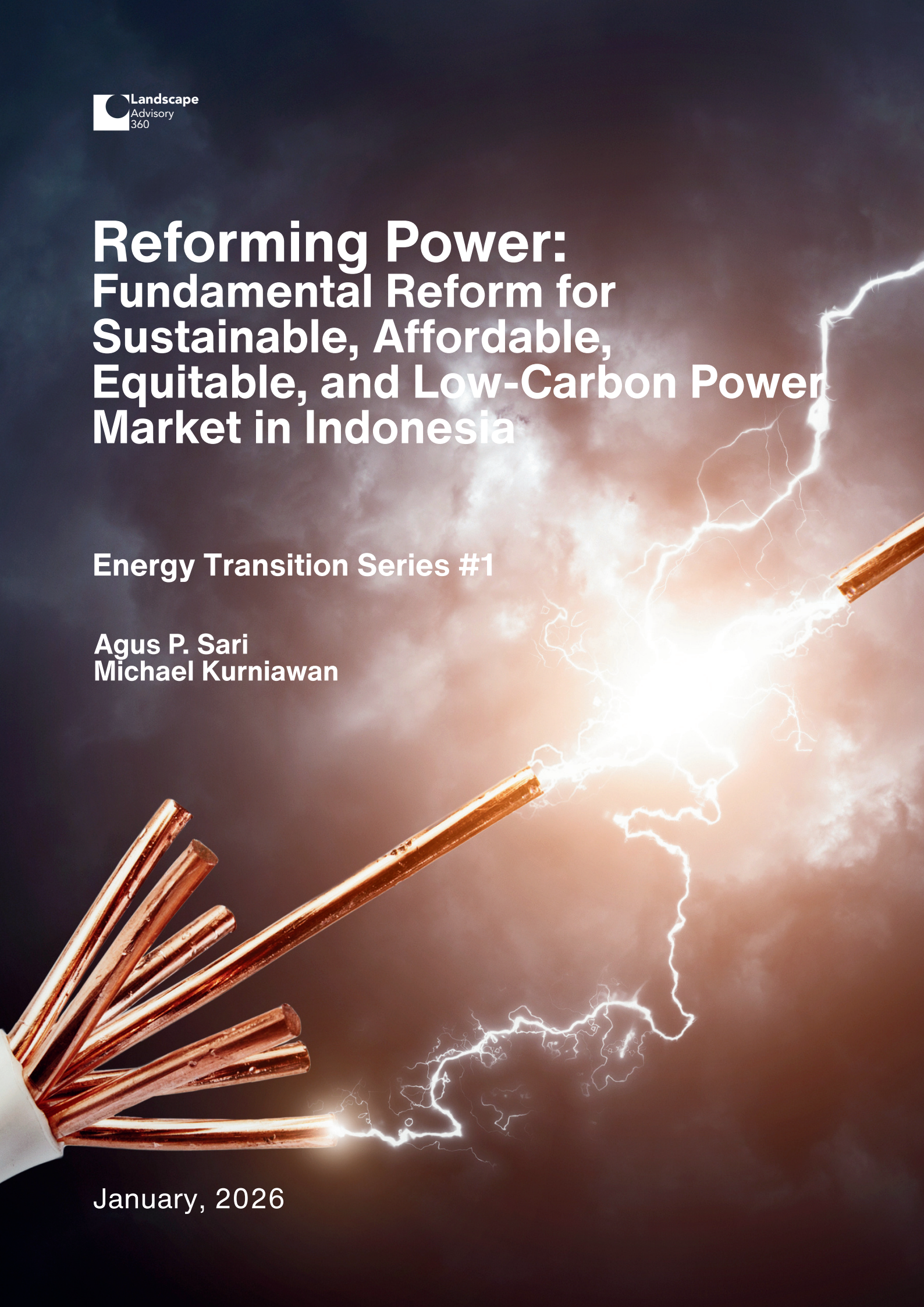
Landscape Advisory 360

Reforming Power:
Fundamental Reform for Sustainable, Affordable, Equitable, and Low-Carbon Power Market in Indonesia

Energy Transition Series #1

Agus P. Sari
Michael Kurniawan



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Michael Kurniawan

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Authors:
Agus P. Sari
Michael Kurniawan

PT Bentang Alam Indonesia
Citylofts Sudirman
Suite #2019, 20th floor
Jl. K.H. Mas Mansyur 121
Jakarta 10220
Indonesia

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Table of Content

1 Introduction: Why Reform Now 1
1.1 Problem Statement 1
1.2 In a Nutshell: What Must Change 2
1.2.1 The Critique of Liberalized Reform — and Why It Strengthens, Rather Than Weakens, the Case for Proper Unbundling 4
1.3 The Objectives 5

2 Stocktaking: The Carbon-Intensive Electricity Market in Indonesia 5
2.1 On-Grid System 5
2.2 Off-Grid Captive System 8
2.3 The Outlook to the Future 9
2.4 Key Existing Initiatives 11

3 Reform Options 13
3.1 Unbundling Generation: Take-or-Pay Must Go Away 13
3.1.1 Why "Take-or-Pay" Made Sense Before But No Longer 13
3.1.2 Alternatives to Take-or-Pay in a Reformed Market 14
3.2 Unbundling the Transmission: Opening the Wires to Capital Without Losing Control 16
3.2.1 The Case For and Against Privatizing Transmission 16
3.2.2 When Private Transmission Works 17
3.2.3 If Transmission is Privatized, What Should PLN Do? 17
3.2.4 Policy Design for Power Wheeling in Indonesia 18
3.3 Unbundling Distribution: Unbundling the Customer 21
3.4 Rooftop Solar "15%" Limits: Why the Utility Wants a Brake — and What That Signals for Reform 25
3.4.1 The Case For and Against Limiting 25
3.4.2 Why the debate intensified: the system's policy posture shifted from "rules" to "rationing" 26
3.4.3 Implications for Reform: What the "15 percent" Controversy is Really About 27
3.5 Tariff Opacity, "One National Price," and the Hidden-Subsidy Problem 27
3.6 Setting Tariff Commercially, Not Politically 30
3.7 Making Subsidies Transparent 31
3.8 Making the Dual Commercial-Social Functions More Explicit 33
3.8.1 What The Split Actually Changes 33
3.8.2 Why it Improves Transparency and Reform Credibility 34
3.8.3 How the "Electricity Financial Entity" Could Work in Practice 34
3.8.4 The Hard Risks — and the Design Guardrails 34
3.9 Public Utility Commission in a Reformed Electricity Market 35
3.9.1 What A PUC Actually Does 35
3.9.2 Why This Matters in Indonesia 36
3.9.3 The Indonesian "PUC debate" Has Happened Before 36
3.9.4 How A PUC Is Applied Today and Could Be Better Applicable in Indonesia 37
3.10 The Good Old Constitutional Argument 37
3.11 Other Legal Aspects of Reform 39
3.11.1 What the Current Legal Architecture Already Enables 39
3.11.2 The Legal Gaps That Still Block Reform 40
3.11.3 What Regulations May Still Need to be Developed 41

4 How Reform Supports Energy Security, Affordability, Equity, and Sustainability, Including Achieving Net Zero Emissions **42**
4.1 Energy Security: From Single-Operator Security to System-Wide Resilience 42
4.2 Affordability: Least-Cost Dispatch and Investment Discipline, Not Hidden Inefficiency 43
4.3 Equity: Priced as Equity — Explicitly Funded and Targeted, not Buried Inside Tariffs 43
4.4 Sustainability and net zero: aligning operations and investment with decarbonization 44
4.5 These Objectives Reinforce One Another Under Reform 44

5 Stakeholder and Engagement Strategy **45**
5.1 Stakeholder Engagement Strategy 49
5.2 Sequencing the Movement 50
5.3 The Critical Path 51
5.3.1 Critical Path and Gates 51

6 Risks and Their Mitigation **53**

7 Concluding Note **56**

References **58**

1 Introduction: Why Reform Now

1.1 Problem Statement

Indonesia's electricity sector sits at the intersection of three mandates that increasingly collide: (1) deliver reliable power as a foundation for national development; (2) keep electricity affordable and equitable for households and businesses across a vast archipelago; and (3) decarbonize fast enough to meet Indonesia's own climate trajectory — including a power-sector transition consistent with net zero emissions before 2060. Yet the sector's current institutional design still concentrates planning, procurement, system operations, and much of investment decision-making in a single vertically integrated, state-owned utility — Perusahaan Listrik Negara (PLN) — within a political economy where tariffs, contracts, and access have long been arenas of distributional conflict. When reform debates surface, they predictably encounter the same hard truth highlighted two decades ago: electricity reform is never "just technical." It is fundamentally about who pays, who benefits, and who controls rents — which is why tariff policy, procurement discipline, and governance credibility become the real battlegrounds, not the engineering.[1]

That political economy is no longer a background condition; it is now the decisive constraint on Indonesia's ability to execute a credible energy transition at least cost. The Just Energy Transition Partnership (JETP) Comprehensive and Investment Policy Plan (CIPP) formalizes a high-ambition near-term benchmark — including a 2030 emissions cap for the power sector and a step-change in renewable electricity generation by 2030, on a pathway toward a net zero power sector by mid-century.[2] But Indonesia's own planning documents also reveal the structural tension: under a "renewables base" planning scenario in the Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) 2025–2034, coal still accounts for roughly half of electricity generation in 2034, with renewables below one-third. Even a more ambitious RUPTL scenario improves the renewables share, but still leaves coal as the single largest source of generation well into the 2030s.[3] This is not merely a matter of "more projects" — it reflects deeper questions about how the sector plans, how it contracts, how it allocates risk, and how it disciplines investment decisions in a system where a dominant buyer and planner can unintentionally hardwire lock-in.

At the same time, the system is carrying warning signs of inefficiency that make the transition harder and costlier. The CIPP itself notes a very high reserve margin in the Java–Bali system — far above typical reliability requirements — which is a polite way of saying the system risks paying for capacity it does not need.[4] When oversized planning meets long-term contractual obligations, the result is predictable: fiscal and quasi-fiscal pressure, tariff politics, and an incentive to run existing thermal plants to recover costs, even when cleaner alternatives become available. This dynamic can also crowd out investments that actually matter for a modern power system — grid flexibility, storage, demand response, and smarter procurement — because the sector's attention and balance sheet are consumed by legacy obligations.

This is where PLN's role becomes strategically pivotal and must be reviewed with clear eyes. PLN is not simply an operator; it is also a quasi-policy institution, a dominant single buyer, and (in practice) a gatekeeper for market entry. That concentration can be

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[1] Seymour, F., and A.P. Sari, 2002. "Indonesia: Electricity Reform Under Economic Crisis," in Dubash, N.K. (ed.), *Power Politics: Equity and Environment in Electricity Reform*. World Resources Institute, Washington, DC.
[2] JETP (Just Energy Transition Partnership Indonesia), 2023. *Just Energy Transition Partnership: Comprehensive and Investment Policy Plan (CIPP).* Just Energy Transition Partnership Indonesia, Jakarta.
[3] PLN (PT PLN (Persero)), 2025. *Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) 2025–2034.* PT PLN (Persero), Jakarta.
[4] JETP, 2023, *op cit*.

defended as administratively convenient and, historically, as a vehicle for national electrification. But it also creates structural conflicts of interest: the same institution that owns assets and carries liabilities is asked to design procurement rules, decide what gets built, and determine how competition (if any) is allowed to emerge. Over time, this can weaken accountability, reduce transparency in contracting, and blur the line between public obligations and commercial incentives — the very conditions that earlier reform episodes showed could undermine public trust and generate backlash, especially around tariffs and perceptions of unfairness.[5]

The constitutional argument is often invoked to settle this debate quickly: because the 1945 Constitution (Undang-Undang Dasar Negara Republik Indonesia 1945) states that "branches of production important to the state and affecting the livelihood of many" are to be "controlled by the state," some argue that PLN must therefore remain a monopoly.[6] On its face, the claim has intuitive appeal — electricity clearly affects the livelihood of many, and an integrated state utility looks like the simplest institutional expression of "state control." But constitutionally and practically, the argument is not so clean. Indonesia's Constitutional Court (Mahkamah Konstitusi) has repeatedly treated "controlled by the state" as a standard about effective state control to secure public welfare, not as a mechanical requirement for a single, vertically integrated monopoly. In electricity specifically, the Court has been willing to strike down reforms that, in its view, risked shifting core control away from the state (including earlier liberalization designs associated with unbundling and market restructuring), while still recognizing that the state can organize service provision through a range of legal and institutional instruments so long as the state retains decisive control and the public interest remains paramount.[7] In other words, the Constitution can be read as an argument *for* strong state authority over electricity — but not automatically for PLN doing everything.

This constitutional nuance matters because the real policy question is not "state control or not," but what form of state control best delivers energy security, affordability, equity, and decarbonization at least cost. A monopoly can sometimes mobilize investment quickly, cross-subsidize access, and coordinate planning. But it can also entrench inefficiency, dampen innovation, conceal costs, and delay difficult tradeoffs — especially when tariff adjustments are politically constrained and procurement discipline is weak. Reform "now" is therefore not a doctrinal preference for markets; it is a pragmatic response to a narrowing window. Indonesia has already set forward-facing commitments, published investment plans, and acknowledged system-level constraints. The next decade will determine whether the power sector becomes the engine of a competitive, low-carbon economy — or a drag defined by locked-in coal dependence, rising transition costs, and recurrent political conflict over tariffs and fairness.

1.2 In a Nutshell: What Must Change

If the problem is a widening gap between Indonesia's transition commitments and the sector's revealed incentives, then the solution is not a new slogan — it is a new operating logic. Reform must shift the sector from institutional *convenience* (one utility doing everything because that is how it has always been) to constitutional effectiveness (the state exercising control through rules, oversight, and disciplined public finance). The 1945 Constitution's "controlled by the state" mandate is a guardrail, not a business model: it requires the state to remain firmly in charge of outcomes, not necessarily that one enterprise must be everywhere at once.[7]

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[5] Seymour and Sari, 2002, *op cit*.

[6] MPR (Majelis Permusyawaratan Rakyat Republik Indonesia), 2002. *Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 dalam Satu Naskah*. Majelis Permusyawaratan Rakyat, Jakarta.

[7] MK (Mahkamah Konstitusi, Republik Indonesia), 2004. Putusan Nomor 001-021-022/PUU-I/2003 (Pengujian

Move from “state control by ownership” to “state control by governance”. The single biggest reform is conceptual: treat control as the ability to set direction, enforce rules, and protect public welfare — not as a justification for institutional overlap. The Constitutional Court’s electricity jurisprudence has been wary of unbundling where it risks diluting state control, but it does not require that planning, procurement, dispatch, generation ownership, and retail functions be fused inside one entity.[8] A constitutionally robust design can preserve state control while still separating conflicting functions under strong public oversight — which is exactly how the state regains credibility with consumers and investors.

Redefine PLN’s role — from “do-everything utility” to “system steward,” with conflicts of interest reduced by design. PLN’s strategic role is unavoidable; the question is *what kind* of centrality Indonesia needs. A transition-ready model makes PLN unbeatable where a monopoly is economically justified — networks, reliability, universal service — and less dominant where competition improves outcomes — new generation procurement, flexibility services, potentially large-customer supply over time. The wry truth is that asking PLN to be planner, buyer, operator, and competitor at once is not “integration”; it is a permanent negotiation with itself. That internal negotiation shows up as slower procurement, riskier contracting, and weaker accountability — precisely the conditions earlier reform episodes warned against.[9]

Replace discretionary deals with predictable, competitive procurement pipelines — especially for renewables and flexibility. Indonesia does not have an “aspiration deficit”; it has a *bankability deficit*. The JETP Comprehensive Investment and Policy Plan (CIPP) places unusual emphasis on procurement reform, bankable Power Purchase Agreements (PPAs), and reducing risks that inflate financing costs.[10] A reform package should institutionalize competitive auctions (where appropriate), standardize contracts, and disclose procurement decisions and evaluation criteria — so the system buys what it needs at least cost, rather than what is easiest to finance in the moment.

Make dispatch and system operation rules reward least-cost reliability — not legacy rigidity. As variable renewable energy grows, system operation becomes the market: curtailment rules, grid access, balancing services, forecasting, and flexibility incentives determine whether renewables lower costs or merely add complexity. The International Energy Agency’s net-zero roadmap is explicit that Indonesia’s transition depends on accelerating renewables *and* building flexibility and grid integration capabilities.[11] This implies institutional changes: a ring-fenced system operator function with transparent dispatch rules, and a market/contract framework that values flexibility (storage, demand response, fast-ramping capacity) as a service — not as an afterthought.

Unbundle affordability from price suppression: redesign tariffs and subsidies to be targeted, transparent, and fiscally honest. Electricity affordability is a legitimate political constraint — but broad price suppression is a blunt instrument that tends to distort investment signals and strain the utility balance sheet. PLN’s own planning narrative reflects the system’s exposure to cost pressures and the sensitivity of tariffs. Reform needs to separate three things that are currently blurred: the efficient cost of service, the subsidy the state chooses to provide for equity, and the delivery mechanism to target

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Undang-Undang Nomor 20 Tahun 2002 tentang Ketenagalistrikan); MK, 2016. Putusan Mahkamah Konstitusi Nomor 111/PUU-XIII/2015 tentang Pengujian Undang-Undang Nomor 30 Tahun 2009 tentang Ketenagalistrikan terhadap Undang-Undang Dasar Negara Republik Indonesia Tahun 1945.

[8] *ibid*.

[9] Seymour and Sari, 2002, *op cit*.

[10] JETP, 2023, *op cit*.

[11] IEA (International Energy Agency), 2022. *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*. International Energy Agency, Paris

that subsidy. Done well, this strengthens — rather than weakens — the constitutional mandate to prioritize public welfare, while making the sector financially investable.

Treat legacy coal obligations, oversupply, and captive power as core reform issues — not side projects. Planning documents and transition roadmaps alike signal that oversupply and inflexible contractual obligations can raise system costs and slow the shift to clean resources.[12] Meanwhile, industrial captive power growth threatens to create a two-track electricity system: a decarbonization agenda on-grid, and emissions growth off-grid. Reform must therefore include tools for managed coal transition (contract renegotiation frameworks, early retirement mechanisms, stranded-cost allocation rules) and a clear policy architecture for captive generation that aligns it with national emissions and reliability objectives.

Taken together, these shifts answer the implicit PLN question without turning reform into an ideological referendum. The goal is not to "shrink the state." It is to make the state's control *work* — by reducing conflicts of interest, strengthening oversight, and ensuring the system's incentives actually deliver net zero, security, affordability, and equity. If reform sounds like "more rules," that is because rules are the difference between a market and a maze — and Indonesia has spent too long asking one institution to navigate both.[13]

1.2.1 The Critique of Liberalized Reform — and Why It Strengthens, Rather Than Weakens, the Case for *Proper* Unbundling

The most credible critique of liberalization is not ideological; it is empirical: half-reforms can fail spectacularly. Joskow's analysis of California's crisis is the canonical warning: wholesale markets were liberalized while retail prices remained effectively fixed, producing utility insolvency, supply stress, and political intervention.[14] The lesson is not "markets are bad". The lesson is: don't liberalize prices and risks in one layer while freezing them in another.

That critique is entirely compatible with arguing for reform in Indonesia — because it pushes reformers toward sequencing and governance, not toward paralysis. The World Bank's retrospective on developing-country power sector reforms makes a similar point: reform trajectories are often partial and politically contested, and performance depends heavily on institutional quality and credible regulation, not on slogans.[15] Joskow's broader lessons on liberalization likewise emphasize that many programs remain partial, and that political and regulatory challenges are central — not incidental — to outcomes.[16]

So the pro-reform position, properly stated, is not "privatize everything." It is unbundle to create neutrality and accountability; regulate networks as public-interest monopolies; introduce competition where it works; and redesign contracts so bankability no longer requires operational rigidity. That is to answer both camps in Indonesia's discourse: protect equity and reliability *by improving the rules*, not by insisting that only a monopoly can be constitutional, fair, or secure.

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[12] IEA, 2022, *op cit*.
[13] Seymour and Sari, 2002, *op cit*.; JETP, 2023, *op cit*.; IEA, 2022, *op cit*.
[14] Joskow, P.L., 2001. "California's Electricity Crisis," *Oxford Review of Economic Policy*, 17 (3), pp. 365–388.
[15] Foster, V., and A. Rana, 2015. *Rethinking Power Sector Reform in the Developing World*. World Bank, Washington, D.C.
[16] Joskow, P.L., 2008. "Lessons Learned From Electricity Market Liberalization," *The Energy Journal*, 29 (Special Issue #2), pp. 9–42.

1.3 The Objectives

This concept note aims to define a constitutionally durable, fiscally honest, and operationally workable pathway to reform Indonesia's electricity "market" — shifting the sector from a single-buyer, administratively priced system toward a rules-based architecture where networks function as neutral platforms, competition is introduced where it improves outcomes, and equity is protected through explicit instruments rather than accounting fog.'

The reform will eventually create a market that is efficient, equitable while at the same time support energy security and sustainable, low-carbon electricity market.

