained structural realities of Scenario A (TKDN + Private Land), the financial architecture completely collapses. The Project NPV registers a severe deficit of (4,572.59), and the Project IRR plummets to 7.48%, falling precipitously below the 8.41% WACC. The static ceiling tariff established by PR 112/2022 fails to absorb the initial capital shock generated by inflated domestic module pricing and extreme commercial land premiums (Peraturan Presiden Republik Indonesia Nomor 112 Tahun 2022, 2022). Removing TKDN (Scenario B) marginally lifts the Project IRR to 8.70%, but the heavy burden of private land acquisition keeps Equity NPV negative. Robust commercial viability is exclusively unlocked in Scenarios C and D, where the government actively assumes the heavy capital burden of land provision. In Scenario D (optimal conditions), the Equity IRR surges to an attractive 21.20%.

Table 3 presents the financial simulation results for the Java case study under four development scenarios. The results demonstrate the sensitivity of project viability to TKDN compliance and land acquisition arrangements.

TABLE 3. Financial Simulation Results for PLTS Java.

Parameter	**Scenario A**	**Scenario B**	**Scenario C**	**Scenario D**
Target IRR (WACC)	8.41%	8.41%	8.41%	8.41%
Cost of Equity	12.91%	12.91%	12.91%	12.91%
Project NPV	(4,572.59)	1,316.51	5,267.51	11,156.61
Equity NPV	(4,986.24)	(402.17)	2,860.86	7,444.93
Project IRR	7.48%	8.70%	9.74%	11.52%
Equity IRR	9.13%	12.58%	15.76%	21.20%

(Note: Assumed Biaya Konstruksi index: 71,188; Base Energy index: 1,728; Harga Jual Yrs 1-10: 9.65 USD cents; Harga Jual Yrs 11-25: 5.26 USD cents)

Financial Evaluation: Sumatra Region (Nias)

Similar to Java, Scenario A remains fundamentally unviable, demonstrating deep negative NPVs. However, Scenario B in Sumatra demonstrates a crucial divergence. Because the localized commercial land cost in Nias is significantly lower (Rp 340,000/m2), merely removing the TKDN premium allows the project's cash flows to rapidly recover, generating a positive Equity NPV and a 13.41% Equity IRR, successfully surpassing the strict Cost of Equity hurdle (Damodaran, 2012). Interestingly, Scenario C (TKDN + Government Land) underperforms Scenario B for equity holders, highlighting that the severe price inflation generated by mandatory domestic module procurement is actually a heavier burden in this specific topology than acquiring private land.

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Table 4 summarizes the financial performance of the Sumatra case study under the four evaluated scenarios. The results highlight the interaction between local land costs and procurement policies in determining project feasibility.

TABLE 4. Financial Simulation Results for PLTS Sumatra.

Parameter	**Scenario A**	**Scenario B**	**Scenario C**	**Scenario D**
Target IRR	8.41%	8.41%	8.41%	8.41%
Cost of Equity	12.91%	12.91%	12.91%	12.91%
Project NPV	(6,024.39)	3,826.37	1,763.15	11,613.91
Equity NPV	(6,794.92)	872.90	(481.80)	7,186.02
Project IRR	7.61%	8.97%	8.68%	10.37%
Equity IRR	9.50%	13.41%	12.63%	17.74%

(Note: Assumed Biaya Konstruksi index: 109,131; Base Energy index: 1,728; Harga Jual Yrs 1-10: 9.09 USD cents; Harga Jual Yrs 11-25: 4.95 USD cents)

Highly similar to the Java outcome, Scenario A remains fundamentally unviable, demonstrating a deficient Project IRR of 7.61% and deep negative NPVs across both metrics. However, Scenario B in Sumatra demonstrates a crucial, highly instructive divergence from the Java model. Because the localized commercial land cost in Nias is significantly lower (Rp 340,000/m2 compared to Java's Rp 850,000/m2), merely removing the TKDN premium allows the project's cash flows to rapidly recover. The project generates a positive Equity NPV of 872.90 and an Equity IRR of 13.41%, successfully surpassing the strict Cost of Equity hurdle.

