Accelerating renewables investment in Indonesia: Shared use of the transmission network

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Context: Renewable electricity and ‘Golden Indonesia 2045’

Economic growth anchored in clean energy

- Indonesia’s 8% economic growth target depends on clean energy, industrial growth, and investor confidence
- Ambitious economic and climate targets make renewables central to national development

From potential to progress – the imperative for renewables

- Indonesia’s untapped renewable potential - 3.7TW
- Targets require transformation - 75 GW by 2040

Private sector momentum is building – but needs a clear path to invest

- Major global companies, including 130+ RE100 members, are investing billions into clean energy
- Renewables access is an investment dealmaker
- A joint transmission network utilisation mechanism unlocks investment opportunities

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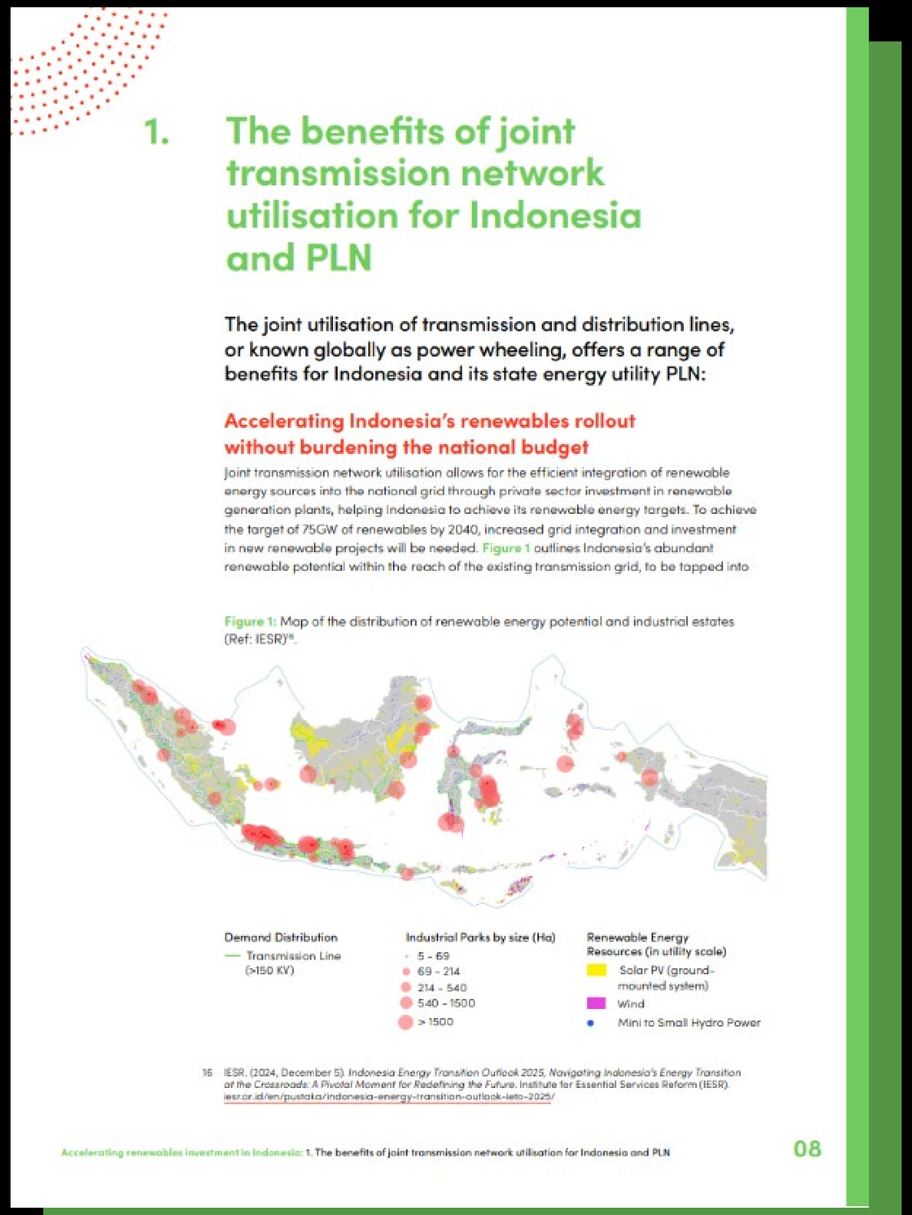
Benefits of joint transmission network utilisation for Indonesia and PLN