Specifically, the objectives are to:

1. Establish a shared, evidence-based baseline for reform, including the sector's physical and financial structure (on-grid and captive/off-grid), the scale and incidence of subsidies and compensation, and the main sources of lock-in (oversupply, contracting rigidity, and institutional conflicts of interest).
2. Make the sector legible as a precondition for reform, by requiring regulatory accounting and ring-fencing that separates costs and revenues by function (generation, transmission, distribution, retail) and by system/region, so cross-subsidies and policy transfers can be measured, debated, and governed rather than assumed.
3. Redesign governance so "state control" becomes operable through rules, not discretion, including (1) enforceable neutrality obligations for network and system functions during transition, and (2) a credible regulatory model (PUC-like functions) for tariff methodologies, access enforcement, consumer protection, and dispute resolution as contestability expands.
4. Turn open access and power wheeling from negotiated exceptions into governed instruments, through a minimum viable rulebook covering interconnection standards, queue management, network charges, metering and settlement, congestion/curtailment principles, and fast dispute timelines — piloted first for large users and scaled only as readiness thresholds are met.
5. Replace "one price" politics with a layered pricing structure that matches electricity's economics: energy priced through competition (or competitive procurement as a bridge), wires priced as regulated services, and equity priced explicitly through targeted household support and transparent equalization for high-cost systems — so affordability remains protected without distorting investment and dispatch signals.
6. Create a transition framework that preserves bankability while restoring efficiency, including a credible approach to legacy Power Purchase Agreements (PPAs) and take-or-pay structures, clearer curtailment discipline, and time-bound legacy-cost handling — so reform does not trigger investment freezes, litigation cascades, or operational "reform on paper, rigidity in dispatch" outcomes.
7. Deliver an implementable reform program — not just a design argument — by sequencing priorities, mapping stakeholders and their incentives, and specifying near-term deliverables (rulebook, compacts, pilots) that can produce early wins while keeping household exposure and political risk manageable.

2 Stocktaking: The Carbon-Intensive Electricity Market in Indonesia

2.1 On-Grid System

Indonesia's electricity "market" is less a single market than a stitched-together archipelago of systems — some interconnected, many still operating like semi-islands. That geography is why Indonesia can look comfortably supplied on paper while still

feeling tight, expensive, or unreliable in specific regions. It is also why national debates about reform tend to become debates about who cross-subsidizes whom — and for how long.

Start with the physical system. By October 2024, Indonesia's installed generation capacity recorded in the national plan reached 75.9 gigawatts (GW). Ownership is already mixed: PT PLN (Persero) (PLN) holds about 34.4 GW (46.2 percent), Independent Power Producers (IPPs) about 27 GW (36.2 percent), Private Power Utilities about 11.8 GW (15.8 percent), and a small share sits with rental power plants.[17] This is not a fully state-built system; it is a system where the state still dominates coordination and rules, while a large portion of capacity is privately owned but contractually embedded.

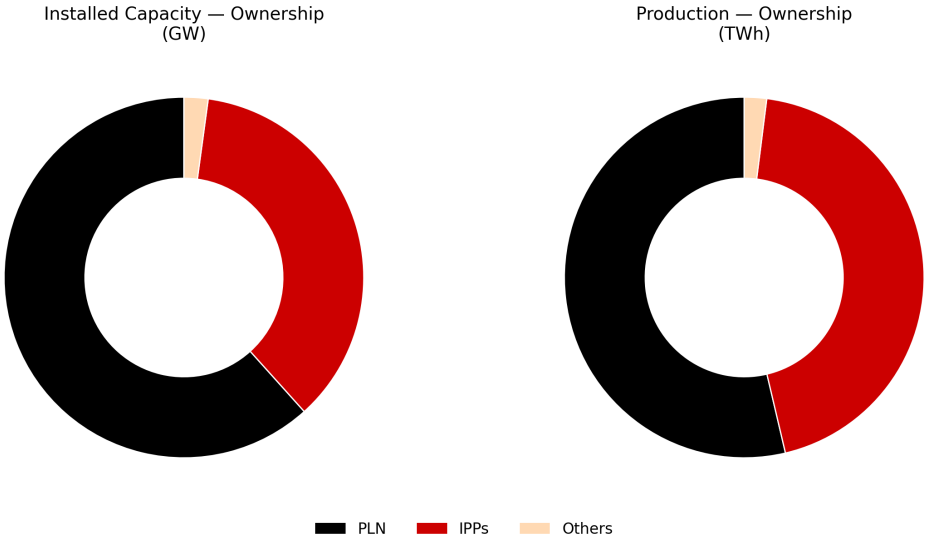

Figure 2.1. The electricity system in Indonesia in 2024 remains dominated by generational capacity and production of PLN. Source: PLN, 2024. *Statistik PLN 2024*. Perusahan Listrik Negara (Persero), Jakarta.

Owner	Capacity		Production	
	GW	percent	TWh	percent
PLN	46.8	61.7	184.6	53.7
IPPs (all private)	27.5	36.2	152.4	44.3
Others (leased + project)	1.6	2.1	6.9	2.0
Total	**75.9**	**100.0**	**343.9**	**100.0**

Table 2.1. Power system in Indonesia is still dominated by generation from PLN. Source: PLN, 2025. *Statistik PLN 2024*. Perusahan Listrik Negara (Persero), Jakarta.

Now the uncomfortable part: the system is still built and run as a fossil system at 68.9 GW (90.8 percent). In installed capacity terms, coal-fired power plants account for 34.1 gigawatts (GW) (44.9 percent) and gas-fired plants 29.3 GW (38.6 percent); diesel remains material at 5.6 GW (7.3 percent). Renewables are present but structurally smaller at a total of 7 GW (9.2 percent) — hydropower 6.0 GW (7.9 percent) and geothermal 0.9 GW (1.2 percent), with other renewable categories still relatively modest. In generation terms, the picture is even more stark: by 2024, realized electricity production was still dominated by coal at 116.6 terawatt-hours (TWh) (61.2 percent),

[17] PLN, 2024. *Statistik PLN 2024*. Perusahan Listrik Negara (Persero), Jakarta.

gas at 48.9 TWh (25.7 percent), and oil at 3.4 GW (1.8 percent); with renewables at 21.7 TWh (11.4 percent).[18] Indonesia's transition challenge, in other words, is not merely adding renewables — it is changing what the system actually dispatches, hour by hour.

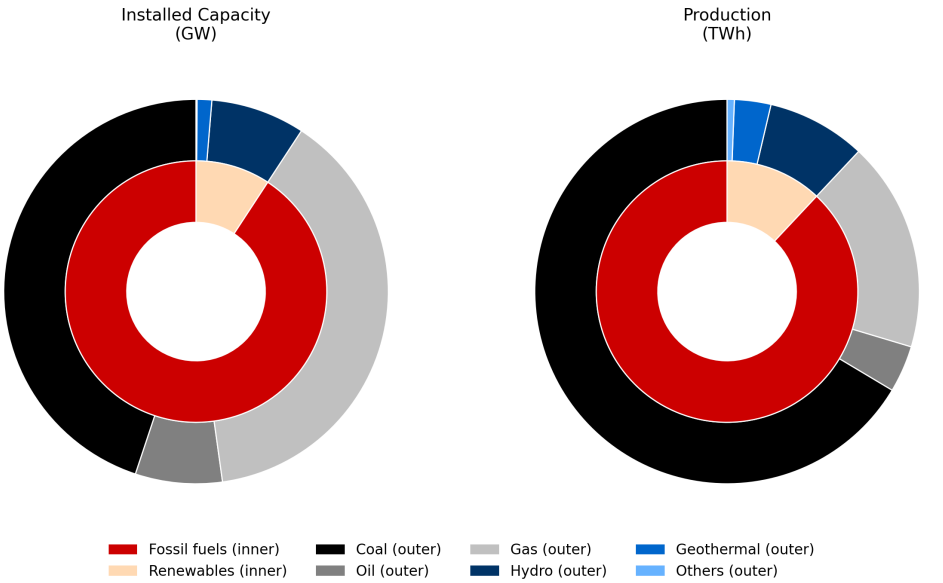

Figure 2.2. The electricity system in Indonesia in 2024 remains carbon-intensive with fossil fuels — notably coal — dominates. Source: PLN, 2024. Statistik PLN.

Fuels	Capacity		Production	
	GW	percent	TWh	percent
Coal	34.1	44.9	228.4	66.4
Oil	5.6	7.3	13.5	3.9
Gas	29.3	38.6	60.7	17.6
Fossil fuels	**68.9**	**90.8**	**302.7**	**88.0**
Hydro	6.0	7.9	28.6	8.3
Geothermal	0.9	1.2	10.5	3.1
Others (biomass + solar/wind)	0.1	0.1	2.1	0.6
Renewables	**7.0**	**9.2**	**41.2**	**12.0**
Total	**75.9**	**100.0**	**343.9**	**100**

Table 2.2. The electricity system in Indonesia in 2024 remains carbon-intensive with fossil fuels — notably coal — dominates. Source: PLN, 2024. Statistik PLN.

Overlay this with the system's second defining feature: overcapacity — but unevenly distributed. PLN reports reserve margins in 2024 of 42.32 percent in Java–Bali, 28.69 percent in Sumatra, 37.85 percent in Kalimantan, and a striking 71.15 percent in Sulawesi, while Maluku–Papua–Nusa Tenggara sits far lower at 17.84 percent.[19] This is the archipelagic paradox: surplus in one place does not automatically translate into resilience everywhere, particularly when interconnections are limited and demand profiles differ. Yet surplus still has consequences — because surplus that is locked into long-term obligations can become a financial and operational anchor.

Other transition assessments underscore that this overcapacity is not trivial. One analysis of Indonesia's transition pathway flags the Java–Bali system as having overcapacity problem, citing a reserve margin estimate of 50 percent and warning that oversupply

[18] *ibid.*.
[19] *ibid*.

could persist under prevailing assumptions.[20] The JETP's CIPP cites an even more dramatic number — a 76 percent reserve margin in Java–Bali in 2022, explicitly framing it as well above existing adequacy criteria.[21] What these numbers translate to in plain language is this: Indonesia is paying for a lot of capacity, and the system has to find ways to recover those costs. If dispatch and contracting are rigid, the path of least resistance is to keep running what already exists — and that often means running coal.

Renewables sit inside this structural box. The country's official planning now points to very large renewable additions over the next decade, but the scale of the build-out required is precisely why market and governance design matters. PLN's planning scenarios for 2025–2034 imply additional generation capacity needs of 52,763 MW in a "renewables base" pathway and 69,512 MW in an "accelerated renewables development" pathway.[22] Those are not marginal adjustments; they are system transformation numbers. But transformation is not just megawatts — it is grid readiness, flexibility, dispatch rules, procurement credibility, and a financial model that does not rely on permanent fiscal patching.

2.2 Off-Grid Captive System

Captive power — sometimes called self-supply or behind-the-meter/ off-grid generation — refers to electricity generation built primarily to serve a company's own demand (for example, industrial estates, smelters, mines, malls, and hospitals), rather than selling power into the public grid. In Indonesia, the core legal category for this segment is Izin Usaha Penyediaan Tenaga Listrik untuk Kepentingan Sendiri (IUPTLS).[23]

In 2024, captive power is not marginal — it is a parallel "shadow system" of meaningful scale. Official reporting places Indonesia's total installed capacity at about 101 gigawatts (GW), with roughly 75 percent within the service area of PLN, about 4.7 percent in Public-Private Utility (PPU) areas, and about 20.3 percent under IUPTLS (self-supply/captive). Put simply: the strict captive category (IUPTLS) is about 20.4 GW (about one-fifth of national capacity), while the broader "outside PLN" block (IUPTLS + PPU) is about 25.2 GW.[24]

A JETP Secretariat estimate cited by *Reuters* reports captive capacity at 25.9 GW in 2024.[25] That figure is best understood as a broader practical definition of the captive/off-grid private supply segment — closer to IUPTLS + PPU rather than IUPTLS alone — plus rounding and definitional differences across datasets.[26] How one defines captive power (PPU included or not) may cause some inconsistencies.

Within the captive/ off-grid private segment, coal dominates — not only in installed megawatts, but also in what is actually generated. The JETP/*Reuters* reporting estimates that more than 75% of captive generation is coal-fired, and notes almost 11 GW under development, mostly coal-based. This "generation share" is the hard metric: it reflects what runs, for how long, and therefore what drives emissions, fuel demand, and industrial lock-in.[27]

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[20] IESR (Institute for Essential Services Reform), 2023. *Delivering Indonesia's Power Sector Transition*. Institute for Essential Services Reform, Jakarta.
[21] JETP, 2023, *op cit*.
[22] PLN, 2025, *op cit*.
[23] Gatrik (Direktorat Jenderal Ketenagalistrikan), 2025. *Laporan Kinerja Direktorat Jenderal Ketenagalistrikan Tahun 2024*. Kementerian Energi dan Sumber Daya Mineral, Jakarta.
[24] *ibid*.
[25] "JETP estimates Indonesia needs $92 billion by 2050 for decarbonising captive power sector," *Reuters* (December 18, 2025).
[26] Gatrik, 2025*, op cit.*; *Reuters* (December 18, 2025), *op cit.*.
[27] *ibid*.

The geography of captive coal is equally telling. The JETP CIPP describes captive coal capacity as concentrated in Sulawesi and the Maluku Islands — reflecting the location of nickel resources and the scale of downstream processing — with smaller shares in Java and Sumatra.[28]. In Java, captive coal is linked more to pulp and paper and chemical production; in Sumatra, to pulp and paper and palm oil processing.[29]

Primarily, these off-grid captive plants exist to supply high-load-factor, always-on industrial demand, especially smelters and metals processing associated with the nickel downstream push.[30] Independent tracking reinforces the direction of travel: between July 2023 and July 2024, Indonesia added 7.2 GW of coal capacity, with 4.5 GW attributed to captive use — meaning new coal capacity for industry was nearly double that added for the public grid over the same period.[31]

Captive power therefore sits at the intersection of industrial policy, emissions, and power-sector economics. If electricity market reform stops at the "PLN system," the country risks optimizing the visible grid while emissions, investment, and demand growth migrate to the invisible edge. Yet the measurement backbone remains incomplete: Badan Pusat Statistik (BPS) publishes Captive Power Statistics, but the 2024 edition notes survey coverage limitations and the need to expand sector coverage for a more comprehensive national picture.[32] That limitation is itself a reform signal: bringing captive power into a coherent market framework requires not only policy instruments (permits, standards, pricing, reporting, interconnection rules), but also credible measurement-and-disclosure so the off-grid system is no longer statistically invisible.

2.3 The Outlook to the Future

By 2030, Indonesia's power system is best read as one national electricity demand story being served by two governance regimes: the on-grid system (PLN and contracted IPPs) on one side and the off-grid/ captive system (industrial self-supply under IUPTLS and related private utility areas). In the JETP scenario, electricity demand reaches 451 TWh in 2030, explicitly including captive connections — a quiet admission that "off-grid" is already part of the national load reality, even when policy conversations pretend otherwise.[33] Meanwhile, the CIPP framing for the on-grid system pushes for a sharper transition posture — including a higher renewable generation share by 2030 and a tighter emissions ceiling — but the political economy hinge remains the same: if captive power keeps expanding as coal-based baseload for industry, Indonesia can hit an on-grid storyline while building an off-grid lock-in.[34]

By 2050, demand scales dramatically in the same JETP scenario — to 1,315 TWh — and the system stops being mainly about adding plants and becomes primarily about balancing, flexibility, and governance.[35] For the on-grid pathway, the CIPP tables place the Net Zero Emissions year at 2050 under the JETP scenario — but that "system" is still explicitly on-grid in scope.[36] This is where captive power moves from "complication" to "determinant." By 2050, Indonesia either has two decarbonizing systems converging, or

[28] JETP, 2023, *op cit*.
[29] *ibid*.
[30] *ibid*.
[31] Hasan and Hummer, 2024, *op cit*.
[32] BPS (Badan Pusat Statistik), 2024. *Statistik Captive Power 2024 / Captive Power Statistics 2024*. Badan Pusat Statistik, Jakarta.
[33] JETP, 2023, *op cit*.
[34] *ibid*.; ci, 2025c, op cit.
[35] JETP, 2023, *op cit*.
[36] *ibid*.

a net-zero grid target that becomes nationally insufficient because the industrial edge remains a parallel coal system.[37]

And by 2060, the Rencana Umum Ketenagalistrikan Nasional (RUKN) 2024–2060 outlook (as publicly summarized) anticipates national electricity demand reaching around 1,813 TWh — with industry accounting for a very large share of that total.[38] On the supply side, the Ministry of Energy and Mineral Resources describes a system reaching 443 GW of installed capacity by 2060, with 79 percent from renewable energy, including a very large variable renewable energy component supported by energy storage.[39] The same official summary also places a "supergrid" at the center of the 2060 architecture — explicitly to move renewable supply from resource-rich regions to load centers and to raise system reliability.[40]

The core 2060 question, then, is not whether Indonesia can write a renewables-heavy plan; it is whether governance catches up so that the industrial edge is no longer statistically and commercially "outside the system." If "off-grid" remains a durable parallel regime, Indonesia risks running two systems with two carbon realities well into the transition. If market rules, reporting, and interconnection incentives mature, captive power increasingly becomes either integrated into the grid or reduced to a residual role — and the 2060 supergrid becomes the backbone of a genuinely national decarbonization pathway.[41]

[37] JETP, 2023, *op cit*.; *Reuters* (December 18, 2025), *op cit*.
[38] "Bahas RUKN dengan DPR, Kementerian ESDM Usulkan Konsumsi Listrik dan Bauran Energi," Kementerian ESDM Media Center (January 23, 2025). https://esdm.go.id/id/media-center/arsip-berita/bahas-rukn-dengan-dpr-kementerian-esdm-usulkan-konsumsi-listrik-dan-bauran-energi (accessed on December 20, 2025); Suryowati, E., 2024. "Kebutuhan Listrik Diprediksi Capai 1.813 TWh Berdasarkan RUKN 2024–2060, 43 Persennya oleh Industri," *Jawa Pos* (December 20, 2024).
[39] Kementerian ESDM Media Center, 2025, *op cit*.
[40] *ibid*.
[41] *Reuters* (December 18, 2025), *op cit*.; Kementerian ESDM Media Center, 2025, *op cit*.

	2030	2050	2060
Projected total electricity demand (TWh)	451	1,315	1,813
Projected installed generating capacity (GW)	199	407	443
On-grid system (headline)	Still the dominant planning/ dispatch anchor, but increasingly constrained by coal rigidity; renewables integration and transmission become binding issues.	Deep electrification and industrial load growth makes grid flexibility, transmission, and firming/storage central.	Grid becomes a "supergrid-era" balancing machine for a renewables-heavy system, with firm low-carbon sources and storage doing the reliability work.
Off-grid / captive system (headline).	Continues to matter materially for industrial growth; without policy integration it can undermine grid decarbonization and inflate coal lock-in.	Either becomes a decarbonization success story (solar and storage, efficiency, cleaner firming) or remains a parallel coal system that distorts national outcomes.	In a coherent transition pathway, captive is no longer "invisible" — it is governed, measured, and aligned with national least-cost planning logic.

Table 2.3. The outlook of the power system in Indonesia until 2060, when Indonesia is supposed to achieve its net zero emission commitments.

2.4 Key Existing Initiatives

Indonesia already has a crowded "transition intent" landscape. The reform opportunity is to treat these initiatives not as parallel programs, but as binding constraints and design inputs for a more rules-based, investable electricity market. First, Indonesia's Second Nationally Determined Contribution (NDC) under the Paris Agreement explicitly centers the energy sector as the dominant source of national emissions and sets out economy-wide mitigation trajectories that necessarily require power-sector decarbonization at scale. The NDC also anchors this in sectoral pathways (including power) and published emissions projections by sector, which makes the electricity system's choices measurable — and, by extension, contestable in policy. In practical reform terms, the NDC's sectoral framing strengthens the case for separating (i) regulated network functions (wires and system operations) from (ii) competitive or competitively procured supply — because only a system with transparent dispatch, transparent costs, and credible access can translate national targets into operational incentives rather than slogans.[42]

Second, the Ministry of Energy and Mineral Resources (Kementerian Energi dan Sumber Daya Mineral) has advanced an early retirement agenda for coal-fired power plants, framed (at least initially) through Presidential Regulation No. 112/2022 on accelerating renewable energy development and managing coal retirement criteria. In August 2024, the ministry publicly noted a plan to retire 13 coal plants early totaling 4.8 gigawatts — effectively "around five gigawatts" as a first tranche — while emphasizing constraints: do not trigger supply shocks, do not raise generation costs (Biaya Pokok Penyediaan), and avoid new fiscal burdens.[43] That phrasing is revealing: it is not a technical constraint so

[42] RI, 2025. *Second Nationally Determined Contribution*. United Nations Framework Convention on Climate Change (UNFCCC), Bonn.
[43] "Pensiunkan Dini PLTU, Pemerintah Pertimbangkan Hal Ini," *Kementerian ESDM Media Center* (August 22,

much as a market design constraint. Without (1) credible competitive procurement for replacement supply, (2) bankable network access to integrate new renewables, and (3) transparent mechanisms to surface and allocate legacy costs, early retirement becomes politically fragile and financially reversible — as shown by subsequent signals of hesitation around flagship retirements.[44]

Third, the President's public ambition-setting has moved the goalposts upward — and, whether one sees it as vision or overreach, it changes the reform context. President Prabowo Subianto has been widely reported stating that Indonesia aims to reach 100 percent renewable electricity within about a decade (often framed as 10 years, sometimes as 10–15 years), accompanied by related commitments to retire fossil generation far earlier than legacy timelines. The discourse around this ambition is divided: advocates read it as a political opening that can unlock capital and administrative urgency, while critics warn that targets without enforceable rules and investable instruments can incentivize "announcement policy" and later backlash.[45] For reform design, that critique is useful: it implies the sector needs governance that can translate ambition into (a) grid build-out, (b) nondiscriminatory access, (c) transparent settlement, and (d) disciplined procurement — otherwise the promise becomes an invitation to ad hoc interventions.