Ironically, when observing Scenario C (which enforces TKDN but utilizes free Government Land), it actually underperforms Scenario B for equity holders (yielding an Equity IRR of 12.63%). This fascinating inversion highlights a critical macroeconomic insight: the severe price inflation generated by mandatory, inefficient domestic module procurement is actually a heavier, more destructive burden on long-term cash flows in this specific geographic topology than the cost of acquiring private land. Naturally, Scenario D remains the absolute optimal configuration, maximizing returns across all metrics.

Financial Evaluation: Maluku Region

The empirical results in Maluku indicate a complete, systemic market failure under current baseline policies. Scenarios A, B, and C all uniformly fail to meet the absolute minimum WACC threshold (Brealey et al., 2020). In Scenario A, the Project IRR collapses to a catastrophic 4.99%. This deep financial stagnation demonstrates that the exceptionally high IKK in Maluku, driven by the intense costs of inter-island shipping and lack of local material chains, completely overwhelms the increased revenue generated by the regulatory F multiplier (Badan Pusat Statistik, 2025). Investment is exclusively viable under the zero-friction conditions of Scenario D.

Table 5 presents the financial simulation results for the Maluku region. The table illustrates the significant impact of high construction and logistics costs on investment returns despite the application of regional tariff multipliers

TABLE 5. Financial Simulation Results for PLTS Maluku.

Parameter	**Scenario A**	**Scenario B**	**Scenario C**	**Scenario D**
Target IRR	8.41%	8.41%	8.41%	8.41%
Cost of Equity	12.91%	12.91%	12.91%	12.91%
Project NPV	(52,215.28)	(33,820.66)	(7,193.05)	11,201.58
Equity NPV	(43,035.58)	(28,717.22)	(7,443.01)	6,875.35
Project IRR	4.99%	6.03%	7.79%	9.48%

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Parameter	Scenario A	Scenario B	Scenario C	Scenario D
Equity IRR	2.61%	5.25%	10.33%	15.60%

(Note: Assumed Biaya Konstruksi index: 236,677; Base Energy index: 1,728; Harga Jual Yrs 1-10: 9.93 USD cents; Harga Jual Yrs 11-25: 4.76 USD cents)

Financial Evaluation: Papua Region

Papua represents the most extreme geographical barrier, possessing the highest IKK nationally (Badan Pusat Statistik, 2025). The forced combination of private land acquisition and extreme underlying EPC costs renders Scenarios A and B highly unviable. However, a remarkable financial inversion occurs in Scenarios C and D. The moment the massive capital burden of land acquisition is removed (Scenario C), the massive regulatory revenue multiplier (up to F=1.50) takes unhindered effect (Peraturan Presiden Republik Indonesia Nomor 112 Tahun 2022, 2022). The Project IRR drives to a robust 11.62% and generates an exceptional Equity IRR of 18.87%, achieving this even with TKDN restrictions. This proves that the tariff multiplier designed by the government is mathematically sound, provided the IPP is entirely insulated from the legally fraught process of customary land acquisition.

Table 6 summarizes the financial performance of utility-scale solar PV investments in Papua. The results provide insights into how government support mechanisms, particularly land provision, can substantially improve project bankability.

TABLE 6. Financial Simulation Results for PLTS Papua.

Parameter	Scenario A	Scenario B	Scenario C	Scenario D
Target IRR	8.41%	8.41%	8.41%	8.41%
Cost of Equity	12.91%	12.91%	12.91%	12.91%
Project NPV	(39,355.22)	(19,033.60)	52,705.62	73,027.24
Equity NPV	(31,744.06)	(15,925.73)	27,651.36	43,469.69
Project IRR	5.95%	7.13%	11.62%	13.30%
Equity IRR	4.92%	8.47%	18.87%	23.57%

(Note: Assumed Biaya Konstruksi index: 256,233; Base Energy index: 1,728; Harga Jual Yrs 1-10: 11.91 USD cents; Harga Jual Yrs 11-25: 4.76 USD cents)

Tariff Evaluation and Viability Gap Analysis

The fixed regulatory revenue ceilings lack the elasticity to absorb localized, exogenous cost shocks, creating a massive "viability gap" (Charoenwong et al., 2024). To bridge this gap, a new equilibrium tariff must be established. This equilibrium tariff is the minimum per-kWh selling price necessary to force the project's NPV to exactly zero, aligning the Project IRR precisely with the 8.41% WACC and ensuring baseline bankability (Gatti, 2024).