- **Accelerates Indonesia's renewables rollout without burdening the national budget**
- **Attracts new investment, and boosts economic growth**
- **Establishes an additional revenue stream for PLN**



1. The benefits of joint transmission network utilisation for Indonesia and PLN

The joint utilisation of transmission and distribution lines, or known globally as power wheeling, offers a range of benefits for Indonesia and its state energy utility PLN:

Accelerating Indonesia's renewables rollout without burdening the national budget

Joint transmission network utilisation allows for the efficient integration of renewable energy sources into the national grid through private sector investment in renewable generation plants, helping Indonesia to achieve its renewable energy targets. To achieve the target of 75GW of renewables by 2040, increased grid integration and investment in new renewable projects will be needed. Figure 1 outlines Indonesia's abundant renewable potential within the reach of the existing transmission grid, to be tapped into

Figure 1: Map of the distribution of renewable energy potential and industrial estates (Ref: IESR)[16].

16 IESR. (2024, December 5). *Indonesia Energy Transition Outlook 2025, Navigating Indonesia's Energy Transition at the Crossroads: A Pivotal Moment for Redefining the Future*. Institute for Essential Services Reform (IESR). iesr.or.id/en/pustaka/indonesia-energy-transition-outlook-ieto-2025/

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Accelerating Indonesia's renewables rollout without burdening the national budget

- A joint transmission network utilisation mechanism unlocks new renewable generation plants
- Huge 333GW renewable potential within reach of the existing grid
- Private sector investment reduces reliance on national budget
- Enables clean energy for industrial growth

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Attracting new investment and boosting economic growth

- Regional momentum for renewables is building
- Indonesia has a unique investment window
- Delay risks Indonesia's regional competitiveness
- Joint transmission unlocks growth and green foreign direct investment
- Clean investment can power ‘Golden Indonesia 2045’

1. The benefits of joint transmission network utilisation for Indonesia and PLN

by corporate buyers and large industrial areas. A recent study from IESR, reveals a total of 333GW of economically viable solar, wind, and mini-to-small hydro projects, highlighting the readiness of potential projects to supply Indonesia's renewable demand[17].

With the adoption of a joint transmission network utilisation scheme, the private sector can provide upfront investment in new renewable projects beyond the stated projects in PLN's electricity supply business plan (*RUPTL PLN*) while supporting grid infrastructure integration and expansion. This mechanism also supports companies committed to using clean energy in their operations to achieve their commitments, especially global companies such as RE100 members. Through capitalising on new and foreign direct investment opportunities to develop new renewable projects, the reliance on the national budget will be lessened, while supporting the state utility PLN in achieving its renewable targets.

Attracting new investment, and boosting economic growth

After the launch of Direct Power Purchase Agreement (DPPA) and Corporate Renewable Energy Supply Scheme (CRESS) joint transmission network utilisation type schemes in Vietnam and Malaysia (p.25-30), multinational companies, such as Google, Oracle, Alibaba, NVIDIA, Intel, and Samsung made significant investments in those countries[18]. Investors are increasingly looking to expand in markets like Indonesia, moving away from places like Singapore, where there are restrictions on the construction of new data centres and limited renewable electricity availability. Indonesia has an opportunity to provide large-scale access to renewable electricity, offering the private sector more options to invest and grow, whilst meeting their sustainability goals.

Currently, neighboring countries in the region, such as Vietnam and Malaysia, have already established a clear, competitive ecosystem around renewable energy access, positioning themselves as attractive destinations for investors seeking reliable and sustainable energy sources. In contrast, Indonesia faces falling behind on this golden opportunity. A clear mechanism for private investment in renewable energy projects can attract both domestic and international investors, boost economic growth, and create job opportunities for Indonesia[19].