Fourth, the administration's village-scale solar ambition is large enough to be a structural reform driver, not merely an electrification program. Public reporting and sector commentary describe a plan framed as 100 gigawatts of solar, including 80 gigawatts deployed as approximately 1 megawatt systems across 80,000 villages with battery storage, plus 20 gigawatts of centralized solar. If pursued at anything close to scale, this initiative forces decisions that are inseparable from market reform: distribution networks must evolve into active platforms (hosting capacity management, metering, connection standards), retail rules must accommodate distributed generation and storage, and tariff/subsidy design must become transparent enough to avoid new hidden cross-subsidies that penalize either rural systems or the grid as a whole.[46] In other words, this is not only a generation target; it is a governance stress test for the distribution layer.

Finally, these commitments sit alongside planning and financing frameworks that are already pointing toward a more competitive, investment-led power system — but also exposing the implementation gap. For example, reporting on Indonesia's evolving electricity supply plan highlights a sharp intended increase in renewables share over the next decade, while still acknowledging legacy coal projects and system reliability constraints.[47] At the same time, JETP-related analysis warns that captive power (off-grid industrial generation) could become a parallel, coal-heavy system unless market rules and incentives extend beyond the PLN grid.[48] These are not peripheral issues: they reinforce why electricity market reform must be system-wide, rules-based, and designed to prevent a two-track transition where the grid cleans up while industrial growth locks in coal elsewhere.

2024). https://www.esdm.go.id/id/media-center/arsip-berita/pensiunkan-dini-pltu-pemerintah-pertimbangkan-hal-ini (accessed on December 21, 2025.

[44] "Indonesia backpedals on retiring Cirebon coal power plant early," *Reuters* (December 5, 2025).

[45] Hasjanah, K., 2025. "Target of 100% Renewable Electricity in 10 Years Requires Concrete Plans and Policies, IESR Says," Institute for Essential Services Reform (August 22, 2025). https://iesr.or.id/en/target-of-100-renewable-electricity-in-10-years-requires-concrete-plans-and-policies-iesr-says/ (accessed on December 21, 2025); Paddock, R.C., and N. Putra, 2024. "Indonesia's Prabowo plans to retire all fossil fuel plants in 15 years, but experts are skeptical," *Associated Press* (November 2024).

[46] Tumiwa, F., 2025. "100 GW Solar Power Plant for Indonesia's Energy Self-Sufficiency and Economic Revival," Institute for Essential Services Reform (August 8, 2025). https://iesr.or.id/en/100-gw-solar-power-plant-for-indonesias-energy-self-sufficiency-and-economic-revival/ (accessed on December 21, 2025); Jowett, P., 2025. "Indonesia unveils plan for 100 GW of solar," *PV Magazine International* (August 11, 2025).

[47] "Indonesia plans to boost renewable usage in new electricity supply plan," *Reuters* (February 11, 2025).

[48] *Reuters* (December 18, 2025), *op cit*..

3 Reform Options

3.1 Unbundling Generation: Take-or-Pay Must Go Away

3.1.1 Why "Take-or-Pay" Made Sense Before But No Longer

Electricity reform always begins with an awkward truth: the sector is both an industry and a public obligation. That duality is why vertically integrated monopolies became the default model — and why reform, when it comes, is never just engineering. It is political economy with transformers.[49]

Still, the core logic of unbundling remains straightforward. When the same entity owns dispatch, owns the grid, and also competes (directly or through affiliates) in generation and retail, the incentives to discriminate are structural, not accidental. Unbundling is the institutional antidote: separate the natural monopoly networks (transmission and distribution) from competitive activities (generation and retail supply), and then regulate the networks as neutral platforms.[50] The point is not to "shrink the state," but to relocate "state control" from ownership of everything *to* rule-setting, enforcement, and universal-service obligations — the kind of control that survives scrutiny because it is transparent and contestable.[51]

This matters immediately for Indonesia because the existing IPP model sits inside a single-buyer architecture where Power Purchase Agreements (PPAs) function as quasi-planning instruments. And the most consequential clause in that architecture is the "take or pay" (TOP) logic: the buyer must pay for a minimum contracted volume (or capacity availability) whether or not the system needs the energy. When discussing power sector reform in Indonesia, the question regarding TOP becomes front and center.

3.1.1.1 Why Take-or-Pay Became the Default (and Why Financiers Defend It)

TOP is not a moral failing. It is a financing technology. Lenders fund power plants when revenues are predictable. A "fixed take-or-pay" structure creates a bankable revenue stream, reduces merchant price risk, and lowers the cost of capital.[52] In systems without deep futures markets, liquid balancing markets, or credible scarcity pricing, TOP substitutes for missing institutions. In plain terms: ToP is what you do when you want private capital, but you do not yet have a functioning market. That is why reformers should resist a lazy caricature that "TOP = bad." The more accurate diagnosis is: TOP is rational inside a non-market system — and increasingly irrational once the system faces oversupply, variable renewables, and decarbonization constraints.

3.1.1.2 Why Take-or-Pay Now Bites in Indonesia

Indonesia's constraint is no longer only "bankability." It is "operability." In the Indonesian PPAs between PLN and IPPs, the TOP system has been widely criticized for inducing

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[49] IEA (International Energy Agency), 2000. *Electricity Market Reform: An IEA Handbook*. International Energy Agency, Paris; Dubash, N.K., 2002. *Power Politics: Equity and Environment in Electricity Reform*. World Resources Institute, Washington, D.C.

[50] "Governance of the internal energy market," Energy, EC (European Commission). https://energy.ec.europa.eu/topics/markets-and-consumers/governance-internal-energy-market_en (accessed on December 20, 2025).

[51] IEA, 2000, *op cit*.; Foster, V., and A. Rana, 2015. *Rethinking Power Sector Reform in the Developing World*. World Bank, Washington, D.C.

[52] Audu, H., and A. Duclos, 2024. "Five Pillars That Determine Commercial Renewables Projects' Bankability," *IRENA News — Expert Insights*, (April 2024). https://www.irena.org/News/expertinsights/2024/Apr/Five-Pillars-That-Determine-Commercial-Renewables-Projects-Bankability (accessed on December 20, 2025).

operational inflexibility: PLN must prioritize dispatch to meet minimum contracted volumes, even when the system experiences overcapacity or when dispatch should shift to accommodate variable renewable energy. The same policy note links TOP-style contracting to broader rigidity, including fuel-supply obligations that further constrain how gas plants are operated.[53]

Once oversupply exists in major grids, TOP becomes an economic logic that forces the system to treat "minimum payments" as "minimum dispatch". That is the slippery step where a finance clause mutates into a dispatch rule — and where efficiency losses become locked in as contractual obligation.

This is also where the discourse splits:

- Pro-status-quo voices describe TOP as the price of investment certainty and system reliability. Without it, they argue, projects will not reach financial close, tariffs will rise, and the state will be forced back into funding capacity itself.[54]
- Critics describe ToP as a "rigidity machine" — a contractual structure that socializes risk to the offtaker and (eventually) to consumers and the budget, while blocking the system from learning how to balance, curtail, and value flexibility.[55]

Both camps are partly right — which is precisely why the solution is not to abolish long-term contracts, but to reform what the contracts pay for.

3.1.2 Alternatives to Take-or-Pay in a Reformed Market

The practical objective is not "no guarantees." It is smarter guarantees: contracts that preserve bankability while restoring dispatch efficiency and enabling competition. The following are some alternatives to take-or-pay in a reformed, unbundled power market in Indonesia.

Shift from "minimum energy" to "availability + dispatch": pay for readiness, not must-run energy. In competitive markets, the clean separation is:

- pay capacity/ availability to ensure the plant is there when needed, and
- pay energy when dispatched.

This is conceptually closer to an Availability Factor (AF) obligation than to a minimum-energy TOP. Indonesia's own regulatory evolution is already inching in this direction: Ministry of Energy and Mineral Resources (Kementerian Energi dan Sumber Daya Mineral, KESDM) Regulation No. 5/2025 (as summarized by PwC Indonesia) explicitly references Contracted Energy (CE) and Availability Factor (AF) constructs, and sets more detailed rules for "excess energy" purchases beyond CE/ AF — including capped pricing (e.g., a discount relative to the PPA price) and limits tied to demand conditions.[56] That is not yet a competitive market — but it is a visible move away from the bluntest ToP logic toward a structure where "what you *can* provide" and "what the system *needs*" begin to separate.

Build curtailment discipline: "deemed dispatch" as a transitional fairness tool — with guardrails. In systems integrating variable renewable energy, curtailment is

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[53] Soejachmoen, M.H., A. Halimatussadiah, T. Ketelsen, A. Rachmatika D.A., K. Rangkuti, F.A.R. Afifi, T.N. Do, D. Sabba, and G. Newey, 2023. *Grid & Financing Challenges for Energy Transition in Indonesia*. Energy Transition Partnership, Jakarta.
[54] Audu and Duclos, 2024, *op cit*.
[55] Soejachmoen, et al., 2023, *op cit*.; Dubash, 2002, *op cit*.; Seymour and Sari, 2002, *op cit*.
[56] PwC Indonesia, 2025. *Key points for renewable energy PPAs under MEMR Regulation 5/2025*. PwC Indonesia, Jakarta.

unavoidable. The question is whether curtailment becomes an arbitrary off-taker power or a transparent operational tool.

KESDM Regulation No. 5/2025 strengthens deemed-dispatch concepts: where curtailment is driven by PLN's system conditions (inspection, maintenance, repairs, emergencies), IPPs may be entitled to compensation, subject to compliance with grid and distribution codes.[57] This is a classic transitional mechanism: it reassures investors while the system builds the operational and market institutions needed to handle congestion and balancing transparently.

The reform risk is obvious: deemed dispatch can become a new form of "hidden take-or-pay" if curtailment is frequent and governance weak. The remedy is also obvious: unbundling the system operator function so curtailment decisions are neutral, auditable, and rule-bound — not embedded inside the balance sheet of the dominant market participant.

Use Contracts for Difference: stabilize revenue without forcing dispatch. A two-sided Contract for Difference (CFD) stabilizes revenues by paying (or clawing back) the difference between a strike price and a reference market price, without requiring the buyer to take physical delivery as if it were a must-run unit.

The European debate is instructive precisely because it includes both advocates and skeptics. Kitzing *et al*. (2024) emphasizes that CFDs can be designed to avoid day-ahead distortions, but they also warn about spillover incentive effects across intraday, balancing, and futures markets; they frame the central trade-off as price stabilization versus market integration.[58] That is possibly the right lens for Indonesia: CFDs can be a bridge from single-buyer contracting to market-facing investment — but only if paired with the gradual construction of balancing and ancillary-service arrangements.

Create a market value for flexibility: ancillary services and balancing, not just "energy". One of the most damaging legacies of monopoly-era planning is the habit of valuing only megawatt-hours. Yet modern systems pay for services: frequency response, reserves, ramping capability, inertia, congestion management.

Indonesia's reform discourse increasingly acknowledges this gap. The same policy note that criticizes TOP also observes that "only energy is traded", while other services (frequency control, ancillary services, system capacity) are not properly valued, leaving PLN to provide stability "outside the market".[59] In an unbundled model, these become explicit products procured competitively — which is exactly how you keep reliability while letting energy dispatch become efficient.

Capacity mechanisms — but with eyes open: reliability options and the "don't copy-paste Pennsylvania-Jersey-Maryland (PJM)" warning. Where energy-only markets struggle to remunerate adequacy, capacity mechanisms can help. But the global record is mixed, and the debate is live.

Recent outcomes in the PJM Interconnection capacity auction show the political economy risk: record-high capacity prices designed to stimulate new supply can also translate into large consumer-bill impacts and political backlash.[60] Newer research proposes reframing capacity as reliability options, pricing adequacy commitments as option-like instruments to better account for tail risks and structural price shifts.[61]

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[57] *ibid*.
[58] Kitzing, L., A. Held, M. Gephart, F. Wagner, V. Anatolitis, and C. Klessmann, C., 2024. *Contracts-for-difference to support renewable energy technologies: Considerations for design and implementation*. European University Institute, San Domenico di Fiesole.
[59] Soejachmoen, *et al*., 2023, *op cit*.
[60] Kearney, L., 2025. "Prices in biggest US power grid auction hit new record, signaling higher utility bills ahead," *Reuters*, (December 17, 2025).
[61] Roy, M., A. Capponi, V. Pyltsov, Y. Hu, and V. Modi, V., 2025. "CapOptix: An Options-Framework for

Indonesia should read this as a design lesson: capacity mechanisms can be useful — but only if they are transparent, competition-preserving, and paired with strong governance. Otherwise, they become a second layer of "payments without performance," i.e., TOP by another name.

3.2 Unbundling the Transmission: Opening the Wires to Capital Without Losing Control

If generation is where competition can discipline costs, transmission is where regulation must discipline power. The grid is a *natural monopoly*: duplicating high-voltage corridors is usually wasteful, and "competition" on the wires mostly produces parallel assets and stranded investment. Reform, therefore, is not about liberalizing transmission in the way one liberalizes generation; it is about turning transmission into a neutral, tightly regulated platform that enables competition elsewhere.[62]

That framing clarifies the real question behind "privatizing transmission". It is not a binary choice between state and market. It is a spectrum of models, each with a different balance between investment mobilization, governance complexity, and political legitimacy: from public ownership with strict ring-fencing; to corporatized transmission companies; to auctioned concessions for new lines; to full private ownership under incentive regulation; and, at the far end, "merchant" transmission that relies on market revenues. The caution from international experience is blunt: the closer you move toward merchant logic, the more coordination failures you invite — Chile is often cited precisely because it moved away from a market-led approach and back toward more centralized planning after underinvestment and inefficiencies became apparent.[63]

3.2.1 The Case For and Against Privatizing Transmission

The strongest argument for private participation is not ideological; it is operational. Energy transition is grid-intensive, and expanding transmission quickly is often the binding constraint on renewable energy uptake and system reliability. Auctioned concessions — "competition for the market" — can mobilize private capital while keeping revenue regulated and performance enforceable. In other sectors, auctioned concessions are usually applied for natural monopolies: lands, toll roads, to name a few. Brazil is frequently referenced as a case where regulated transmission auctions have attracted investment at scale under a clear regulatory framework.[64]

A second argument is discipline. With the right incentive regulation, a transmission operator can be rewarded for outputs that matter — availability, congestion reduction, timely connections — rather than for capital expenditure itself.[65] In well-governed settings, this can reduce cost padding, sharpen delivery incentives, and improve service quality.

A third argument becomes decisive once generation is opened: conflicts of interest. If the same corporate group both owns the wires and competes in generation or retail,

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Capacity Market Pricing," *arXiv* Electrical Engineering and Systems Science, Systems and Control, (December 14, 2025). https://arxiv.org/abs/2512.12871 (accessed on December 20, 2025).

[62] Joskow, P.L., 2008. "Incentive Regulation and Its Application to Electricity Networks," *Review of Network Economics*, 7 (4).

[63] Rudnick, H., J.C. Araneda, and S. Mocarquer, 2009. "Transmission planning — From a market approach to a centralized one: The Chilean experience," IEEE General Meeting (panel contribution); Sauma, E., and I. Pavez, 2022. "Chilean Electric Transmission Regulation: From a Merchant Approach to Central Planning," *Energies* 15 (12).

[64] IEA, 2024. *Brazil Case Study: Grids in Brazil — Mobilising private capital through a robust regulatory framework*. International Energy Agency, Paris.

[65] Joskow, 2008, *op cit*.

discrimination does not need to be explicit to be real — it can occur through planning assumptions, connection delays, or congestion management. This is why many jurisdictions moved toward open-access rules and, in some cases, separation of system operation from ownership.[66] The recent United Kingdom decision to bring the Electricity System Operator into public ownership reflects, in part, the sensitivity of system operation and planning to perceived conflicts.[67]

Meanwhile, the strongest argument against privatization is also practical: a private monopoly is still a monopoly — and will behave like one unless the regulator is competent, empowered, and protected. Privatization without credible tariff setting, data transparency, and enforcement does not create efficiency; it creates a contractual fortress around market power.[68]

A related concern is cost of capital. Private investors price political and regulatory risk. If governance is weak, financing costs rise and tariffs follow. "Private funding" is never free; the bill is merely paid through network charges rather than through the state balance sheet.

Finally, transmission is choreography as much as concrete. If planning authority is fragmented — or if the system lacks a credible, neutral entity to decide what to build, where, and when — investment can lag needs or chase rents. Chile's experience is frequently invoked to underscore that leaving expansion too close to market logic can under-deliver on systemwide efficiency.[69]

3.2.2 When Private Transmission Works

Transmission privatization works when the state becomes a sharper regulator and planner. Three conditions are non-negotiable:

- Incentive-based economic regulation that sets revenues transparently and ties returns to measurable outputs (availability, reliability, connection performance), acknowledging the information asymmetry between operator and regulator.[70]
- Independent system operation and planning — either a Transmission System Operator (TSO) or an Independent System Operator (ISO) function — so dispatch, congestion management, and network access are rule-based and auditable, not negotiated.[71]
- Competition for the market (concessions/ auctions) rather than pretending there can be competition in the market for the same physical wires.[72]

3.2.3 If Transmission is Privatized, What Should PLN Do?

If Indonesia opens transmission to private ownership or concessions, PLN must stop being both player and referee. The reform-consistent role for PLN is not disappearance; it is redefinition:

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[66] FERC (Federal Energy Regulatory Commission), 1996. "Order No. 888 — Open Access Transmission Tariff Reform," Federal Energy Regulatory Commission (April 24, 1996); Joskow, P.L., 2004. *Transmission Policy in the United States*. Massachusetts Institute of Technology, Cambridge, MA.
[67] Ambrose, J., 2024. "UK government to buy electricity system operator from National Grid for £630m," *The Guardian* (September 13, 2024).
[68] Joskow, 2008, *op cit*.
[69] Rudnick, *et al*., 2009, *op cit*.; Sauma and Pavez, 2022, *op cit*.
[70] Joskow, 2008, *op cit*.
[71] FERC, 1996, *op cit*.; Joskow, 2004, *op cit*.
[72] IEA, 2024, *op cit*.

- PLN should exit transmission ownership and operation as an integrated function (or, at most, retain a clearly non-controlling stake), because neutrality is the point of the reform.
- Indonesia should establish a genuinely independent system operation function (Independent System Operator) with authority over dispatch, congestion, grid codes, and network planning standards; PLN should not hold that function if it remains active in competitive businesses.[73]
- PLN should concentrate on becoming a strong, disciplined participant where scale helps rather than harms: as a competitive Generation Company (GenCo) and a performance-regulated Distribution Company (DisCo), with explicit obligations on reliability, loss reduction, metering modernization, and consumer service.
- PLN should manage legacy PPAs through a dedicated, time-bound transition unit — gradually shifting from bespoke, rigid contracting toward standardized market instruments and transparent procurement.
- Any remaining public mandates (affordability, last-mile electrification, social tariffs) should be explicitly financed as public service obligations, rather than hidden inside cross-subsidies and balance-sheet stress.

In short: transmission reform can bring private capital and sharper performance incentives — but only if it is paired with stronger regulation and independent system operation. Done right, PLN does not lose its relevance; it loses its conflicts.

3.2.4 Policy Design for Power Wheeling in Indonesia

Power wheeling — the ability to move electricity from a generator to a customer using another party's transmission and distribution network — is often treated in Indonesia as a proxy war over "liberalization". The debate quickly becomes moral ("electricity must not become a commodity"), constitutional ("the state must control"), and fiscal ("PLN will lose revenue; tariffs and subsidies will rise").[74]. And because the debate is framed as a binary — PLN monopoly versus free market electricity — the practical middle ground is missed: wheeling is not a substitute for the state; it is a test of whether the state can govern the grid as a neutral platform.

Indonesia, importantly, is not starting from a legal blank page. Peraturan Pemerintah (PP) No. 14/2012 already recognizes jual beli (buy and sell) and sewa jaringan tenaga listrik (lease or rental of power network) between license holders, with pricing subject to government approval.[75] KESDM Regulation No. 11/2021 further operationalizes the concept through pemanfaatan bersama (shared use) and network leasing arrangements, again under approvals and technical constraints.[76] And the Rencana Umum Ketenagalistrikan Nasional (RUKN) 2025–2060 explicitly states that the transmission business must open opportunities for shared use of transmission networks for the public

[73] FERC, 1996, *op cit*.; Joskow, 2004, *op cit*.; Ambrose, 2024, *op cit*.
[74] Waluyo, D., 2025. "Prabowo Tolak Power Wheeling Masuk RUU EBET, Ini Respons Dewan Energi Nasional," *Katadata*, (March 3, 2025). https://katadata.co.id/ekonomi-hijau/energi-baru/67c56053c9c2e/prabowo-tolak-power-wheeling-masuk-ruu-ebet-ini-respons-dewan-energi-nasional (accessed on December 20, 2025); Komalasari, T.D., 2024. "Skema Power Wheeling Berpotensi Buat Tarif Listrik Naik, Diusulkan di RUU EBET," *Katadata*, (September 3, 2024). https://katadata.co.id/ekonomi-hijau/energi-baru/66d71361b807a/skema-power-wheeling-berpotensi-buat-tarif-listrik-naik-diusulkan-di-ruu-ebet (accessed on December 20, 2025); Batubara, M., 2024. "Skema 'power wheeling' dinilai jadikan listrik komoditas pasar," *Antara*, (September 3, 2024). https://www.antaranews.com/berita/4306039/skema-power-wheeling-dinilai-jadikan-listrik-komoditas-pasar (accessed on December 20, 2025).
[75] RI, 2012, *op cit*.
[76] KESDM, 2021. Peraturan Menteri Energi dan Sumber Daya Mineral Republik Indonesia No. 11/2021 tentang Pelaksanaan Usaha Ketenagalistrikan.

interest, subject to capacity and grid-code requirements.[77] In other words, the core design question is no longer "may it exist?" but "can it be made rule-based, scalable, and politically legitimate?"