Table 7 presents the equilibrium tariff estimates required to achieve minimum financial feasibility across the four regions. These tariffs represent the minimum electricity selling prices needed to satisfy the required return thresholds and close the identified viability gap.

TABLE 7. Recommended Equilibrium Tariffs (USD cents/kWh) to achieve Base Feasibility.

Region	Rec. Tariff (Yrs 1-10)	Rec. Tariff (Yrs 11-25)	WACC	Target Proj. IRR	COE	Target Eq. IRR
Java	10.54	5.75	8.41%	8.83%	12.91%	12.91%
Sumatra	9.82	5.35	8.41%	8.81%	12.91%	12.91%
Maluku	12.75	6.12	8.41%	8.71%	12.91%	12.91%
Papua	14.05	5.61	8.41%	8.55%	12.91%	12.91%

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For Java, the tariff must be elevated to 10.54 cents for the first 10 years. Sumatra requires a slightly lower 9.82 cents due to its optimal baseline land economics. Maluku demands a structural increase to 12.75 cents to combat its scattered-grid logistical premiums. Most notably, the recommended equilibrium tariff for Papua (14.05 cents) falls below the maximum theoretical ceiling allowed by the PR 112/2022 F-factor adjustment. This crucial insight indicates the regulatory framework for Eastern Indonesia is theoretically adequate, but practical implementation is paralyzed by land acquisition bottlenecks and forced TKDN inefficiencies (Peraturan Menteri Perindustrian Republik Indonesia Nomor 34 Tahun 2024, 2024).

CONCLUSIONS

This exhaustive investment decision analysis concludes that the utility-scale PLTS tariff structures mandated by Presidential Regulation Number 112 of 2022 are systematically insufficient to cultivate a sustainable, bankable environment for IPPs in Indonesia. The rigid regulatory ceiling prices fail to compensate for severe, front-loaded CAPEX, resulting in Project and Equity IRRs that consistently fall below required industry thresholds under standard commercial scenarios (Ross et al., 2022).

This widespread market failure is driven by two primary friction vectors: the strict enforcement of the TKDN policy and the privatization of land acquisition risk. The mandate to utilize immature domestic solar modules artificially inflates baseline EPC costs (Peraturan Menteri Perindustrian Republik Indonesia Nomor 34 Tahun 2024, 2024). Furthermore, forcing IPPs to independently navigate the volatile commercial land market introduces prohibitive capital burdens, particularly in high-density regions like Java or complex customary territories in Eastern Indonesia (Siagian & Saputra, 2021).

To ensure the successful realization of the 42.6 GW renewable capacity targets in the RUPTL 2025–2034, policymakers must execute a structural realignment (PT PLN (Persero), 2024). Regulatory interventions must shift from static price ceilings toward dynamic, cost-reflective equilibrium tariffs that respect regional nuances. National industrial TKDN policies must be carefully synchronized with the actual maturity of domestic manufacturing. Ultimately, direct government facilitation in procuring and providing ready-to-build land plots for IPPs stands as the single most effective de-risking mechanism to restore financial viability and accelerate the Indonesian energy transition (Charoenwong et al., 2024). Future research should further integrate variables such as exchange rate volatility, EPC cost escalations, and green financing instruments into the feasibility models.

RECOMMENDATIONS

Based on the findings of this study, policymakers should consider adopting a more region-specific and cost-reflective tariff framework under Presidential Regulation No. 112/2022 to better accommodate disparities in construction costs, logistics challenges, and investment risks across regions. The results indicate that the current tariff structure is insufficient to ensure project bankability under standard commercial conditions, particularly in regions with high construction cost indices and additional infrastructure requirements.

Furthermore, the implementation of TKDN requirements should be aligned with the competitiveness and maturity of the domestic solar manufacturing industry to avoid excessive capital cost burdens on project developers. Government support in land acquisition and the provision of ready-to-develop project sites should also be strengthened, as these measures were found to significantly improve project feasibility and investment attractiveness. Future research may incorporate additional variables such as exchange rate volatility, financing structures, carbon pricing mechanisms, and energy storage costs to provide a more comprehensive assessment of solar PV investment feasibility in Indonesia.

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