17 IESR. (2025, February 27). *Unlocking Indonesia's Renewables Future: the Economic Case of 333GW of Solar, Wind and Hydro Projects*. Institute for Essential Services Reform (IESR). iesr.or.id/en/pustaka/unlocking-indonesias-renewables-future-the-economic-case-of-333-gw-of-solar-wind-and-hydro-projects/

18 Nguyen, P., Guarascio, F. (2024, August 29). *Google considering large data centre in Vietnam, source says, in nation's first by US big tech*. Reuters. reuters.com/technology/google-weighs-large-data-centre-vietnam-source-says-nations-first-by-us-big-tech-2024-08-29/; Oracle. (2024, October 2). *Oracle to Invest More Than US$6.5 Billion in AI and Cloud Computing in Malaysia*. oracle.com/news/announcement/oracle-to-invest-in-ai-and-cloud-computing-in-malaysia-2024-10-02/; Reuters. (2024, August 23). *Vietnam's FPT to invest $200 mln in AI factory using Nvidia chips*. reuters.com/technology/vietnams-fpt-invest-200-mln-ai-factory-using-nvidia-chips-2024-04-23/; World Economic Forum. (n.d.). *Malaysia is emerging as a new semiconductor powerhouse*. weforum.org/videos/malaysia-semiconductors/. [Last accessed March 7, 2025].

19 IRENA. (2023, January). *Socio-economic footprint of the energy transition in Indonesia*. IRENA. irena.org/Publications/2023/Jan/Socio-economics-of-the-energy-transition-Indonesia

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Establishing an additional revenue stream for PLN

- Renting transmission capacity unlocks new income
- Strengthening PLN's financial position for grid modernisation
- Tapping into private sector demand for renewables
- Ensuring steady, predictable, cash flow
- Preparing for Indonesia's tripling energy demand

1. The benefits of joint transmission network utilisation for Indonesia and PLN

Establishing an additional revenue stream for PLN

PLN stands to benefit significantly from a joint transmission network utilisation mechanism. Through renting its grid transmission facilities to private electricity suppliers through a transmission charge, PLN can establish another revenue stream. This would support its capital needs, including the estimated $5 billion USD required annually for power generation and the $146 billion USD investment gap Indonesia must bridge to meet its 2030 climate targets, as outlined by IEEFA[20]. Given PLN's ongoing investments in grid modernisation and expansion, preserving its funds for these priorities is critical.

At the same time, private industry has a strong demand for renewable electricity to power their operations, and are willing to invest directly in generation given the opportunity. Recent BloombergNEF research highlighted that in Japan, since 2008, private corporates have invested in and added over 220GW of clean power through offsite Power Purchase Agreements (PPAs), growing at an annual average of 43%[21]. A joint transmission network utilisation mechanism would enable PLN to unlock this private investment, accelerating Indonesia's energy transition whilst alleviating further financial responsibility.

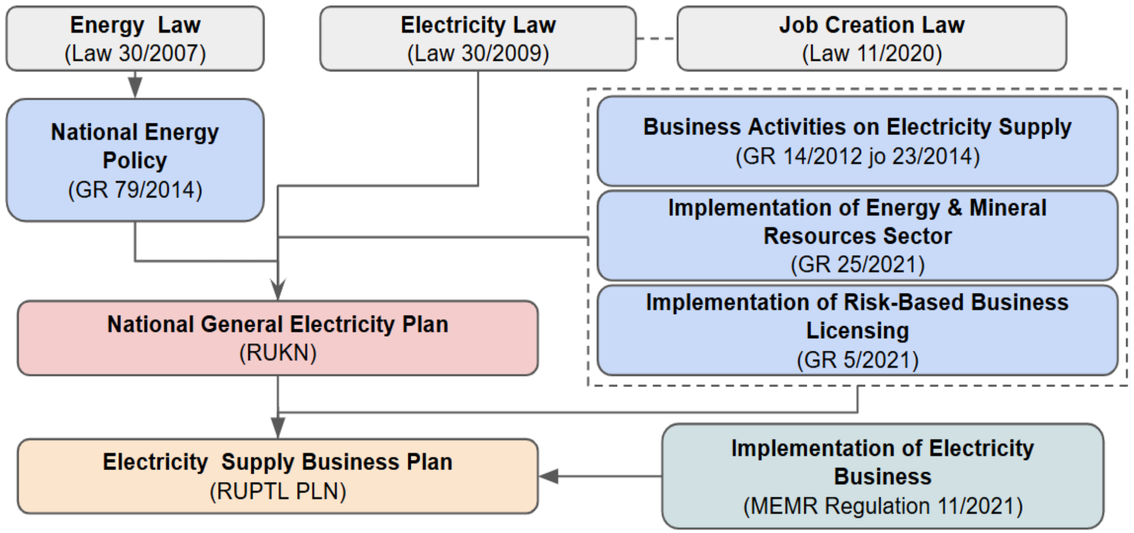
20 Yustika, M. (2024, July 23). *Unlocking Indonesia's renewable energy investment potential*. Institute for Energy Economics and Financial Analysis (IEEFA). ieefa.org/resources/unlocking-indonesias-renewable-energy-investment-potential