A workable policy design has to do two things at once: (1) unlock investment and renewable procurement (the pro-wheeling promise), and (2) protect system reliability, universal service, and PLN's financial integrity (the anti-wheeling fear). That requires turning wheeling from a negotiated exception into a governed market instrument.

Define wheeling as regulated access — not "selling the grid". The simplest framing is the most stabilizing: wheeling is non-discriminatory access to a regulated monopoly network. The wires remain a monopoly — and remain governed as such — but access becomes a service with published terms. This matters because it answers the constitutional and political anxiety reflected in public discourse: opponents warn wheeling would "privatize" electricity and turn it into a market commodity, undermining state protection for poorer households.[78] The counterpoint is not to dismiss the concern, but to re-anchor the design: the state retains control through licenses, grid codes, tariff regulation, dispatch rules, and enforcement — while allowing private parties to transact energy under a supervised framework.

Start with "corporate wheeling" and additional renewables — not retail chaos. A credible Indonesian on-ramp is limited third-party access for large users, especially industrial estates and data centers seeking clean electricity. This segment is already central to Indonesia's transition challenge: the captive power sector serving industry is large and coal-heavy, and decarbonizing it requires new supply and new contracting routes.[79] Design choices that keep this disciplined are as follows:

- Eligibility threshold for buyers (large loads only, at first), to avoid destabilizing cross-subsidies overnight.
- Additionality for supply (new renewable capacity, or clearly incremental procurement), so wheeling grows clean supply rather than merely reshuffling who buys what.
- Phased geography (begin where grids can accommodate transactions and where network data is strongest).

This sequencing also responds to the political reality that wheeling has been contentious in the New and Renewable Energy Bill (RUU EBET), with government signals at times leaning toward removing or not proposing the clause, and political leaders voicing concerns about PLN's monopoly role.[80] The reform path, therefore, should not depend on a single legislative "big bang"; it should use existing legal hooks and scale via implementable regulations.

Replace case-by-case bargaining with an Open Access rulebook. Indonesia's current framework, while enabling in principle, still leans heavily toward proposal, then evaluation**,** negotiation, and finally approval — a sequence that can work for pilots but does not scale.[81] The predictable failure mode is not outright refusal; it is delay, discretion, and dispute.

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[77] KESDM, 2025. Rencana Umum Ketenagalistrikan Nasional (RUKN) 2025–2060. Ministry of Energy and Mineral Resources, Jakarta.
[78] Waluyo, 2025, *op cit*.; Komalasari, 2024, *op cit*.
[79] "*Reuters*, (December 18, 2025), *op cit*. https://www.reuters.com/sustainability/climate-energy/jetp-estimates-indonesia-needs-92-billion-by-2050-decarbonising-captive-power-2025-12-18/ (accessed on December 20, 2025).
[80] Batubara, 2024, *op cit*.; RI, 2012, *op cit*.
[81] RI, 2021, *op cit*.

So the central design upgrade is: convert "sewa jaringan" (network lease or rental) from a negotiated price into standardized access products and published charges, including the following:

- Standard service products (firm and non-firm wheeling; long-term and short-term).
- A transparent access and interconnection queue (milestones, data requirements, deadlines, and anti-hoarding penalties).
- Published transfer capability and constraint reporting, so "no capacity" becomes verifiable.
- Standard-form agreements, so each transaction does not die in bespoke contract redlines.

This is the institutional meaning of "open access" in practice: not philosophical permission, but published, non-discriminatory terms.

Price it honestly: separate energy, wires, and public obligations. The strongest anti-wheeling argument is fiscal-political: if creditworthy large customers leave PLN's bundled sales, PLN's ability to fund universal service, subsidies, and legacy obligations may weaken — pushing costs back onto households or the state budget.[82] The design answer is not prohibition; it is explicit cost allocation.

A credible wheeling tariff architecture should unbundle payments into three components:

- Energy payment (generator–buyer contract price; the competitive part).
- Network use-of-system charge (wheeling charge paid to the grid business, covering regulated transmission and distribution costs, including losses).
- System obligation charge (a transparent, time-bound charge to cover legitimate legacy costs and public service obligations during transition).

Two guardrails matter here. First, the wheeling charge must cover what the transaction actually consumes: network capacity, losses, system operation, and (where structured) balancing/ancillary services. Second, legacy cost recovery must be time-limited and defined, not a perpetual surcharge that quietly taxes competition into irrelevance. This is how reform stays both pro-market and pro-state: the market is allowed to function, while the state's social obligations remain funded — explicitly.

Make reliability boring: scheduling, imbalance settlement, and curtailment rules. Wheeling works only if the grid can answer, in real time: who is responsible when schedules diverge from reality? Indonesia should specify default operational rules from the start:

- Scheduling (day-ahead nominations with intraday updates where feasible).
- Imbalance responsibility (either the buyer/supplier is balance-responsible, or balancing is purchased as a priced service from the system operator).
- Curtailment protocols (transparent priority rules during congestion and security events, plus reporting and dispute processes).

Without this, critics will be correct in practice even if wrong in principle: wheeling becomes a perceived threat to reliability and a magnet for political backlash.

Governance: ring-fence the grid and create a fast dispute mechanism. The political economy trap is obvious: if PLN remains simultaneously the dominant supplier

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[82] Dwi, A., 2024. "Penolakan Terhadap Skema Power Wheeling Dalam RUU EBET," *Listrik Indonesia* (September 3, 2024), listrikindonesia.com (diakses pada December 22, 2025). https://listrikindonesia.com/detail/14041/penolakan-terhadap-skema-power-wheeling-dalam-ruu-ebet (accessed on December 22, 2025); Rossi, J., 2000. "Universal Service in Competitive Retail Electric Power Markets: Whither the Duty to Serve?" *Energy Law Journal* 21(1), pp. 27–49; Pace, J.D., 1987. "Wheeling and the Obligation to Serve," *Energy Law Journal* 8, pp. 265–302.

and the gatekeeper of network access, open access will never be fully trusted. The solution is not necessarily full privatization. It is ring-fencing and neutrality:

- A clearly separated grid business (functionally unbundled transmission/distribution operations with regulated revenues and performance targets).
- An access regulator (or regulator-like function) that can enforce non-discrimination.
- A fast-track dispute mechanism with deadlines and interim measures, so access disputes are not resolved on the same timeline as geological eras.

This is also how PLN "wins" in a wheeling world: PLN becomes the paid platform — rewarded for throughput, reliability, and timely connections — rather than an institution forced to defend monopoly rents to finance social obligations.

Regional proof-of-concept: learn from corporate open access models. Indonesia does not need to copy another country's market wholesale architecture to make wheeling usable. It can borrow narrower design lessons from corporate open access schemes: Malaysia's Corporate Renewable Energy Supply Scheme (CRESS) is explicitly framed as enabling corporate consumers to source renewable energy through open access to the grid, under defined access charges and rules.[83] Such regional examples matter less as templates than as political reassurance: open access can be structured as a regulated service, not a surrender of sovereignty.

Phasing: pilot and then scale. Indonesia should treat pilots as the first deployment of a national system, not as exceptions:

- Pilot 1, large corporate users, new renewables, standardized contracts and charges, basic scheduling and settlement.
- Pilot 2, expand geography and introduce firmer congestion/curtailment protocols.
- Scale, broaden eligibility gradually as network transparency, metering, and governance mature.

Parallel to this, government and PLN should provide an "easy option" for corporates that want clean power without complexity (green tariff / sleeving products) — so wheeling is not the only path, but it remains the discipline mechanism that forces transparency.

Wheeling can work in Indonesia if it is treated as regulated platform reform, not as a symbolic liberalization battle. The state's job is to make access rule-based; PLN's job is to become the neutral carrier and reliable system backbone; the market's job is to bring investment and innovation where competition is useful. The political argument for reform, then, is not that wheeling weakens the state — it is that wheeling is how the state proves it can govern a modern grid without relying on monopoly opacity as a substitute for policy.

3.3 Unbundling Distribution: Unbundling the Customer

If transmission is the backbone, distribution is the face — the business that shows up (or fails to) on people's doorsteps as outages, voltage dips, slow connections, inaccurate bills, and "mysterious" losses. It is also where the political economy hides: cross-subsidies, arrears, theft, and the daily friction between a public service obligation and a commercial balance sheet. That is precisely why distribution reform can be the most

[83] ECM (Energy Commission of Malaysia), 2024. *Guideline for Corporate Renewable Energy Supply Scheme (CRESS)* (First Edition, September 2024). Energy Commission of Malaysia, Putrajaya.

controversial — and, in many countries, the most valuable. In many instances, unbundling distribution show strong case for privatization.

Start with first principles: distribution is two businesses, not one. Distribution is routinely treated as a single monopoly. In reality it is at least two functions:

- The wires business — owning, maintaining, and expanding the local network (a natural monopoly).
- The supply/ retail business — billing, customer service, product design, and procurement (potentially competitive, at least for large customers).

Reform begins by unbundling these functions. The wires company becomes a regulated monopoly "platform." Retail becomes a licensed activity that can be opened gradually, starting with large users. This distinction is not an imported ideology; it is the practical way to get efficiency without gambling with reliability.

Indonesia's existing framework already hints at "open access" thinking even at the distribution level: PP 14/2012 explicitly allows the opportunity for shared use of distribution networks through a network lease (sewa jaringan) mechanism, subject to distribution capacity.[84].[1] That provides a legal foothold for retail choice and corporate supply models — but only if the rules evolve from case-by-case bargaining into a predictable access regime.

The spectrum of distribution reform — from "better PLN" to competitive retail. A credible reform menu runs from modest to transformative:

- Functional unbundling within PLN: separate accounts and performance targets for distribution, so losses and underinvestment stop being cross-subsidized invisibly.
- Corporatized regional Distribution Companies (DisCos): PLN distribution is split into regionally accountable entities with ring-fenced finances, regulated revenue, and enforceable service standards.
- Privatization or long-term concessions of DisCos: private operators run the wires-and-service business under regulated tariffs and strict output obligations (loss reduction, reliability, connection times).
- Retail liberalization ("open access"): customers above a defined threshold can choose their supplier while captive customers remain protected; the DisCo remains the neutral platform and "supplier of last resort" backstop.

This is the key point: distribution can be privatized without "privatizing electricity". The monopoly remains regulated; competition is introduced where it is feasible.

Why distribution is often the best candidate for privatization. Privatizing generation is about investment. Privatizing distribution is about performance — and accountability.

- Loss reduction is where cash is hiding. In many systems, the fastest way to improve sector finances is not building more supply, but stopping electricity (and revenue) from disappearing between the substation and the customer. Delhi's 2002 distribution privatization is repeatedly cited because it was explicitly designed around Aggregate Technical and Commercial (AT&C) loss reduction targets, with a competitive selection process and regulatory oversight. The model is documented not only by the private operators, but also in multilateral policy notes that describe the structure — unbundling, competitive selection, and a regulator adopting loss-reduction trajectories.[85]

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[84] RI, 2012, *op cit*.
[85] PPIAF (Public–Private Infrastructure Advisory Facility), 2020. *Privatization of Power Distribution* (Delhi DisCom privatization model: unbundling, competitive selection, AT&C loss trajectories, regulatory role).

- Reliability and customer service are measurable outputs — perfect for incentive regulation. Distribution is uniquely suited to output-based regulation: outage frequency and duration, restoration times, connection delays, complaint resolution, voltage quality, and customer satisfaction. The United Kingdom's Office of Gas and Electricity Markets (Ofgem) shows what a mature regime looks like: distribution network operators face explicit performance incentives and penalties (for example, on interruptions and customer service), alongside new expectations for "distribution system operation" to manage distributed resources and flexibility.[86]
- Private participation can deliver durable efficiency gains — when institutions exist. Evidence from Latin America links private participation and institutional reform to improved performance across efficiency and quality indicators over long periods, emphasizing that ownership change works best when paired with governance and regulation.[87] In Brazil, peer-reviewed work has assessed the long-run effects of distribution privatization using regulatory performance indicators, precisely because distribution is the segment where metrics are most comparable over time.[88]

So the pro-privatization argument is not that private owners are morally superior. It is that distribution is operationally fixable, and incentives matter.

The strongest critique —but not a reason to stop. The critique of distribution privatization is equally serious: a private monopoly can be worse than a public one if regulation is weak, politics is inconsistent, or tariffs are not credibly set. There are two classic failure modes:

- Tariffs become politically frozen, and costs accumulate as "regulatory assets". When governments delay cost-reflective tariffs, losses do not disappear — they turn into arrears, deferred costs, and eventually court cases. Even Delhi, the poster child, has faced recurring controversy over large deferred recoveries ("regulatory assets") and the politics of who pays and when.[89] This is not a condemnation of privatization; it is proof of a deeper law of physics: someone always pays — the only question is whether they pay transparently and on time.
- Underinvestment and "discrimination by neglect". If service obligations and enforcement are weak, private operators may rationally prioritize high-margin zones and postpone capex in low-income areas — unless the regulatory contract forces universal service and quality standards.

This is why the World Bank's reform literature is consistent on one point: reforms succeed when the institutional "minimum conditions" — credible regulation, tariff-setting, governance, and enforcement — are present or deliberately built alongside restructuring.[90] The critique does not defeat the reform case. It sharpens it: privatization is not a substitute for regulation; it is a reason to make regulation stronger.

A workable design for Indonesia. A distribution reform package that is both pro-market and pro-state looks like this:

- **Step 1 — Unbundle distribution inside PLN (immediately)**. Create ring-fenced distribution accounts and performance reporting. Treat distribution not as a cost center, but as a regulated business with explicit outputs: reliability,

[86] OGEM (Office of Gas and Electricity Markets), 2024. *RIIO-2 Electricity Distribution Annual Report 2023–24* (performance incentives including interruptions and distribution system operation).
[87] Balza, L., R.A. Jimenez Mori, and J.E. Mercado Díaz, J. E., 2013. *Privatization, Institutional Reform, and Performance in the Latin American Electricity Sector*. Inter-American Development Bank, Washington, D.C..
[88] Muller, R.B., and E.E. Rego, 2021. "Privatization of electricity distribution in Brazil: Long-term effects on service quality and financial indicators," *Energy Policy*, 159.
[89] Mathur, A., 2025. "BSES Discoms to recover 28.5k Cr dues," *Times of India* (August 9, 2025).
[90] Foster and Rana, 2019, *op cit*.

losses, connection speed, customer satisfaction, and distributed energy readiness.

- **Step 2 — Create regional DisCos with regulated "wires" revenue (Year 1–2)**. Split PLN's distribution function into regional DisCos (Java–Bali sub-regions, Sumatra corridors, Eastern Indonesia clusters), each with:
    - exclusive network obligations in its area,
    - regulated revenue allowances tied to outputs, and
    - transparent loss baselines and improvement trajectories.

- **Step 3 — Privatize DisCos through concessions or partial equity (Year 2–4)**. Privatize *operations and investment obligations* without surrendering public control:
    - tender DisCo concessions (15–30 years) or sell controlling stakes with a golden share;
    - make the bid variable the loss-reduction and service-improvement trajectory (Delhi's design logic), not just price;[91]
    - impose non-negotiable standards: reliability indices, connection timelines, minimum capex, anti-theft programs, and metering deployment.

- **Step 4 — Liberalize retail gradually ("contestable customers" first)**. Introduce retail choice for large users first, while retaining captive customers under regulated supply. This is the same "two-tier" logic used in systems that introduced retail choice without abandoning protection for smaller customers. The Philippines' Retail Competition and Open Access (RCOA) framework, enabled under the Electric Power Industry Reform Act (EPIRA), explicitly distinguishes contestable customers from captive markets and sets a policy basis for competition while emphasizing reliability and public interest.[92] For Indonesia, this dovetails with the existing sewa jaringan concept in PP 14/2012 — but it must evolve from negotiated access to standardized products and published charges.[93]

- **Step 5 — Make subsidies and universal service explicit (so PLN is not set up to fail)**. If the state wants social tariffs and electrification mandates, fund them transparently as public service obligations, not as hidden cross-subsidies inside a DisCo's balance sheet. This is not a technical detail — it is what prevents "reform" from becoming an accounting trick.

What PLN should do in a liberalized, privatized distribution future. PLN doesn't need to be "abolished." It should be repositioned:

- Exit being the universal everything-company. PLN becomes a holding structure with distinct subsidiaries: generation, retail supply, and (if retained) a ring-fenced platform role.
- Serve as supplier of last resort (and benchmark retailer). In a contestable retail segment, PLN (or its retail arm) competes on service and products, while remaining the default supplier for captive customers until full readiness.

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[91] PPIAF, 2020, *op cit*.
[92] Department of Energy (Philippines), 2017. *Department Circular 2017-12-0013: Policies on the Implementation of Retail Competition and Open Access (RCOA) for Contestable Customers*; "Retail Competition and Open Access (RCOA) — Overview," Meralco. https://meralcopowergen.com.ph/gesc-2/rcoa/ (accessed on December 21, 2025).
[93] RI, 2012, *op cit*.

- Lead the transition management of legacy burdens. PLN (or government) manages the legacy contract and subsidy unwind transparently — time-bound and declining — so the new DisCos and suppliers are not born insolvent.
- Compete where competition belongs. PLN's scale can be an advantage in retail and generation — but only after it stops controlling the gate.

3.4 Rooftop Solar "15%" Limits: Why the Utility Wants a Brake — and What That Signals for Reform

The "15 percent rule" has taken on a life of its own in Indonesia's power-sector debates: as a symbol of how far customer choice can go before the incumbent pulls the handbrake. In practice, it has appeared less as a single, universally applied legal provision and more as reported operational guidance in parts of the PLN system — that rooftop solar photovoltaic (PV) installations should be kept around 10–15 percent of a customer's connected capacity. A business press report, for example, described PLN limiting rooftop solar PV to a maximum of 15 percent and linked it to the absence (at the time) of finalized technical guidance.[94]
At the same time, PLN has publicly denied imposing a blanket 15 percent cap. In one widely cited response, PLN argued it never limited rooftop solar PV to 15 percent of installed capacity and emphasized that rooftop solar PV should primarily serve self-consumption, not become a route for exporting excess electricity to PLN — especially under oversupply conditions. That denial is telling: it signals that PLN sees the controversy not as "we are blocking solar," but as "we are blocking exported solar (and the financial and operational consequences that follow)".[95]

So the real question is not whether "15 percent" is a formal national rule. The real question is why a limit — formal or informal — feels necessary to the system operator and the incumbent utility, and what that reveals about the readiness of Indonesia's distribution system to function as a neutral platform in a reformed market.

3.4.1 The Case For and Against Limiting

From a distribution-operator perspective, the engineering concerns are not imaginary. High rooftop solar PV penetration can create voltage rise, reverse power flow, protection coordination issues, and localized congestion — especially on feeders that were built to deliver power one-way, from substation to load. When visibility is limited (few smart meters, limited feeder monitoring, and slow automation), a conservative cap is the administrative equivalent of driving with the handbrake partly engaged: it reduces the chance of an incident, at the cost of speed and efficiency.

But the more politically potent drivers sit on the commercial side. Under the earlier rooftop solar PV regime, export-import metering (and compensation mechanics) meant rooftop solar PV could reduce a customer's bill not only by lowering consumption, but also by exporting surplus to the grid. The formal rulebook under KESDM Regulation No. 26/2021 allowed rooftop solar PV capacity up to 100 percent of the customer's connected capacity (daya tersambung) and regulated the export-import arrangement.[96] In an oversupplied system, PLN's position has been that it cannot be expected to

[94] Rahayu, A.C., 2022. "Alasan PLN Batasi Pemasangan PLTS Atap Maksimum 15%," *Kontan* (May 2022) (diakses pada December 21, 2025).
[95] Riyandanu, M.F., 2022. "PLN Bantah Isu Batasi Pemasangan Daya PLTS Atap 15%," *Katadata* (November 28, 2022). https://katadata.co.id/berita/energi/6384bd31e1dda/pln-bantah-isu-batasi-pemasangan-daya-plts-atap-15/ (accessed on December 21, 2025).
[96] KESDM, 2021. Peraturan Menteri Energi dan Sumber Daya Mineral Republik Indonesia Nomor 26 Tahun 2021 tentang Pembangkit Listrik Tenaga Surya Atap yang Terhubung pada Jaringan Tenaga Listrik Pemegang Izin Usaha Penyediaan Tenaga Listrik untuk Kepentingan Umum.

absorb "excess" exports; it frames rooftop solar PV as intended for self-use, not as an export channel.[97] In plain terms: PLN's insistence on limitation is a combined response to technical uncertainty and a revenue/ obligation model that is still tied to kilowatt-hour sales and legacy costs.

The contemporaneous reporting around the "15 percent" practice also hints at a transitional governance gap: limits were justified, at least in part, by the absence of finalized technical implementation rules.[98] That is a classic symptom of systems where the utility is held accountable for reliability outcomes but lacks the full regulatory toolkit — and incentives — to modernize the distribution network quickly.

Developers and consumers tend to argue that a blunt percentage cap is the wrong instrument. If the constraint is local hosting capacity, then the remedy should be feeder-level engineering standards, transparent interconnection procedures, and targeted upgrades — not a customer-level ceiling that may be unrelated to the actual limiting transformer or feeder segment.

They also argue (more fundamentally) that uncertainty over access rules is itself the problem. When the national regulation says "up to 100 percent", but practice becomes "10–15 percent in some places", the market learns that formal rights can be narrowed through operational discretion.[99] That lesson travels far beyond rooftop solar PV: it affects confidence in power wheeling, third-party access, and any distribution liberalization that depends on predictable, non-discriminatory network access.

3.4.2 Why the debate intensified: the system's policy posture shifted from "rules" to "rationing"

The arc of rooftop solar PV policy helps explain why PLN's insistence on limitation kept recurring — even as the shape of the limitation changed. KESDM Regulation No. 2/2024 explicitly states, in its rationale, that policy was adjusted by removing provisions on capacity limits, export-import energy, and capacity charges, while adding quota provisions for rooftop solar PV development.[100] The Ministry's press communications framed this as "capacity not limited", but the practical logic is "capacity allowed within quotas and system readiness".[101] Indonesia's Cabinet Secretariat summary was more direct: rooftop solar PV capacity is not limited to 100 percent of connected power anymore, but determined by PLN's quota availability, alongside the removal of export-import compensation.[102]

Critics, including the Institute for Essential Services Reform (IESR), argued that removing net-metering and moving toward quota-based administration could slow deployment and complicate the achievement of renewable energy targets.[103] Whether one agrees

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[97] Riyandanu, 2022, *op cit*.
[98] Rahayu, 2022, *op cit*.
[99] KESDM, 2021, *op cit*.; Rahayu, 2022, *op cit*.
[100] KESDM, 2024. Peraturan Menteri Energi dan Sumber Daya Mineral Republik Indonesia Nomor 2 Tahun 2024 tentang Pembangkit Listrik Tenaga Surya Atap yang Terhubung pada Jaringan Tenaga Listrik Pemegang Izin Usaha Penyediaan Tenaga Listrik untuk Kepentingan Umum (rationale on removing capacity limits/export-import and adding quota provisions).
[101] KESDM, 2024. "Aturan Terbaru PLTS Atap Terbit, Kini Kapasitas Pemasangan Tidak Dibatasi" Siaran Pers, Kementerian Energi dan Sumber Daya Mineral (March 5, 2024). https://www.esdm.go.id/id/media-center/arsip-berita/aturan-terbaru-plts-atap-terbit-kini-kapasitas-pemasangan-tidak-dibatasi (accessed on December 2025).
[102] "Pemerintah Terbitkan Aturan Terbaru PLTS Atap, Kapasitas Pemasangan Tidak Dibatasi," Sekretariat Kabinet (March 2024). https://setkab.go.id/pemerintah-terbitkan-aturan-terbaru-plts-atap-kapasitas-pemasangan-tidak-dibatasi/ (accessed on December 21, 2025).
[103] Hasjanah, K., and U. Simanjuntak, 2024. "Permen ESDM No. 2/2024 Membatasi Partisipasi Publik untuk Mendukung Transisi Energi lewat PLTS Atap" Press Release, Institite for Essential Services Reform (March 2024). https://iesr.or.id/permen-esdm-no-2-2024-membatasi-partisipasi-publik-untuk-mendukung-transisi-

with that critique or not, the governance signal is unmistakable: Indonesia has been moving from a rights-based framework ("you may install up to a certain percent of your connection") toward an administrative framework ("you may install if quota exists").

3.4.3 Implications for Reform: What the "15 percent" Controversy is Really About

Once you treat the "15 percent rule" as a symptom rather than a headline, its reform implications become clearer. First, it exposes the unfinished business of distribution unbundling. A reformed system needs a distribution entity that behaves like a regulated platform — paid for performance in reliability, connections, and hosting capacity — rather than a gatekeeper whose default tool is discretionary restriction. If rooftop solar PV access remains discretionary, more complex open-access instruments (wheeling, retail competition for large users, aggregators) will struggle to scale credibly.

Second, it highlights the cost-recovery problem that reform must face directly. PLN's instinct to limit exports is not only technical; it is also about who pays for legacy obligations and public service mandates when large customers reduce purchases. If reform avoids explicit treatment of stranded costs and universal service financing, the system will repeatedly fall back on administrative rationing — caps, quotas, procedural friction — because it is the only available way to protect the incumbent's finances without admitting the real accounting.

Third, it shows why "open access" is more governance than ideology. Rooftop solar PV is the simplest form of distributed entry. If the system cannot provide transparent interconnection rules, feeder hosting capacity visibility, and standardized timelines for rooftop solar PV, it will be hard to claim readiness for deeper liberalization at the distribution edge.

In that sense, the "15 percent" debate is not mainly about a number. It is about whether Indonesia wants distributed energy to be governed through transparent, technical rules and cost-reflective network charges, or through administrative rationing and discretionary approvals — two very different institutional futures for a reformed electricity market.

3.5 Tariff Opacity, "One National Price," and the Hidden-Subsidy Problem

Indonesia's one national electricity price is politically elegant: it signals that a household in Java and a small business in Maluku are treated as equals. The trouble is that the power system does not share that elegance. Costs vary sharply by geography, fuel logistics, grid topology, and generation technology — which means a single national retail tariff can only be sustained by (1) explicit fiscal transfers, (2) cross-subsidies inside the system, or (3) both. When the second mechanism is not clearly measured and published, it becomes a hidden subsidy — not necessarily illegitimate, but analytically slippery and structurally distortionary.

The law does not require a single national tariff — policy does. Under Law No. 30/2009, tariffs are set by the Government with the approval of the Dewan Perwakilan Rakyat (House of Representatives), and the law explicitly allows tariffs to be "set differently in each area within a business area".[104] In other words, a uniform national tariff is not a constitutional or statutory inevitability; it is a policy choice — and therefore fair game for redesign.

The system already "admits" cost diversity — then hides it in settlement. The regulatory architecture recognizes that costs are not uniform through Biaya Pokok Penyediaan

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energi-lewat-plts-atap/ (accessed on December 21, 2025).
[104] RI, 2009, *op cit*.

Tenaga Listrik (BPP Tenaga Listrik) — the cost of supplying electricity through to delivery to the consumer.[105] The Ministry of Finance's subsidy rules further operationalize BPP Tenaga Listrik by defining cost components (fuel, purchased power, operations and maintenance, depreciation, financing costs, and other adjustments) and using the latest published BPP Tenaga Listrik data in subsidy settlement.[106]

The state already has a cost concept that can support transparency. The opacity arises because the public-facing tariff (the "one price") is not a clean reflection of these differentiated costs — and the gap is then covered through instruments that are visible in aggregate, but not always illuminating in distributional detail.

Fiscal support exists — but it also masks where the burden truly sits. PLN's own audited *Statistics PLN 2024* shows the scale of state support: in 2024, total operating revenue was Rp545.38 trillion, including Rp77.05 trillion in government electricity subsidies and Rp100.18 trillion in compensation revenue. Together, subsidy plus compensation equals about 32.5 percent of operating revenue — a large enough share to make any discussion of "PLN profitability" incomplete unless fiscal flows are placed front and center.[107]

Compensation is particularly revealing because it is, by design, a payment for *the* difference between what tariffs would be under the adjustment formula and what the Government actually sets for non-subsidized customers.[108] PLN's own public communications describe compensation as covering tariff gaps relative to BPP Tenaga Listrik for certain customer groups.[109] This is not merely accounting trivia; it is the fiscal footprint of a politically constrained tariff regime.

Where the "hidden subsidy" sits — and why it matters for reform. Even with explicit subsidies and compensation, a uniform tariff across very different supply-cost realities tends to create implicit cross-subsidies. The logic is mechanical:

- If tariff is the same everywhere, but cost-of-supply differs widely, then surplus in low-cost systems (or customer classes) is effectively used to cover deficits elsewhere — unless the gap is fully covered by explicit budget transfers.
- If the size and direction of these transfers are not published in a way that matches operational reality (by system, region, and voltage level), the subsidy becomes "hidden" — meaning policymakers cannot easily answer: Who pays for whom, how much, and with what efficiency?

This matters because hidden subsidies do not just redistribute — they also distort:

- Investment signals get scrambled. Cost-reflective pricing is how systems communicate where efficiency gains and least-cost investments are. When price signals are averaged into a single number, capital allocation becomes more political and less economic. Foster and Witte show globally that tariff designs often miss cost-recovery and price-signal objectives — and that weak price signals become more problematic as distributed generation and new technologies expand.[110]

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[105] KESDM, 2024. Peraturan Menteri Energi dan Sumber Daya Mineral No. 7/2024 tentang Tarif Tenaga Listrik yang Disediakan oleh PT Perusahaan Listrik Negara (Persero).
[106] MOF (Ministry of Finance of the Republic of Indonesia), 2025. Peraturan Menteri Keuangan No. 20/2025 tentang Tata Cara Penyediaan, Penghitungan, Pembayaran, dan Pertanggungjawaban Subsidi Listrik.
[107] PLN, 2024. *Statistics PLN 2024 (Audited)*. PT Perusahaan Listrik Negara (Persero), Jakarta.
[108] MOF (Ministry of Finance of the Republic of Indonesia), 2021. Peraturan Menteri Keuangan Nomor 159/PMK.02/2021 (definition of electricity tariff compensation mechanism; published in Berita Negara).
[109] PLN, 2024. "Berikan Kompensasi Listrik Rp 17,8 T ke PLN, Pemerintah Hadir Lindungi Rakyat Dalam Pemulihan Ekonomi" Press Release, (May 24, 2024), PT Perusahaan Listrik Negara (Persero). https://web.pln.co.id/media/siaran-pers/2024/05/berikan-kompensasi-listrik-rp-178-t-ke-pln-pemerintah-hadir-lindungi-rakyat-dalam-pemulihan-ekonomi (accessed on December 21, 2025).
[110] Foster, V., and S. Witte, 2020. "Falling Short: A Global Survey of Electricity Tariff Design," *World Bank Policy*

- Accountability weakens. When affordability is delivered through opaque cross-subsidy, it is harder to evaluate whether the state is "buying equity" efficiently — or simply financing inefficiency quietly.
- PLN's balance sheet becomes a policy shock absorber. When tariffs are frozen, the difference reappears as compensation arrears, quasi-fiscal pressure, or debt — with "stability" achieved by moving volatility from consumers into the utility and the budget. IEEFA's analysis of PLN's finances argues that headline profitability can be misleading when subsidies and compensation dominate the revenue story.[111]

What is better in a reformed market: one national rulebook, transparent transfers, cost-reflective prices. A reformed electricity market does not need to abandon social equity. It needs to stop achieving equity through accounting fog. The core design shift is this: keep national solidarity as an explicit policy goal, but deliver it through *transparent* instruments — while letting prices do their job as signals. A workable reform package looks like the following:

- Unbundle the tariff into what it really is. Separate (1) energy supply, (2) transmission and distribution network charges, and (3) policy costs (subsidy/equalization). This makes it possible to regulate the wires as a natural monopoly while liberalizing supply.
- Move toward cost-reflective wholesale pricing (zonal first; nodal later). Even before full retail competition, a zonal wholesale market (or at minimum, transparent system-based cost benchmarks) reveals where marginal costs are high and why. That is the informational backbone of dispatch efficiency and investment discipline.
- Replace hidden cross-subsidy with an explicit "equalization" mechanism. If the state wants consumers in high-cost systems to pay something closer to the national norm, that support should be booked as an explicit transfer — funded transparently (through Anggaran Pendapatan dan Belanja Negara, APBN, the State Budget, and/ or a clearly stated levy), with published allocation rules by system and customer segment.
- Target affordability to households, not to megawatt-hours. Use lifeline blocks and/ or direct transfers for low-income households, while letting other tariffs converge toward cost-reflective levels. This reduces "leakage" (subsidies benefiting those who do not need them) — a classic critique in global subsidy literature and a recurring theme in power-sector reform assessments.[112]
- Mandate radical transparency as a market precondition. A liberalized market cannot rest on consolidated, non-comparable accounts. Require regulatory accounting that disaggregates costs and revenues by: system/region, voltage level, and function (generation, transmission, distribution, retail). Publish BPP Tenaga Listrik and settlement outcomes in a way that lets Parliament and the public audit the equity-efficiency trade.

The best critique — and the answer. Regionalized tariffs will be politically explosive and could worsen inequality in remote areas. Answer: Exactly — if regionalization is done as "price hikes with no protection." The reform answer is not to keep distortion; it is to make protection explicit and targetable. A transparent equalization fund plus household-targeted assistance preserves equity while restoring efficiency and accountability. The politics do not disappear, but they become honest.

Research Working Paper 9174. World Bank, Washington, DC.

[111] Yustika, M., 2024. *Pathways to Financial Sustainability for PLN through Renewable Energy Development*. Institute for Energy Economics and Financial Analysis, Cleveland.

[112] Foster and Rana, 2019, *op cit*.

3.6 Setting Tariff Commercially, Not Politically

PLN is not really a "price setter." It is a price taker — allowed to charge only the retail Tarif Tenaga Listrik (Electricity Tariff) that the Government sets (with legislative approval), and explicitly prohibited from applying a consumer tariff that is not in line with that government determination. The legal logic is clear enough: tariffs are a public decision, not a commercial decision by the utility.[113]

Electricity tariffs in Indonesia have historically been set by the Government (rather than by PLN) because electricity is treated as a public-utility service tied to Article 33's "state control" mandate — meaning price is framed as a welfare instrument (affordability and equity) and an extension of state responsibility, not a commercial decision of a utility. This approach was embedded in the state-centered framework of the earlier Electricity Law (Law No. 15/1985), then politically and legally reinforced when the Constitutional Court struck down the liberalizing Electricity Law (Law No. 20/2002) for conflicting with Article 33, and it was re-codified in Law No. 30/2009, which explicitly grounds electricity supply in state control and government administration rather than PLN's pricing discretion.

That is why the common shorthand — "the President sets PLN's selling price" — is directionally right, even if the plumbing runs through the KESDM and the House of Representatives. The Directorate General of Electricity's own tariff guidance states that the tariff is set by the MEMR Minister after approval from the House, and that the tariff is calculated from BPP Tenaga Listrik (Cost of Electricity Supply) plus a "reasonable" margin.[114] PLN's public tariff page likewise frames its tariffs as referencing the prevailing MEMR tariff regulation and tariff-adjustment mechanism — again reinforcing that PLN is implementing an administered regime, not choosing a price.[115]

In a reformed market, the right move is not to flip the table and let PLN charge whatever it wants. The right move is to stop pretending there is only one "PLN price." Electricity has at least three price layers, and reform works when each layer is governed in the way that matches its economics and politics. First: energy should be priced through competition (or competitive procurement as a bridge), not decree. The price of kilowatt-hours — the energy itself — should increasingly be formed through wholesale market competition (bids/offers) or transparent auctions for long-term contracts where markets are still maturing. This is how you get least-cost dispatch and investment discipline — and how you stop forcing a single administratively set number to carry the whole system's inefficiencies.[116]

Second: the wires should be priced as regulated services, explicitly. Transmission and distribution remain natural monopolies. Their charges should be carved out and regulated as network services, instead of being buried inside an all-in retail tariff. Once network costs are explicit, cost differences across regions and systems become visible

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[113] RI, 2009, *op cit*.
[114] Gatrik (Directorate General of Electricity, Ministry of Energy and Mineral Resources, Republic of Indonesia), n.d. *FAQ Tarif Tenaga Listrik*. Jakarta (accessed December 21, 2025). https://gatrik.esdm.go.id/assets/uploads/download_index/files/df17c-faq-tarif-tenaga-listrik-edit-hasil-rapat_sr4.pdf (accessed on December 21, 2025).
[115] "Tarif Tenaga Listrik," Perusahaan Listrik Negara. https://web.pln.co.id/tarif-tenaga-listrik (accessed on December 21, 2025).
[116] *ibid*.; Foster and Rana, 2019, *op cit*.; IEA, 2025. *Electricity Market Design: Building on strengths, addressing gaps*. International Energy Agency, Paris; Maurer, L.T.A., and L.A. Barroso, 2011. *Electricity Auctions: An Overview of Efficient Practices*. World Bank, Washington, DC; Joskow, P.L., 2019. "Challenges for wholesale electricity markets with intermittent renewable generation at scale: the US experience." *Oxford Review of Economic Policy* 35 (2), pp. 291–331.

— and governable — rather than being silently cross-subsidized inside a consolidated PLN account.

Third: equity should be priced as equity — explicitly funded and targeted. If Indonesia wants national solidarity (for remote, high-cost systems and vulnerable households), that is a legitimate political choice — but it should be delivered through explicit instruments (targeted subsidies and/or an equalization mechanism), not through a uniform administered tariff that obscures who pays, who benefits, and how large the transfer really is.[117] The Electricity Law itself even allows tariffs to be set differently across areas within a business area — meaning "one national price" is a choice, not a legal constraint.[118]

Once you structure pricing this way, PLN's "selling price" naturally splits in two:

- For contestable customers (large users first), PLN's supply arm competes and can offer commercial prices because customers have credible alternatives.
- For non-contestable customers (households and small businesses during transition), PLN supplies at a regulated default tariff — but with clearer pass-through rules and explicit subsidy design, so political affordability decisions don't automatically turn into hidden financial stress for the sector.[119]

This is the deeper reform payoff: the President (and Government) still sets the social contract — affordability objectives, reliability standards, and how solidarity is funded — but steps away from administratively fixing a single retail price that cannot reflect Indonesia's diverse cost realities without generating opacity and hidden transfers.[120]

3.7 Making Subsidies Transparent

Subsidies in Indonesia's electricity sector are often defended as a social promise — affordable power for households and equal treatment across a geographically fragmented archipelago. The problem is that subsidies have also become a structural pillar of sector cashflow, masking underlying cost differences and turning the utility's accounts into a political shock absorber rather than a transparent operating statement.[121]

In 2024, PT Perusahaan Listrik Negara (Persero) (PLN) recorded Rp545.38 trillion in operating revenue — but Rp77.05 trillion of that came as government electricity subsidies and Rp100.18 trillion as compensation. Together, that is Rp177.23 trillion — about 32.5 percent of total operating revenue, roughly 50% of electricity sales revenue, and almost 10 times PLN's net profit (Rp17.76 trillion).[122] This is not "support at the margin." It is a financing architecture.

Compensation is particularly revealing: it exists precisely because non-subsidized tariffs are not consistently set according to the government's own adjustment formula, and the state pays the utility for the resulting revenue shortfall.[123] That means the system is simultaneously trying to be *administrative* (prices held for macro and political reasons)

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[117] Armstrong, M., 2001. "Access Pricing, Bypass, and Universal Service," *American Economic Review*, 91(2) (May 2001), pp. 297–301.
[118] RI, 2009, *op cit*.
[119] RI, 2009, *op cit*.; Gatrik, n.d., *op cit*.; PLN, n.d., *op cit*.
[120] RI, 2009, *op cit*.; Foster and Rana, 2019, *op cit*.
[121] IISD (International Institute for Sustainable Development) and IESR (Institute for Essential Services Reform), 2012. *A Citizen's Guide to Energy Subsidies in Indonesia*. International Institute for Sustainable Development, Winnipeg.
[122] PLN, 2025, *op cit*. Revenue composition includes electricity sales Rp353.18 trillion; subsidies Rp77.05 trillion; compensation Rp100.18 trillion; net profit Rp17.76 trillion.
[123] MOF, n.d. "Dana Kompensasi Tarif Tenaga Listrik". Definition of electricity tariff compensation as payment for revenue shortfall due to deviation from the tariff adjustment formula.

and *financially viable* (utility costs still real, contracts still binding) — and the bridge between the two is a large, recurring fiscal transfer.

The next problem is targeting. The subsidy is large, but it is not always *surgically* social. Government reporting cited in business press indicates that the 2024 subsidy allocation is heavily concentrated in household categories — about 71 percent going to households, with 450 volt-ampere (VA) customers accounting for 52 percent (around Rp37.07 trillion) and 900 VA subsidized accounting for 19 percent (around Rp13 trillion).[124] This approach uses connection capacity as a proxy for welfare; it catches many poor households, but it also creates leakage and edge cases — and it leaves the state paying for *electricity consumption* rather than household vulnerability.

Then comes the political economy: a uniform national tariff (or nationally smoothed tariff classes) cannot reflect the reality that costs differ sharply by system and technology — especially where diesel-based and logistics-heavy supply persists. The result is an implied cross-subsidy that is hard to see in public accounts: low-cost systems silently support high-cost systems unless the budget fully and transparently equalizes the gap. The Ministry of Finance's subsidy rules already define the BPP Tenaga Listrik and its components (purchased power, fuel, maintenance, personnel, depreciation, financing, and adjustments), underscoring how cost-sensitive the sector is — yet the public debate often revolves around a single "tariff" number rather than published cost-of-service by system.[125]

Subsidies also distort investment signals. When prices are held below cost, demand response weakens, efficiency investments look less valuable, and least-cost procurement becomes politically fragile. Worse, some "low cost" narratives are themselves policy constructs: the coal supply chain, for instance, has been discussed as benefiting from price interventions (such as domestic coal pricing mechanisms) that can depress the apparent cost of coal-fired generation — making the transition debate less about technology economics than about which subsidies are visible.[126]

Finally, opacity is not incidental — it is expensive. If a third of revenue depends on fiscal transfers and formula deviations, then every reform instrument (unbundling, open access, retail competition) inherits the same question: who pays for the gap, how is it calculated, and when is it settled? If those answers are discretionary, private capital will price the risk, and reform will slow.

A reform agenda does not need to abandon equity. It needs to stop delivering equity through accounting fog.

- Shift from "subsidizing kilowatt-hours" to "supporting households". Keep a small lifeline tariff block, but move the main support to targeted, data-driven transfers (linked to social registries), so the state pays for vulnerability — not for electricity volumes consumed by anyone who happens to sit in a tariff class.[127]
- Make tariffs cost-reflective for non-vulnerable segments — automatically. Restore credible automatic tariff adjustment for non-subsidized customers, so "compensation" becomes exceptional rather than routine.[128]

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[124] Agung, F., 2024. "Realisasi Subsidi Listrik hingga April 2024 Capai Rp 23,45 Triliun," *Kontan* (June 4, 2024) . The article reports APBN 2024 subsidy allocation Rp73.24 trillion; distribution across household tariff groups including RT-450 VA and RT-900 VA subsidized.

[125] MOF, 2025. Peraturan Menteri Keuangan Nomor 20 Tahun 2025 tentang Tata Cara Penyediaan, Penghitungan, Pembayaran, dan Pertanggungjawaban Subsidi Listrik. The regulation defines BPP Tenaga Listrik and its components.

[126] Rahayu, A.C., 2023. "PLN Ungkap Biaya Pokok Penyediaan (BPP) Listrik EBT Masih Mahal," Kontan (December 17, 2023). The article discusses coal pricing support mechanisms and implications for apparent generation costs.

[127] Agung, 2024, *op cit*.; Foster and Rana, 2019, *op cit*.

[128] MOF, n.d., *op cit*.

- Create an explicit equalization mechanism for high-cost systems. If the policy goal is a national affordability standard, fund the difference through a transparent equalization transfer tied to audited cost-of-service by system — rather than burying cross-subsidies inside PLN's consolidated accounts.[129]
- Publish the numbers that matter. Require regulatory accounting that disaggregates costs and revenues by system/region and by function (generation, transmission, distribution, retail), and publish BPP and subsidy settlement outcomes in a way Parliament and the public can audit.[130]
- Reduce the underlying need for subsidy. Attack the cost base (loss reduction, contract rationalization where feasible, and least-cost procurement), and accelerate renewables where they lower long-run system costs and reduce exposure to volatile fuel and currency assumptions — a point emphasized in sector reform literature and PLN-focused financial analysis.[131]

Subsidies should be a visible social policy, not a hidden market design. When they are explicit, targeted, and auditable, the state can keep the promise of affordability without sacrificing transparency, efficiency, or investment credibility.

3.8 Making the Dual Commercial-Social Functions More Explicit

PLN's structural tension is not a moral failure; it is an institutional design problem. PLN is expected to behave like a commercially viable utility and like a social instrument that stabilizes tariffs, equalizes regional cost differences, and carries policy mandates. The result is predictable: costs and transfers get blended inside one set of accounts, and the true size of the social role becomes hard to read. When a third of revenue is effectively fiscal-policy throughput, "PLN's commercial performance" is inevitably entangled with political tariff decisions.

That is the core logic behind proposals to split PLN into two entities: (1) a commercial PLN that competes and invests under clearer business incentives, and (2) a dedicated electricity financial entity that transparently carries the social and transition mandates. The second entity would not "replace" PLN; it would buy public outcomes that the market will not deliver on its own — affordability for targeted households, equalization for high-cost systems, and incremental support for renewables and low-carbon reliability.

3.8.1 What The Split Actually Changes

The reform value is in separating prices from policy:

- Commercial PLN (and other sellers) would be held to clearer commercial logic: cost discipline, bankable procurement, and transparent performance.
- The electricity financial entity would carry the explicitly political choices: who gets subsidized, how much, and for what objective — and would fund them directly rather than smuggling them through distorted tariffs or opaque cross-subsidies.

This is not an abstract idea; Indonesia already has the fiscal concept of compensation as a payment for a tariff gap created by policy. The Ministry of Finance defines electricity compensation as a government payment to a business entity for revenue shortfalls arising from the difference between the formula-based non-subsidy tariff and the tariff actually set by government.[132] Electricity subsidy administration is also governed through

[129] MOF, 2025, *op cit*.; Foster and Rana, 2019, *op cit*.
[130] PLN, 2025, *op cit*.; MOF, 2025, *op cit*.
[131] Foster and Rana, 2019, *op cit*.; Yustika, 2024, *op cit*.
[132] MOF, n.d., *op cit*.

detailed Ministry of Finance rules.[133] The split simply institutionalizes these flows into a purpose-built vehicle with auditable mandates, instead of leaving them as a recurring patch on PLN's income statement.

3.8.2 Why it Improves Transparency and Reform Credibility

A two-entity model can clarify four things that currently blur together:

- Targeting and equity. Subsidies become explicitly targeted (by household eligibility and by system equalization), rather than being indirectly embedded in a single national tariff and PLN's consolidated finances.
- Cost signals and investment discipline. Commercial procurement and dispatch can become more cost-reflective, because the social objective is no longer achieved by suppressing the underlying price logic.
- Creditworthiness. Investors can finance commercial PLN and private entrants against clearer cashflows, while the state funds social obligations through a dedicated, budgeted mechanism.
- Policy additionality. Transition support (renewables, low-carbon flexibility, early coal retirement, net-zero "extra effort") can be financed as explicit policy, rather than forcing PLN to carry it while also being judged as "commercial".

3.8.3 How the "Electricity Financial Entity" Could Work in Practice

A credible design is a rules-based payer, not a discretionary dispenser:

- Affordability window: pays a transparent subsidy per kilowatt-hour (kWh) or per customer for eligible households (delivered through the bill, but funded off-PLN).
- Regional equalization window: pays an equalization transfer to high-cost systems based on auditable cost-of-service and service standards.
- Transition window: acts as a counterparty/funder for low-carbon support mechanisms (for example, Contracts for Difference (CFD)-style top-ups that pay the difference between a strike price and market price). The United Kingdom's CFD program is instructive precisely because the counterparty is a separate, government-owned company (the Low Carbon Contracts Company) rather than the incumbent utility — which makes the subsidy explicit and contractually bankable.[134]

3.8.4 The Hard Risks — and the Design Guardrails

Splitting PLN can also fail if it becomes a new opaque silo. The two biggest risks are (1) underfunding and arrears (the fund doesn't pay on time), and (2) mission creep (the fund becomes a political ATM). The guardrails are straightforward but non-negotiable: statutory mandate, automatic settlement rules, independent audit, published allocation formulas, and a hard separation between (a) policy eligibility decisions and (b) commercial dispatch and procurement decisions.

Done well, however, dividing PLN is not about weakening the state's role; it is about making it legible. The state should continue to decide how much solidarity and

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[133] MOF, 2025, *op cit*.

[134] "Contracts for Difference," GOV.UK. https://www.gov.uk/government/collections/contracts-for-difference (accessed on December 21, 2025). The site describes CFD as a private law contract with the government-owned Low Carbon Contracts Company); "About the Low Carbon Contracts Company," Low Carbon Contracts Company, CfD Allocation Round. https://www.cfdallocationround.uk/about/low-carbon-contracts-company (accessed on December 21, 2025). The site explains ownership and counterparty role.

decarbonization it wants to buy — but it should buy it transparently through a dedicated financial entity, while letting commercial PLN (and other players) operate under clearer market and performance disciplines.

3.9 Public Utility Commission in a Reformed Electricity Market

A Public Utility Commission (PUC) (often also called a *public service commission* or *energy regulator*) exists for one simple reason: electricity is half market, half monopoly. Generation and retail *can* be competitive, but transmission and most distribution networks remain natural monopolies. So a reformed market still needs an institution whose daily job is to make monopoly behave, and to make competition credible, fair, and investable. In the classic PUC model, that means running quasi-judicial proceedings, testing evidence, and issuing binding orders so that rates are *reasonable* while utilities remain financially viable — a balancing act regulators openly acknowledge as core to the job.[135]

In practice, a capable PUC becomes the *hinge* of reform. Without it, reforms often devolve into a familiar pattern: markets are "opened" on paper, but access is discretionary; tariffs are "reformed" but still politicized; and private investment arrives — if at all — only with heavy guarantees and non-transparent risk transfers. The World Bank's stocktake of global reform experience makes the point indirectly but clearly: market-oriented reforms assumed a shift where the state stops micromanaging operations and instead takes on a regulatory role that can discipline the sector consistently over time.[136]

3.9.1 What A PUC Actually Does

A well-designed PUC does not "run" the sector — it sets the rules of the game and enforces them. The most important functions, especially under unbundling and wheeling, include:

- Network tariff regulation (transmission and distribution)**.** Approving revenue requirements, setting tariff methodologies (cost-of-service, price-cap, TOTEX, performance-based regulation), and ensuring non-discriminatory access for all generators, retailers, and large customers.
- Open access and wheeling enforcement. Turning "access rights" from policy slogans into enforceable obligations — including interconnection standards, queue management, congestion rules, curtailment principles, and dispute resolution.
- Regulatory accounting and transparency. Mandating separate accounts by function (generation vs transmission vs distribution vs retail), publishing audited data, and making cross-subsidies visible rather than folkloric.
- Consumer protection and retail market oversight. Rules on service quality, reliability metrics, complaint handling, switching (if retail competition exists), supplier-of-last-resort obligations, and protections for vulnerable consumers.
- Market monitoring (if wholesale competition exists). Detecting manipulation, monitoring market power, and coordinating enforcement with competition authorities.

A PUC, in other words, is not "pro-market" or "anti-state." It is pro-governance — and in electricity, governance is not optional.

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[135] "Reasonable Rates," National Association of Regulatory Utility Commissioners. https://www.naruc.org/serving-the-public-interest/about/reasonable-rates/ (accessed on December 21, 2025).
[136] Foster and Rana, 2019, *op cit*.

3.9.2 Why This Matters in Indonesia

Indonesia already has a legal architecture that implicitly recognizes why a PUC-like function is needed, but it places those functions largely inside government rather than in an independent regulator. Under Law No. 30/2009, electricity tariffs for consumers are set by government (and can be set by regional governments within their authority) with legislative approval; operators are prohibited from applying tariffs outside government determination. The same law also frames sale prices and network lease (wheeling-related) arrangements as requiring government approval, and states that tariffs may be differentiated across areas within a business territory — a legal opening that acknowledges geographic cost variation, even if politics often pushes toward uniformity.[137] Government Regulation No. 14/2012 further operationalizes this by assigning tariff-setting authority to the Minister, governor, or regent/mayor (with the relevant legislature's approval) and requiring approval for electricity sale prices and network leasing between license holders.[138]

Institutionally, the Ministry of Energy and Mineral Resources (MEMR) — through the Directorate General of Electricity (DJK) — is tasked with policy formulation and implementation, including development, control, and supervision of electricity activities.[139] So Indonesia does have regulation — but it is ministerial regulation, not the quasi-independent, evidence-driven adjudicatory model associated with a PUC.

That difference becomes consequential the moment Indonesia tries to scale reforms like wheeling, deeper unbundling, competitive procurement, or retail contestability. Ministerial regulation can be effective for planning and command-and-control oversight; it is less effective for credible commitment in a market setting where investors, consumers, and incumbents all need to trust that rules will not change by surprise — or by lobbying.

3.9.3 The Indonesian "PUC debate" Has Happened Before

Indonesia has already flirted with a PUC-like institution. In the early-2000s reform wave, Government Regulation No. 53/2003 created the Electricity Market Supervisory Agency (Badan Pengawas Pasar Tenaga Listrik, BPPTL) as part of a competitive market design under the then-electricity law. Official government summaries describe BPPTL explicitly as an independent body intended to supervise electricity markets in competitive regions. But that reform wave collided with constitutional politics: the Constitutional Court struck down key elements of the 2002 electricity law framework, and "market structuring" became inseparable from arguments over state control and the public interest.[140]

Importantly, the *discourse* is not a binary of "technocrats vs nationalists." The World Resources Institute's Indonesia case study captures a more nuanced split: donors and some reformers saw an autonomous regulatory agency as a route to transparency and accountability, while public-interest advocates remained skeptical — not necessarily because regulation was bad, but because the design details were vague, and the risk of capture, tariff shock, and unequal outcomes was real.9 That same study also notes how little sustained attention was devoted to the hard governance work of building an independent regulatory function, despite its centrality to private participation.[141] So the debate is really about this: who gets to decide trade-offs, with what transparency, and with what safeguards.

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[137] RI, 2009, *op cit*.
[138] RI, 2012, *op cit*.
[139] "Tugas & Fungsi Direktorat Jenderal Ketenagalistrikan,", Kementerian Energi dan Sumber Daya Mineral. https://gatrik.esdm.go.id/frontend/tugas_fungsi (accessed on December 21, 2025).
[140] MK, 2004, *op cit*.
[141] Seymour and Sari, 2002, *op cit*.

3.9.4 How A PUC Is Applied Today and Could Be Better Applicable in Indonesia

A common misunderstanding in Indonesia's reform debate is to treat "independent regulation" as synonymous with "privatization." It is not. A PUC is an instrument of the state — just one designed to be predictable, transparent, and procedurally fair. In constitutional terms, if "state control" is understood as the state setting rules, supervising performance, and protecting the public interest, then a PUC is arguably a stronger form of control than opaque bargaining, because it makes control auditable.

Even without a formal PUC, Indonesia already performs many PUC-like functions — just fragmented across institutions:

- Economic regulation & approvals. Government/MEMR approvals for tariffs, sale prices, and network leasing; tariff setting by levels of government with legislative approvals.[142]
- Technical regulation & supervision. DJK's policy, standards, and oversight role.[143]
- Political accountability. Executive decisions and parliamentary scrutiny embedded directly in pricing decisions.[144]
- Competition oversight. Handled more generally through competition institutions (not electricity-specific), which is rarely enough once market design becomes technical and fast-moving.

This fragmentation is manageable in a vertically integrated monopoly model. It becomes a bottleneck in a liberalized one, because markets need a referee — and refereeing by committee is rarely trusted by players.

A workable Indonesian design could look like this:

- Policy stays political; implementation becomes rule-based. The President and government set high-level policy (affordability objectives, electrification commitments, renewable targets). The PUC sets tariff methodologies, access rules, performance standards, and adjudicates disputes within that policy envelope.
- Legislative oversight shifts from approving each tariff move to approving the framework. Today, tariff-setting is tightly tied to government and legislative approval.[145] A reform path could preserve democratic legitimacy by having the legislature approve the methodology, guardrails, and subsidy principles, while allowing the PUC to apply formula-based adjustments transparently (with published reasoning, hearings, and appeal rights).
- A "single rulebook, many systems" approach. Indonesia's geography ensures multiple grids and cost structures. A PUC can keep the rulebook national while allowing locational differentiation (including transparent equalization mechanisms) — instead of forcing uniformity that hides subsidies and distorts investment signals.

3.10 The Good Old Constitutional Argument

In Indonesia, every serious conversation about electricity reform eventually walks into the same room: Article 33 of the 1945 Constitution, with its insistence that sectors affecting the lives of many must remain "controlled by the state" (dikuasai oleh negara). The room

[142] RI, 2009, *op cit*.; RI, 2012, *op cit*.
[143] KESDM, n.d., *op cit*.
[144] RI, 2009, *op cit*.
[145] RI, 2009, *op cit*.

has a bouncer, too — the Constitutional Court (Mahkamah Konstitusi) — and it has thrown people out before.

That happened most famously in 2003–2004, when the Court struck down Law No. 20/2002 on Electricity. The ruling is often summarized as "the Court rejected liberalization." What it actually rejected was a reform architecture that, in the Court's view, thinned "state control" into something closer to a market referee, and risked treating electricity as a normal commodity rather than a public-necessity infrastructure.[146] In other words, the Court did not issue a blanket ban on change — it issued a warning about *what kind* of change becomes unconstitutional.

The 2009 Electricity Law (Law No. 30/2009) was the sector's institutional attempt to absorb that lesson.[147] It reopened space for participation beyond the state-owned enterprise, but re-anchored the system in the language of Article 33: the state remains responsible for the framework, for the public service obligation, and for the governance of supply. Its implementing rules (for example, Government Regulation No. 14/2012) reinforce the same move: private participation is possible, but it operates inside a public-law regime of licensing, tariff setting, planning, and supervision.[148]

Then, in 2015–2016, the Court returned — and clarified the tripwire. In Decision No. 111/PUU-XIII/2015, it declared parts of the 2009 framework *conditionally unconstitutional* if read to permit unbundling in a manner that erases the substance of state control. This is the core doctrinal point reformers sometimes try to shortcut: the Court's anxiety is not "private capital exists," but "the state's controlling hand disappears." A competitive structure is constitutionally dangerous when it makes the state merely one actor among many, unable to guarantee reliability, affordability, and universal service — and unable to steer investment and dispatch toward public goals.[149]

So, what does this mean for "liberalization"? It means the word is usually unhelpful in Indonesia. The constitutional space is less about laissez-faire markets and more about state-controlled competition — competition as a tool the state uses, not a regime that replaces the state. That framing also explains how to build a pro-reform argument that can survive judicial scrutiny.

- First, "state control" is not a logo; it is a duty to deliver outcomes. If the existing system produces persistent inefficiency, weak investment signals, avoidable fiscal burdens, or a dispatch and procurement regime that cannot absorb renewable energy at scale, then *not reforming* becomes its own Article 33 problem: the state is failing the constitutional mandate to organize a vital sector for public welfare.[150]
- Second, the safest kind of competition is competition-by-procurement, not competition-by-fragmentation. Reform can invite competition in new generation, storage, and system services (flexibility, demand response) through state-designed auctions and contracts — while keeping transmission and distribution as regulated monopolies and keeping system operation, reliability standards, and tariff methodology firmly under public authority. This looks "market-like" in the parts that benefit from rivalry, but it reads constitutionally as the state strengthening control through better instruments — not surrendering control through structural divorce.

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[146] MK, 2004, *op cit*.
[147] RI (Republic of Indonesia), 2009. Undang-Undang No. 30/2009 tentang Ketenagalistrikan. Pemerintah Republik Indonesia, Jakarta.
[148] RI, 2012. Peraturan Pemerintah No. 14/2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik. Pemerintah Republik Indonesia, Jakarta.
[149] MK, 2016, *op cit*. Putusan Nomor 111/PUU-XIII/2015, Pengujian Undang-Undang No. 30/2009 tentang Ketenagalistrikan. Mahkamah Konstitusi Republik Indonesia, Jakarta.
[150] RI, 2009. Undang-Undang Republik Indonesia No. 30/2009 tentang Ketenagalistrikan.

- Third, decarbonization can be presented as an extension of public welfare, not a foreign add-on. Presidential Regulation No. 112/2022 already hardwires state direction to accelerate renewable energy development and to prepare a roadmap for early retirement of coal-fired power plants.[151] Reform can be defended as the governance upgrade needed to implement that state policy without sacrificing reliability and affordability — for example, transparent grid access rules, credible dispatch governance, and procurement that can actually deliver new capacity on time.
- Fourth, reform must confront the system boundary problem head-on: the off-grid/ captive sector. A reform model that "fixes" the on-grid system while allowing captive coal growth to sit outside the core governance envelope risks creating two power systems with two carbon realities. Constitutionally, this is not a side issue — it goes to whether the state is truly controlling the electricity economy, or only the part that runs through one set of wires.

Put together, the constitutional strategy becomes almost counterintuitive: the path to reform is not to argue that the Constitution tolerates liberalization; it is to argue that reform is how the state modernizes control. The state controls through planning discipline, procurement design, network regulation, dispatch rules, tariff-setting, consumer protections, and credible supervision. The more reform is written and implemented through those instruments, the harder it is to portray it as "privatization by stealth" — and the easier it is to defend it as faithful to Article 33.

The real legal risk, then, is not reform. The risk is reform by slogan: "unbundle," "open access," "break the monopoly," said too loudly and designed too thinly. The Constitutional Court has already shown what it does with that kind of architecture.[14] A constitutionally durable electricity reform agenda should do the opposite: make state control visible and operable, then use carefully designed competition inside that envelope to deliver efficiency, investment discipline, and a credible energy transition.

3.11 Other Legal Aspects of Reform

Electricity reform lives or dies on legal plumbing. The constitutional debate sets the outer boundary — but the day-to-day question is simpler and harder: can new market roles, prices, and obligations be implemented cleanly, enforced predictably, and financed bankably under Indonesia's regulatory stack? Today, much of the answer is "partly" — because Indonesia's framework still assumes a state-administered sector with selective private participation, not a rules-based competitive market with neutral network access.

3.11.1 What the Current Legal Architecture Already Enables

Indonesia is not starting from zero. Law No. 30/2009 already contemplates multiple licensed activities (generation, transmission, distribution, and sales) under a state-controlled framework, with tariffs determined by government authority rather than by the operator's discretion.[152] That matters: it means unbundling and private entry are not alien concepts in the statute — what remains underdeveloped is the market governance needed to make them work without ad hoc approvals.

At the implementing level, Government Regulation No. 14/2012 establishes the licensing and "business territory" logic, and it explicitly recognizes sale–purchase and network leasing (sewa jaringan) arrangements between license holders, while requiring approval

[151] RI, 2022. Peraturan Presiden No. 112/2022 tentang Percepatan Pengembangan Energi Terbarukan untuk Penyediaan Tenaga Listrik.
[152] RI, 2009, *op cit*.

of the sale price or network lease price by the competent authority.[153] This is an important legal foothold for wheeling-like arrangements — but it is still framed as permissioned transactions rather than an enforceable, non-discriminatory open-access regime.

Meanwhile, the post–Job Creation Law regulatory environment has shifted permitting into the risk-based licensing system (Perizinan Berusaha Berbasis Risiko) under Government Regulation No. 5/2021, and the ESDM sector implementation under Government Regulation No. 25/2021 — which is highly relevant for reform because unbundling creates new legal entities and therefore new licensing and compliance requirements.[154]

And on the energy-transition track, Presidential Regulation No. 112/2022 anchors renewable procurement rules and explicitly links renewable build-out to system readiness and fiscal capacity, while also mandating a coal phase-down roadmap.[155] This is a legal platform for low-carbon reform — but it still sits atop a sector whose pricing and access rules remain administratively governed.

3.11.2 The Legal Gaps That Still Block Reform

If Indonesia wants unbundling, open access, wheeling, and eventual retail contestability to be more than policy language, several regulatory gaps must be filled. They cluster into six hard issues.

From "approval" to "right": open access needs enforceable rules, not case-by-case permissions. Right now, network leasing and inter-utility transactions are legally possible, but they are still treated as approved deals (including approved prices).[156] In a reformed market, open access must become closer to a right conditioned on transparent technical constraints — with published tariffs, standardized connection studies, queue rules, and dispute timelines. The missing instruments are the "secondary law" of markets: grid and distribution codes that are enforceable; wheeling tariff methodologies; congestion and curtailment principles; metering and settlement rules; and a fast dispute mechanism that prevents access from becoming a negotiation tactic. The regulatory gap remains that detailed implementing regulations turn network access into a standardized service with published terms — rather than an exception negotiated with the incumbent.

The neutral system operator problem: PLN cannot be both player and referee indefinitely. Unbundling makes conflicts of interest unavoidable. The system operator and market operator functions must be neutral — especially once third-party generators and suppliers rely on dispatch, balancing, and settlement rules. Indonesia's current framework is still compatible with an incumbent-led operating model, but it is thin on the legal architecture for a separate, accountable system operator with clear duties (non-discrimination, transparency, reliability obligations, information disclosure, and market monitoring). There is still a need for a legal basis (and governance rules) for a system operator/market operator function that is structurally independent from competitive businesses — including data transparency, auditability, and enforcement powers.

Tariffs, subsidies, and cross-subsidies: the law allows differentiation, but the mechanics remain opaque. Law No. 30/2009 allows tariffs to be differentiated across areas within a business area, and it places tariff-setting under government authority.[157] That is

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[153] RI, 2012, *op cit*.
[154] RI, 2021. Peraturan Pemerintah Republik Indonesia Nomor 5 Tahun 2021 tentang Penyelenggaraan Perizinan Berusaha Berbasis Risiko; RI, 2021. Peraturan Pemerintah Republik Indonesia Nomor 25 Tahun 2021 tentang Penyelenggaraan Bidang Energi dan Sumber Daya Mineral.
[155] RI, 2022. Peraturan Presiden Republik Indonesia Nomor 112 Tahun 2022 tentang Percepatan Pengembangan Energi Terbarukan untuk Penyediaan Tenaga Listrik.
[156] RI, 2012, *op cit*.
[157] RI, 2009, *op cit*.

consistent with a welfare-oriented model — but reform requires the government to stop using the *retail tariff* as a catch-all instrument. As long as tariffs are politically frozen and the gap is patched through compensation and cross-subsidy, the financial system remains opaque and investment risk remains high. There is still a need for a coherent rulebook for (1) separating energy price, network charges, and explicit social-policy transfers; (2) creating a transparent equalization mechanism for high-cost systems; and (3) establishing predictable tariff adjustment rules for non-subsidized segments — so "compensation" becomes exceptional, not structural.

Contracting and procurement: reform cannot run on legacy PPA logic. Indonesia already allows private generation through IPPs under PPAs with PLN, but the current contracting culture is still shaped by single-buyer risk allocation and negotiated terms. Reform — especially competitive generation markets — requires a more explicit legal framework for competitive procurement, standard contracts, dispatch and curtailment compensation, payment-security rules, and the handling of legacy contract lock-in (including stranded cost and take-or-pay risk). Perpres No. 112/2022 helps on renewables procurement direction, but it does not, by itself, solve the legal mechanics of transitioning the existing contract stack into a market-compatible system.[158] Standardized procurement and contracting regulations aligned with competitive markets (auction rules, standard PPAs where needed, curtailment principles, settlement and credit arrangements), plus an explicit stranded-cost treatment framework, are still needed.

Distribution reform and retail competition: licensing categories are not yet "retail-ready". A retail market requires more than "selling electricity" as a licensed activity. It needs legal definitions for: supplier licensing, customer switching, billing and settlement standards, supplier-of-last-resort obligations, consumer protection rules, data access, and codes of conduct that prevent network owners from discriminating against rival suppliers. Indonesia's rules are still closer to an integrated-service model with sales under government-determined tariffs.[159] There is a remaining need for retail-market regulations — even if phased — that specify who may supply whom, under what licensing terms, with what consumer protections, and how the distribution platform stays neutral.

Finally, the post–Job Creation Law permitting environment: unbundling must be executable under risk-based licensing. Unbundling means asset transfers, new legal entities, and re-licensing — all inside a risk-based licensing ecosystem.[160] If the licensing map is unclear, unbundling becomes legally fragile: delays, overlapping authorities, and uncertainty over which entity holds which rights and obligations. There is a remaining need for a transition regulation (or package) that governs restructuring: license migration, asset and workforce transfer rules, continuity of service obligations, and clarity on which permits attach to assets versus entities.

3.11.3 What Regulations May Still Need to be Developed

If reform is to be implemented credibly, Indonesia will likely need a targeted regulatory package that includes:

- Open access and wheeling rulebook (tariff methodology, interconnection/queue, congestion/curtailment, metering and settlement, dispute timelines).
- System operator / market operator governance regulation (neutrality rules, transparency obligations, audit and compliance).

[158] RI, 2022, *op cit*.
[159] RI, 2009, *op cit*.; RI, 2012, *op cit*.
[160] RI, 2021a, *op cit*.; RI, 2021b, *op cit*.

- Ring-fencing and regulatory accounting standards (so subsidies and cross-subsidies become legible).
- Retail competition framework (licensing, switching, consumer protection, supplier-of-last-resort).
- Competitive procurement and legacy-contract transition rules (standard contracts where needed, payment security, stranded-cost treatment).
- Transition regulation for restructuring under risk-based licensing (license migration, asset transfer, continuity obligations).

The strategic point is that constitutional arguments decide whether reform is permitted; regulatory design decides whether reform is workable. Indonesia already has the legal basis to begin — but until the rulebook shifts from discretionary approvals to standardized rights and obligations, liberalization will remain vulnerable to the same old bottleneck: uncertainty dressed up as control.

4 How Reform Supports Energy Security, Affordability, Equity, and Sustainability, Including Achieving Net Zero Emissions

Electricity-market reform is not an ideological exercise. It is a practical redesign of incentives and obligations so that the system can reliably deliver three things at once: power that is secure, affordable, and fair, while also becoming clean fast enough to meet Indonesia's net-zero trajectory. The core logic is simple: when prices, procurement, and operations are governed by transparent rules and accountable institutions, the system stops hiding costs and starts rewarding performance. That is what creates the space for decarbonization without sacrificing reliability or social legitimacy.

4.1 Energy Security: From Single-Operator Security to System-Wide Resilience

Reform strengthens energy security by shifting the sector away from a fragile model in which reliability depends disproportionately on one vertically integrated balance sheet and one set of administrative decisions. A reformed framework improves security through several channels. First, it diversifies supply and reduces fuel-risk concentration. When dispatch and investment decisions are disciplined by competitive signals and transparent procurement, the system has stronger incentives to reduce exposure to volatile imported fuels and to manage domestic fuel risks more explicitly, rather than quietly absorbing them through tariff adjustments, subsidies, or arrears.

Second, it improves operational security by making reliability a measurable, compensated service. A well-designed market architecture values flexibility, reserves, ancillary services, and fast-ramping capability — the attributes that keep the lights on as variable renewables scale up. Instead of forcing all reliability functions to be cross-funded through bundled energy sales, reform allows the system operator to procure reliability products transparently and competitively.

Third, it enables disciplined coal retirement and renewable integration without "reliability panic." The current model often treats coal baseload as the default security blanket, even when system conditions shift. Reform introduces the operational tools and contractual structures that let the system retire inflexible capacity while maintaining adequacy through a portfolio of flexible generation, storage, demand response, and transmission reinforcement.

Fourth, it makes planning and investment more credible. Investors respond to rule stability and transparent procurement more than they respond to ad hoc tariff adjustments. By clarifying who bears which risks (fuel, volume, curtailment, foreign exchange, and policy), reform reduces the probability that the next shock becomes a sector-wide emergency.

4.2 Affordability: Least-Cost Dispatch and Investment Discipline, Not Hidden Inefficiency

Affordability improves when the system stops using a single administratively set tariff to carry the weight of operational inefficiency, procurement risk, and legacy obligations all at once. The first affordability gain is operational: least-cost dispatch. When dispatch decisions increasingly reflect transparent bids or auditable cost-based offers, the system can systematically minimize short-run costs, rather than allowing dispatch to be distorted by legacy contracts, implicit preferences, or non-transparent instructions. Even before full wholesale competition, competitive procurement can serve as a bridge: auctions for long-term contracts and transparent tenders can reveal prices and force discipline on project selection and risk allocation.

The second affordability gain is structural: better investment decisions. The most expensive electricity is not necessarily the highest marginal-cost kilowatt-hour — it is the wrong project, built at the wrong time, with the wrong contract, and then locked in for decades. Reform reduces this risk by introducing stronger screening, clearer system needs, and procurement that rewards cost and performance rather than negotiation leverage.

The third affordability gain is financial: lower risk premiums. Administrative price setting and opaque subsidy arrangements increase perceived policy risk, which raises the cost of capital and ultimately the cost of electricity. Clear market rules, credible regulation, and transparent social-policy instruments reduce this risk and can translate into cheaper financing for networks, renewables, and flexibility resources.

Finally, reform improves affordability by surfacing and managing legacy costs explicitly. If stranded costs, universal service obligations, or contract rigidities are hidden inside a uniform tariff, the result is neither cheap nor honest. Reform creates mechanisms to ring-fence and amortize legacy obligations transparently so that today's tariffs reflect today's costs and tomorrow's investments are not burdened by yesterday's design.

4.3 Equity: Priced as Equity — Explicitly Funded and Targeted, not Buried Inside Tariffs

Equity is a legitimate political choice in electricity. Indonesia's geography makes it unavoidable: serving remote, high-cost systems and protecting vulnerable households cannot be achieved by "market forces" alone. Reform supports equity by making solidarity visible, funded, and governable.

The key principle is that equity should be delivered through explicit instruments, not through a uniform administered tariff that obscures who pays, who benefits, and how large the transfer really is. When equity is embedded implicitly inside tariffs, several problems follow: transfers become regressive (because better-off households often capture more benefit through higher consumption), the true fiscal burden becomes harder to manage, and operational incentives are distorted because the tariff must do too many jobs simultaneously.

Reform enables targeted protection through mechanisms such as:

- targeted subsidies using credible beneficiary databases, delivered as lifeline blocks, rebates, or direct transfers;
- an explicit equalization mechanism for remote and high-cost systems, so that geography is subsidized through a transparent fund rather than through opaque cross-subsidies; and

- clearly specified universal service obligations, with accountable compensation to the obligated party.

This approach is not less equitable — it is more equitable because it forces the state (and the sector) to answer concrete questions: how much solidarity is being provided, to whom, through which mechanism, paid by whom, and under what performance conditions.

Reform also protects equity by addressing the strongest political-economy risk in partial liberalization: the "cream-skimming" problem. If creditworthy large customers can exit bundled service without a settlement mechanism for legacy obligations and universal service, the residual system costs can shift onto households or the state budget. A credible reform therefore pairs any expansion of retail choice or wheeling with a transparent mechanism to fund legacy and social obligations, so that competition does not unintentionally become a transfer from households to large customers.

4.4 Sustainability and net zero: aligning operations and investment with decarbonization

Sustainability and net zero are not achieved by targets alone. They are achieved when the day-to-day rules of dispatch, contracting, and network access reward low-carbon resources and flexibility, and when the financial architecture makes clean investment bankable at scale.

Reform supports net zero through five practical pathways. First, it enables renewables to compete and to be integrated reliably. Transparent procurement for renewables and flexibility reduces the cost of clean energy and avoids ad hoc pricing decrees that can either overpay (creating backlash) or underpay (killing investment).

Second, it builds the market and operational structures that value flexibility. High-renewable systems need fast response, reserves, ramping, and congestion management. Reform creates explicit products and incentives for storage, demand response, and flexible generation, reducing curtailment and improving reliability.

Third, it addresses contractual rigidities that lock in fossil dispatch. Many systems are trapped not by technology but by contracts — especially volume and dispatch constraints embedded in legacy power purchase agreements. Reform creates pathways to renegotiate, restructure, or replace rigid provisions with arrangements that share risk more efficiently and allow the system operator to dispatch least-cost, least-emissions resources while maintaining investor confidence.

Fourth, it supports credible coal transition. Coal retirement requires a mechanism to manage stranded costs, worker and regional impacts, and system adequacy. Reform enables the sector to separate "energy" from "transition liabilities," making it possible to retire coal without destabilizing the entire tariff structure.

Fifth, it strengthens network investment and open access. Net zero requires transmission expansion, stronger interconnections, and modern distribution systems that can integrate distributed energy. Reform improves planning discipline and cost recovery for networks while enabling more transparent access and connection processes for clean generation.

4.5 These Objectives Reinforce One Another Under Reform

The most important point is that these four goals are not trade-offs by default. They become trade-offs only when the system relies on hidden subsidies, opaque procurement, and administratively set prices that try to achieve security, affordability,

equity, and decarbonization simultaneously without clear instruments. Reform separates functions so each goal is achieved with the right tool:

- security through operational procurement and reliability products;
- affordability through least-cost dispatch and disciplined investment;
- equity through targeted subsidies and explicit equalization; and
- sustainability through competitive clean procurement, flexibility incentives, and credible transition mechanisms.

That separation is what makes the whole system more politically durable. When the public can see the transfers, when investors can see the rules, and when the operator can procure reliability transparently, the sector can pursue net zero without repeatedly triggering tariff crises, fiscal surprises, or reliability fears.

5 Stakeholder and Engagement Strategy

Electricity market reform reshuffles money, power, and risk — so the stakeholder map is wide. In Indonesia, the core stakeholders typically include: government entities that includes the President and the Cabinet, the parliament, and others; sector operators and market participants in which PLN is front and center, IPPs, and others; consumers and demand-side actors; labor and local political economy; finance and oversight ecosystem that includes banks, and JETP; and environment, land, and climate governance. Table 5.1 below shows the map of the stakeholders and their likely positions in the power sector reform.

Stakeholder	What they want	What they fear	What leverage they have
President and Cabinet	Political stability; visible wins (reliability, investment, jobs); energy security; manageable fiscal exposure.	Tariff shock; blackouts; labor unrest; reform branded "anti-people/privatization."	Agenda-setting; control of ministries; public narrative; ability to sequence and compensate.
House of Representatives (DPR)	Constituent protection; oversight; rents (political capital) from tariff debates; regional fairness.	Backlash from price increases; losing discretion; constitutional challenges.	Approvals, oversight hearings, budget influence, coalition politics.
MEMR and Directorate General of Electricity (DJK)	Sector control with clearer instruments; investment acceleration; rules that can be enforced; transition credibility.	Loss of authority to new bodies; reform outrunning operational readiness; being blamed for instability.	Licensing, technical rules, planning; operational coordination with PLN.
Ministry of Finance (MoF)	Lower and predictable subsidy/compensation; fiscal risk control; transparency; better cost recovery.	Reform creating new contingent liabilities (guarantees, bailouts); arrears; political pressure to "pay later."	Budget; subsidy and compensation settlement; guarantees; fiscal conditionality.
Bappenas	Reform aligned with development plans, industrial strategy, and net-zero trajectory.	Fragmentation; incoherent sequencing; stranded assets; social backlash undermining development agenda.	Planning alignment; convening authority; influence on priorities.
Danantara	Asset value preservation; creditworthiness; restructuring that improves returns and governance.	PLN value erosion; uncontrolled contract renegotiation; reputational risk.	Capital strategy, governance influence over state-owned enterprises.
PLN (corporate center)	Predictable revenues; funding for grid; manageable legacy contracts; continued strategic role.	Losing customers without compensation; being forced to carry social mandates without funding; neutral access obligations undermining market power.	Operational control; information advantage; political and labor ties; indispensability for reliability.
PLN workforce and labor unions	Job security; benefits; institutional power; predictable transition.	Layoffs, wage/benefit cuts, privatization without protections.	Ability to mobilize politically; operational disruption risk.
Independent Power Producers (IPPs)	Contract sanctity; predictable dispatch/curtailment rules; payment security.	Contract reopeners; market risk without hedges; stranded assets.	Litigation/arbitration rights; investment pipeline; ability to delay new builds.
Renewable energy developers	Bankable routes to market; open access; fast interconnection; predictable pricing.	Quotas/caps; discretionary approvals; curtailment without compensation; offtaker risk.	Investment and jobs narrative; international support; competitiveness pressures from buyers.
Captive power operators and industrial estate utilities	Reliability; lower costs; cleaner supply options; regulatory certainty.	Forced integration costs; compliance burden; loss of flexibility.	Economic importance; export competitiveness; local political influence.
Fuel supply chain (coal, gas, oil/diesel, logistics)	Demand security; predictable offtake; favorable pricing policy.	Accelerated fuel switching; transparency exposing embedded support; contract losses.	Political influence; cost pass-through; regional employment.
Large commercial and industrial customers	Reliability; lower total delivered cost; choice of supplier; clean electricity for competitiveness.	Paying for everyone else's costs; regulatory volatility; complex access processes.	Investment and employment; lobbying power; can self-supply.

				equalization if c limited.
Households (especially subsidized)	Affordable bills; reliable service; fair access.	Tariff hikes; perceived privatization; worse service.	Electoral power; public opinion pressure.	Keep a clear pr (not blunt), lifelir quality standarc makes subsidie prevents blacko
Business associations (KADIN and sectoral groups)	Competitiveness; predictable regulation; investment climate; clean power access.	Costs rising unpredictably; regulatory burden; reliability deterioration.	Narrative-setting; convening industry; policy access.	Co-design refor competitiveness simplify licensin show measurab
Regional governments	Local investment, jobs, reliable supply; fiscal benefits; some discretion.	Tariff disparities; social backlash; losing control over permits/rents.	Permitting, land, local politics; can delay projects.	Offer shared be programs, trans and formal roles regional tariff sh
BPK and BPKP	Auditability; reduced discretion; clean procurement; fewer quasi-fiscal surprises.	Complex mechanisms that hide new rents; weak documentation.	Audit authority; influence on governance norms; deterrence.	Build auditability published meth procurement tra contracts.
KPK and law enforcement	Reduced corruption opportunities; credible procurement; reduced discretion.	Privatization/concessions without safeguards; opaque renegotiations.	Investigative power; deterrence; public legitimacy.	"Governance-fir tenders, conflic disclosure, star independent ov
OJK	Financial stability; credible disclosures; sustainable finance integrity.	Sector volatility affecting banks; greenwashing; hidden liabilities.	Regulation over financial institutions; disclosure regimes.	Require sector- disclosure; crea instruments; cla rules to reduce
Banks, lenders, investors	Predictable cashflows; enforceable rules; FX and payment security managed.	Policy volatility; arrears; contract disputes; unclear settlement.	Capital availability; pricing of risk; can walk away.	Bankability pack settlement disci and ring-fenced bound transitior
Multilateral development banks and bilateral partners (including JETP partners)	Decarbonization; governance; leverage finance for reform; demonstration success.	Political backlash; reform reversal; weak implementation capacity.	Concessional finance; technical assistance; reputational leverage.	Tie finance to m transparency, in subsidy targetin worker protectio
Civil society, think tanks, academia	Equity, transparency, environmental integrity; public accountability.	Privatization without protections; capture; subsidies shifting regressively; weak safeguards.	Narrative legitimacy; watchdog role; litigation/advocacy.	Offer transparer subsidy inciden enforce environ create open co
Communities near generation/grid assets	Local benefits, safeguards, fair compensation; reduced pollution.	Land conflict; environmental harm; exclusion from benefits.	Social license to operate; ability to delay projects.	Benefit-sharing, grievance mech projects; local h improvements.
Constitutional Court (MK)	Uphold constitutional principles; ensure "state control" doctrine is respected.	Reform that appears to surrender control of vital sector to market actors.	Power to annul laws; strong chilling effect on design.	Design reforms explicit: regulati service, and no obligations; avo "privatization," fr competition."

Table 5.1. Map of the stakeholder of the power market reform and their likely positions.

5.1 Stakeholder Engagement Strategy

Electricity market reform in Indonesia is not a technical adjustment. It is a negotiated reallocation of risk, rents, and responsibility. The win condition is not "liberalization" as a slogan; it is a stable bargain in which legacy costs are explicitly managed, network access becomes a predictable right rather than a discretionary favor, and social obligations remain protected but funded transparently. A stakeholder strategy has to treat politics as a design constraint, not a nuisance.

Who must be aligned first — and why. Start with the actors who can move the machinery: the President and Cabinet, the Ministry of Finance (MoF), the Ministry of Energy and Mineral Resources (KESDM) / Directorate General of Electricity (Gatrik), and Danantara. If these enablers are not aligned, reform either never launches or launches without fiscal and administrative credibility. Their shared interest is reliability, competitiveness, and fiscal control. The reform offer is a sequenced plan that avoids household tariff shock, reduces recurring compensation burdens, and produces early wins industry can feel.

Then come the veto players: PLN, PLN labor unions, the House of Representatives (DPR), large IPPs, and often regional governments in sensitive systems. These are the stakeholders who can stop reform through operational resistance, political mobilization, litigation, or delay. The practical objective is not to "convert" them ideologically, but to neutralize veto incentives by making the transition financeable, lawful, and socially safe.

Finally, you need legitimizers: auditors and enforcers (BPK, BPKP, KPK), civil society and academia, communities near assets, and the banking/investor ecosystem as the credibility barometer. They do not pass laws, but they determine whether reform is seen as fair, clean, and durable, or as a rent transfer waiting to be reversed.

Sequencing that survives politics. The fastest way to fail is to lead with the most politically radioactive outputs (tariff increases, privatization framing, contract fights) before the system is legible. The workable sequence is three moves.

- First, make the sector legible. Begin with transparency and ring-fencing: disaggregate accounts by function (generation, transmission, distribution, retail) and by system/region; publish subsidy and compensation incidence; standardize minimum open-access rules (interconnection timelines, queue rules, dispute timelines). This shifts debate from ideology to numbers: who is subsidizing whom, and why. It also gives MoF and DPR something governable.
- Second, make the network behave like a platform. Run wheeling/open access pilots for large customers with standardized tariffs and settlement rules; formalize neutrality obligations for system and network functions (even if housed inside PLN at first); introduce distribution performance pilots (loss reduction, reliability indices, connection times). This creates visible winners (industry reliability and clean procurement options) while keeping household exposure limited. It also gives PLN a viable path: regulated wires revenue and explicitly funded public service obligations, rather than being judged for "commercial performance" while carrying political tariffs.
- Third, introduce competition with protection. Only after the rulebook works in practice do you expand retail contestability beyond large users. At the same time, shift from blunt "one national price" politics to explicit targeting: protect vulnerable households with lifeline support and direct subsidies, and address high-cost systems through transparent equalization. Critically, implement a time-bound, auditable legacy-cost mechanism so old obligations do not destabilize the new market.

Predictable veto points — and bargains that defuse them. Reform is routinely derailed at six points, each with a specific antidote.

- Tariff reform triggers backlash. Defuse it by leading with subsidy precision and service quality, not "price increases." The promise is the same protection with less leakage and fewer blackouts.
- Unbundling is attacked as unconstitutional privatization. Defuse it by framing separation as governed competition under state control: licensing, universal service obligations, regulated networks, enforceable non-discrimination. Avoid ideological terms.
- PLN risks becoming insolvent or scapegoated. Defuse it by ring-fencing regulated network revenues, explicitly funding public service obligations, and creating a credible stranded-cost pathway.
- IPPs litigate and investment freezes. Defuse it with a transparent transition framework: what is honored, what can be restructured, principles for compensation, and dispute resolution fast enough to matter.
- Unions mobilize. Defuse it early with a labor compact: no involuntary layoffs for a defined period, retraining and redeployment, protected benefits, and representation in transition governance.
- Regions fear being exposed as "high-cost." Defuse it by keeping one national rulebook while funding differences through explicit equalization, not sudden local tariff divergence.

A narrative that allows reform to happen. The communications frame must be pro-state and pro-performance at the same time: state control through rules rather than opacity; one national rulebook with targeted protection and fair access; PLN strengthened by clarity, with social roles funded explicitly and commercial roles disciplined transparently; reform as reliability and competitiveness, not ideology.

Immediate outputs to operationalize the coalition. To move from argument to execution, produce four concise artifacts: a one-page stakeholder compact outline (what each veto player gets, what they give up, sequencing); a minimum viable rulebook list (open access, interconnection, settlement, dispute timelines); a transparency package (regulatory accounting template and annual subsidy/compensation incidence report); and a pilot plan (one wheeling corridor, one distribution performance area, one contestable-customer tranche).

5.2 Sequencing the Movement

Reform needs to move in an order that reduces fear faster than it creates new winners. The quickest way to lose is to start with tariff hikes, contract fights, or retail competition before the system is legible and the incumbents' veto incentives are neutralized. The workable sequence is below.

Secure a political mandate that is narrow, concrete, and defensible. First, lock in an executive-level reform statement that defines the end-state in operational terms: one national rulebook, neutral network access, explicit subsidy protection, and phased contestability for large users. This mandate should explicitly avoid privatization framing and emphasize state control through rules, licensing, and enforceable obligations. Without this, agencies will default to risk avoidance and PLN will assume reform is a threat rather than a managed transition.

Make the sector legible before you "open" it. Next, force transparency as a precondition for any market opening. Require ring-fenced reporting by function (generation, transmission, distribution, retail) and by system/region, and publish a subsidy and compensation incidence note that shows who is being supported, how much, and why. This step is not cosmetic; it changes the political conversation from ideology to numbers, and it gives the Ministry of Finance and Parliament something governable.

Publish the minimum viable rulebook for open access and system neutrality. Then, convert access from discretionary permission into standardized obligations. Issue the smallest set of rules that makes access real: interconnection timelines, queue management, hosting capacity or at least feeder-level technical screens, metering standards, settlement rules, and fast dispute timelines. In parallel, define neutrality obligations for system and network functions, even if they remain inside PLN initially. The goal is not institutional perfection on day one; it is credibility that access is rule-based and auditable.

Neutralize the biggest vetoes with explicit "compacts," not promises. Only after transparency and rulebook basics are in place should you lock in the bargains that prevent derailment. A labor compact comes first: job security parameters, retraining and redeployment, and representation in transition governance. Next is a PLN compact: ring-fenced and investable wires revenues, explicit funding of public service obligations, and a clear path for legacy-cost treatment so PLN is not asked to be both commercial and social without compensation. In parallel, publish a contract transition framework for Independent Power Producers so the market understands what will be honored, what can be restructured, and under what principles.

Run tightly bounded pilots that create visible winners without household exposure. Now you can pilot wheeling/open access for large customers under standardized tariffs and settlement, plus a distribution performance pilot (loss reduction, reliability indices, connection times) that shows the "platform" model works. The pilots should be designed to produce measurable improvements quickly: shorter connection times, fewer outages in pilot areas, clearer charges, and bankable settlement discipline. This is where reform shifts from narrative to proof.

Redesign subsidies and tariffs so equity becomes explicit and financeable. Once pilots demonstrate that rule-based access and performance regulation are workable, begin the subsidy shift: protect vulnerable households with targeted support and lifeline structures, and fund high-cost systems through explicit equalization rather than hidden cross-subsidies. At the same time, restore credible automatic adjustment for non-subsidized segments so compensation does not remain structural. This step is where fiscal credibility is earned, and it is also where reform stops using PLN's balance sheet as the shock absorber.

Scale contestability gradually, tied to readiness metrics. Only after the rulebook, settlement discipline, and subsidy architecture are functioning should retail contestability expand beyond large users. Expansion should be triggered by readiness thresholds: metering coverage, dispute resolution performance, reliability metrics, and settlement timeliness. This keeps reform from outrunning the institutions that must enforce it.

5.3 The Critical Path

What follows is a practical sequencing map: each step has a "gate" that must be true before moving on. It is written so you can assign actions to the President/Cabinet, Ministry of Finance (MoF), Ministry of Energy and Mineral Resources (MEMR) / Directorate General of Electricity (Gatrik), and PLN.

5.3.1 Critical Path and Gates

Step 1. Political mandate and reform architecture. Purpose: create a narrow, defensible executive mandate that frames reform as governed competition under state control, with explicit protections. Gate to proceed: a formal mandate that commits to sequencing, transparency, and household protection (no sudden shock), and authorizes pilots.

Step 2. Sector transparency and ring-fencing. Purpose: make costs, subsidies, and performance legible; prevent later disputes from becoming ideological. Gate to proceed: published, audited-style reporting templates and baseline disclosure (by function and by system/region), including subsidy and compensation incidence.

Step 3. Minimum viable rulebook for open access and neutrality. Purpose: turn access into standardized obligations and define neutrality expectations for network/system functions.. Gate to proceed: issued technical and commercial rules for interconnection, queues, metering, settlement, and dispute timelines; neutrality obligations stated and enforceable.

Step 4. Veto-neutralizing compacts. Purpose: prevent derailment by labor, PLN financial stress, and contract panic. Gate to proceed: signed labor transition compact; PLN transition compact (wires revenue and public service obligation funding); IPP transition principles published.

Step 5. Tightly bounded pilots (large customers first). Purpose: prove that open access and performance regulation can work without household exposure.
Gate to proceed: operational pilots with defined tariff methodology, settlement, metering, and dispute handling; early KPI reporting.

Step 6. Subsidy and tariff redesign (make equity explicit). Purpose: stop using the retail tariff and PLN's balance sheet as the primary social-policy instrument; reduce structural compensation. Gate to proceed: targeted subsidy mechanism operational; equalization mechanism defined; automatic adjustment for non-subsidized segments reinstated with clear guardrails.

Step 7. Scale contestability based on readiness metrics. Purpose: expand competition only when enforcement and settlement discipline are proven. Gate to proceed: readiness thresholds achieved (metering, settlement timeliness, dispute resolution performance, reliability metrics).

The first ten strategic deliverables (who does what now) are in Table 5.2 below.

Deliverables	Owner	Output
Executive reform directive and narrative frame	President/Cabinet (with MEMR, MoF)	Short directive defining end-state and sequencing: one national rulebook, neutral access, explicit subsidy protection, phased contestability for large users.
Reform steering committee and decision protocol	President/Cabinet	Committee with clear decision rights, timeline discipline, and a single reporting line to prevent inter-ministerial drift.
Regulatory accounting and ring-fencing template	MoF + MEMR/DJK (Gatrik) (with BPK/BPKP consult)	Mandatory reporting template disaggregated by function (generation, transmission, distribution, retail) and by system/region, with standard definitions aligned to budget and subsidy settlement.
2024 baseline subsidy and compensation incidence report	MoF (using PLN data; audited consistency)	Published note showing size, beneficiaries, and mechanisms of subsidy/compensation, including household targeting versus system equalization versus other gaps.
Minimum viable open access rulebook package (Version 1)	MEMR/DJK	Interconnection standards and timelines, queue rules, technical screening/hosting capacity approach, metering standards, settlement rules, curtailment principles, and dispute timelines.
Neutrality obligations for network and system functions (transition form)	MEMR/DJK + PLN	Binding operational code of conduct and data disclosure obligations to prevent discrimination during the transition period.
PLN transition compact	President/Cabinet + Danantara + MoF + PLN	Agreement on ring-fenced wires revenue approach, funding for public service obligations, and a time-bound legacy-cost treatment pathway.

Labor transition compact	PLN + labor unions (backed by President/Cabinet)	No involuntary layoffs for a defined period, retraining and redeployment commitments, benefit protections, and representation in transition governance.
IPP transition framework (principles before renegotiation)	MEMR + MoF + PLN	Published principles on contract sanctity, treatment of curtailment, restructuring triggers, compensation logic, and dispute resolution.
Pilot implementation plan (wheeling + distribution performance)	MEMR/DJK + PLN (with MoF settlement design)	Selected pilot corridor/area, customer eligibility, tariff methodology, metering and settlement arrangements, KPIs, reporting cadence, and a hard start date.

Table 5.2. Deliverables of the power sector reform.

6 Risks and Their Mitigation

Reform risk is not a side issue in Indonesia's electricity sector; it is the sector. Every serious reform reallocates costs and control, so the predictable failure modes are political backlash, operational instability, fiscal leakage, and legal reversal. A credible reform package therefore needs to present risks and mitigations as a single design logic: each reform step only proceeds when the mitigation is already in place.

Political and social backlash risk (tariffs, "privatization" narrative, labor mobilization). The most immediate risk is that reform is read as a tariff hike and a sell-off, triggering public opposition, parliamentary resistance, and union mobilization. Mitigation is sequencing and explicit protections: do not start with household price adjustments; start with transparency and pilots that deliver visible reliability and competitiveness gains. Pair this with a labor compact early (no involuntary layoffs for a defined period, retraining, redeployment, protected benefits) and a communications frame that emphasizes state control through rules, universal service obligations, and targeted protection rather than market ideology.

Operational reliability risk (blackouts during unbundling and access opening). Unbundling and open access can create coordination failures if dispatch, balancing, and network constraints are not governed by a clear rulebook. The mitigation is to treat system operation neutrality and technical codes as preconditions, not afterthoughts: issue minimum viable interconnection rules, queue management, metering and settlement standards, congestion and curtailment principles, and fast dispute timelines before scaling. Use bounded pilots with tight KPIs and escalation protocols, and only expand contestability when system visibility (metering, monitoring, outage metrics) meets readiness thresholds.

Fiscal risk and hidden-liability risk (compensation arrears, new guarantees, quasi-fiscal burdens). Reform can reduce fiscal pressure over time but increase it in the short term if legacy costs and tariff gaps are not handled explicitly. The key mitigation is to move from implicit to explicit: publish subsidy and compensation incidence; ring-fence accounts by function and system; restore predictable adjustment for non-subsidized segments with guardrails; and create a time-bound legacy-cost mechanism that is budgeted and auditable. Avoid replacing one opacity (cross-subsidy in tariffs) with another (contingent liabilities through guarantees) by requiring full fiscal-risk disclosure for any transition support.

Contract and investment risk (IPP disputes, investment freeze, bankability collapse). If reform is perceived as a pretext to reopen contracts arbitrarily, the sector will face litigation and a capital strike. Mitigation is a transparent transition framework before any renegotiation: clarify which contracts are honored, which may be restructured, what triggers apply, how curtailment is compensated, and how disputes are resolved. Standardize procurement and settlement rules for new projects so investors see a stable path forward, and use transition instruments that preserve bankability while shifting risk gradually (for example, competitively procured replacement contracts rather than unilateral rewrites).

Incumbent-resistance and discrimination risk (open access becomes discretionary in practice). Even with reform decrees, the incumbent can slow access through opaque technical studies, queue delays, data withholding, and non-transparent charges. Mitigation is enforceable neutrality obligations and auditability: publish interconnection timelines and queue rules, require data disclosure, standardize wheeling and network charge methodologies, and create a dispute mechanism that is fast enough to matter. Make performance measurable (connection times, curtailment events, settlement timeliness) and tie management accountability to those metrics.

Governance and corruption risk (new rents through complexity). Reform introduces new interfaces — network access, concessions, procurement — which can create new rent opportunities if discretion grows. Mitigation is governance-first design: standardized contracts, transparent tenders, conflict-of-interest rules, digital procurement trails, independent audit access, and routine publication of key decisions and justifications. Reform should reduce discretionary approvals, not multiply them behind technical jargon.

Regional equity risk (high-cost systems exposed, unequal outcomes, local political backlash). Cost-reflective pricing can provoke regional backlash if it is implemented as immediate differentiation without protection. Mitigation is to keep one national rulebook while funding differences through explicit equalization and targeted household support, rather than forcing uniform tariffs to do silent cross-subsidy. Phase any locational differentiation gradually, communicate the logic openly, and anchor the social objective in transparent transfers.

Legal and constitutional reversal risk (judicial challenges, implementation paralysis). Market reforms can be attacked as violating the state-control doctrine if framed or designed poorly. Mitigation is to embed state control explicitly in the design: licensing, universal service duties, regulated network obligations, enforceable non-discrimination, and transparent subsidy mechanisms. Avoid reform language that suggests the state is “withdrawing” and instead emphasize that the state is shifting from being an operator-pricer to being a rule-setter and guarantor of public outcomes.

Implementation-capacity risk (rules exist but cannot be enforced). The sector can be over-regulated on paper and under-governed in practice. Mitigation is to start with a minimum viable rulebook, pilot it, and scale only when metrics demonstrate compliance and capability. Build institutional capacity in parallel with reform steps, and keep the number of moving parts small at the beginning so enforcement is credible.

Deliverable	Primary risks mitigated (from register)	How it mitigates	Key risks still exposed until next steps
Executive reform directive and narrative frame	Political backlash; legal/constitutional challenge; implementation drift	Sets a narrow, defensible mandate and reform storyline; reduces ideological attack surface; creates authority to sequence and pilot	Fiscal hidden-liability risk remains until MoF transparency and legacy-cost framing are in p incumbent discrimination remains until rulebook/neutrality rules exist
Reform steering committee and decision protocol	Implementation capacity shortfall; inter-ministerial drift; pilot failure	Clarifies decision rights, prevents fragmentation, enforces sequencing discipline	Without transparency and rulebook, committe becomes a talk shop; political backlash risk pe communications and protections are not defin
Regulatory accounting and ring-fencing template	Data transparency failure; fiscal hidden-liability buildup; governance/corruption risk	Creates comparable, auditable accounts by function and system; reduces discretionary narratives; enables subsidy incidence measurement	Reliability and discrimination risks remain until technical/open access rules are issued; contract/investment risk remains until IPP fram exists
2024 baseline subsidy and compensation incidence report	Political backlash; fiscal hidden-liability risk; data transparency failure; regional equity backlash	Moves debate from ideology to who pays/benefits; reveals where support is targeted vs leakage; supports explicit equalization design	Does not by itself change incentives; tariff sho returns if subsidy redesign is attempted withou protections and pilots
Minimum viable open access rulebook (Version 1)	Reliability risk; incumbent discrimination; implementation capacity shortfall; pilot failure	Turns access into standardized obligations; sets technical and commercial rules; enables pilots with predictable procedures	Contract/investment risk remains if dispatch/curtailment and legacy-contract treat principles are unclear; governance risk remain without procurement safeguards
Neutrality obligations for network/system functions	Incumbent discrimination; reliability risk; governance risk	Creates enforceable non-discrimination and data disclosure duties; reduces "PLN as referee" conflict in transition	If dispute resolution is weak or KPIs are not en neutrality becomes symbolic; legal challenge r persists if governance design is unclear
PLN transition compact	PLN solvency/scapegoating; fiscal hidden-liability risk; political backlash	Secures investable wires revenues, funds public service obligations, and defines legacy-cost pathway; reduces PLN veto incentive	Without subsidy targeting and tariff adjustmen compensation may remain structural; investme remains if settlement discipline is not credible
Labor transition compact	Labor mobilization; reliability risk; political backlash	Removes a key veto trigger; preserves operational continuity; provides social legitimacy	Fiscal pressure and subsidy debates still rema reform may still be attacked as anti-people if household protections are not made explicit
IPP transition framework (principles before renegotiation)	IPP disputes/investment freeze; fiscal risk; governance risk	Stabilizes expectations; prevents ad hoc contract fights; defines curtailment/compensation and restructuring triggers	If procurement and settlement mechanisms fo projects are unclear, investment still hesitates; disputes persist if framework lacks credible enforcement
Pilot implementation plan (wheeling + distribution performance)	Pilot failure; reliability risk; political backlash; implementation capacity	Converts rules into proof; creates early winners (industry reliability/choice) without household exposure; generates measurable KPIs	Scaling risk remains until subsidy/tariff redesig ready; regional equity backlash can reappear are perceived as "Java-first" without equalizati narrative

Table 6.1. Risk in delivering outputs and their mitigation measures in reforming the power sector in Indonesia.

7 Concluding Note

Indonesia's electricity sector is already living with the costs of its current design — not only in emissions and slow renewable uptake, but in a governance structure that asks one institution to be planner, operator, buyer, tariff implementer, social-policy instrument, and political shock absorber at the same time. The result is a system that can look stable on paper while building hidden vulnerabilities: recurring fiscal transfers that substitute for cost-reflective signals, rigid contracting that locks in dispatch and crowds out flexibility, and a growing "shadow system" of captive power that can outpace on-grid decarbonization if left outside the reform frame.

The central choice, therefore, is not "state versus market." It is whether state control is exercised through opacity and discretionary deals, or through rules that are legible, enforceable, and investable. A reformed market can remain fully consistent with the public-welfare mandate embedded in Indonesia's legal architecture — precisely by separating what must remain regulated monopolies (transmission and most distribution) from what can and should be disciplined by competition (generation, procurement, and contestable retail), while making social objectives explicit, targeted, and transparently funded rather than embedded in a single administratively smoothed tariff. That shift is also the practical answer to the recurring political anxiety that "reform" automatically means abandonment: reform is not withdrawal of the state, but a redesign of the state's instruments — from ownership-as-control to governance-as-control.[161]

The hard lesson from international experience is that half-reforms fail when risks are liberalized in one layer while frozen in another — producing insolvency, panic interventions, and backlash that delegitimizes the reform project itself.[162] That critique does not weaken the case for Indonesia's reform; it strengthens it by forcing sequencing discipline. Start by making the sector legible (ring-fenced accounts, published subsidy and compensation incidence, and auditable cost benchmarks by system), then make the network behave like a neutral platform (open access rules, nondiscrimination obligations, standardized wheeling and settlement procedures), then scale competition gradually with protection (targeted household support, explicit equalization for high-cost systems, and a time-bound pathway for legacy coal and take-or-pay (ToP) obligations).[163] This sequencing is not cosmetic. It is how reform stays lawful, financeable, and socially survivable.

Finally, reform must treat the "two-track system" risk as core, not peripheral. If the on-grid system is pushed toward cleaner supply while captive coal expands to serve industrial growth, Indonesia can win a grid narrative and still lose the national emissions and competitiveness story. A coherent reform package therefore has to extend governance to captive power — at minimum through disclosure, standards, incentives for clean procurement (including corporate wheeling where feasible), and integration pathways that align industrial reliability needs with national transition objectives.[164] In that end-state, PLN is not diminished; it is clarified. The wires and system functions become a regulated, performance-driven platform. Contestable supply becomes a commercial business that must compete, innovate, and manage risk. Social equity and transition additionality remain government choices — but they are purchased transparently through explicit mechanisms rather than buried inside accounts that neither Parliament nor the public can easily audit.[165]

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[161] RI, 2009, *op cit.*; RI, 2012, *op cit*.
[162] Joskow, 2001, *op cit*.
[163] JETP, 2023, *op cit*.
[164] *ibid*.
[165] RI, 2009, *op cit.*; RI, 2012, *op cit*.

If Indonesia wants a power sector that is simultaneously affordable, reliable, equitable, and compatible with a net-zero trajectory, the conclusion is blunt: the country does not need less state control — it needs better state control. And better control, in electricity, means rules that replace discretion; transparency that replaces folklore; and a transition bargain that turns veto players into implementers by making the pathway credible, compensated where necessary, and enforceable for everyone.

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Cityloft Sudirman
19th floor, # 2019
Jl. K.H. Mas Mansyur No.121
Jakarta Pusat, Jakarta 10220
Indonesia