21 BloombergNEF. (2024, November 26). *24/7 Carbon-Free Energy Procurement in APAC: Pathways for Companies and Countries*. globalrenewablesalliance.org/wp-content/uploads/2024/11/BNEF_GRA_Report_247_Carbon-Free_Energy_Procurement_in_APAC.pdf

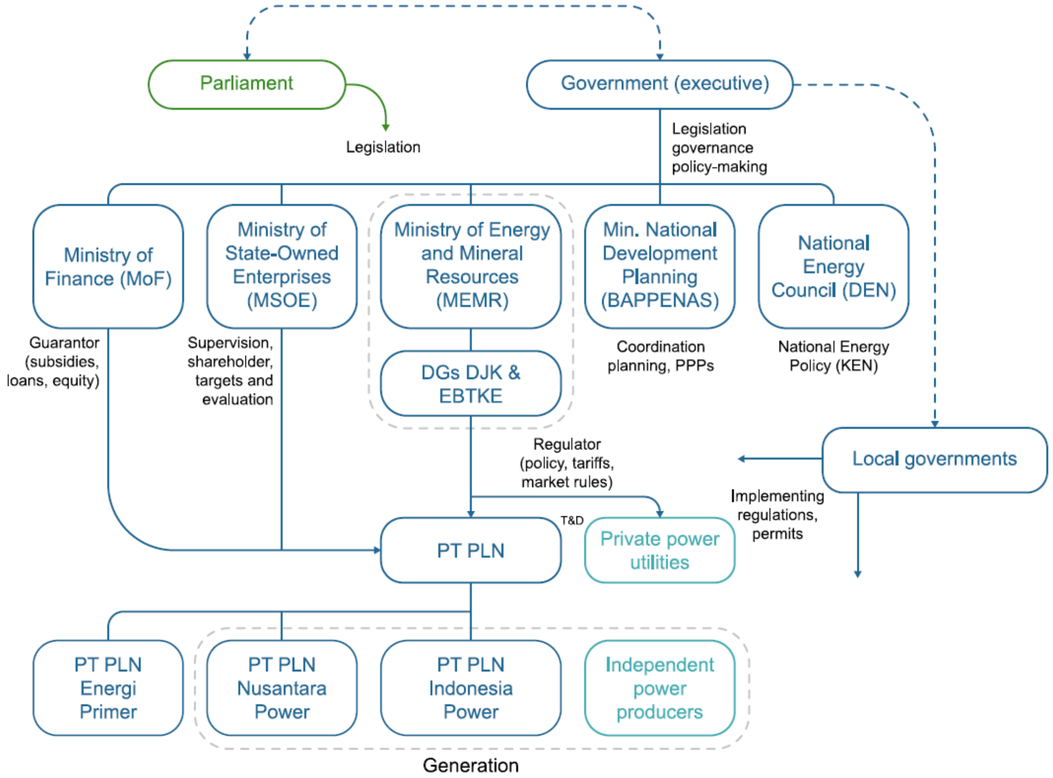
Overview of Indonesia’s existing position on joint transmission network utilisation

- Policy and governance of Indonesia power system
- Existing regulatory framework on joint transmission utilisation
- Current barrier on join transmission network utilisation

Policy and governance of Indonesia's power system: central role of PLN as the state-controlled utility



Source: IESR (2024)

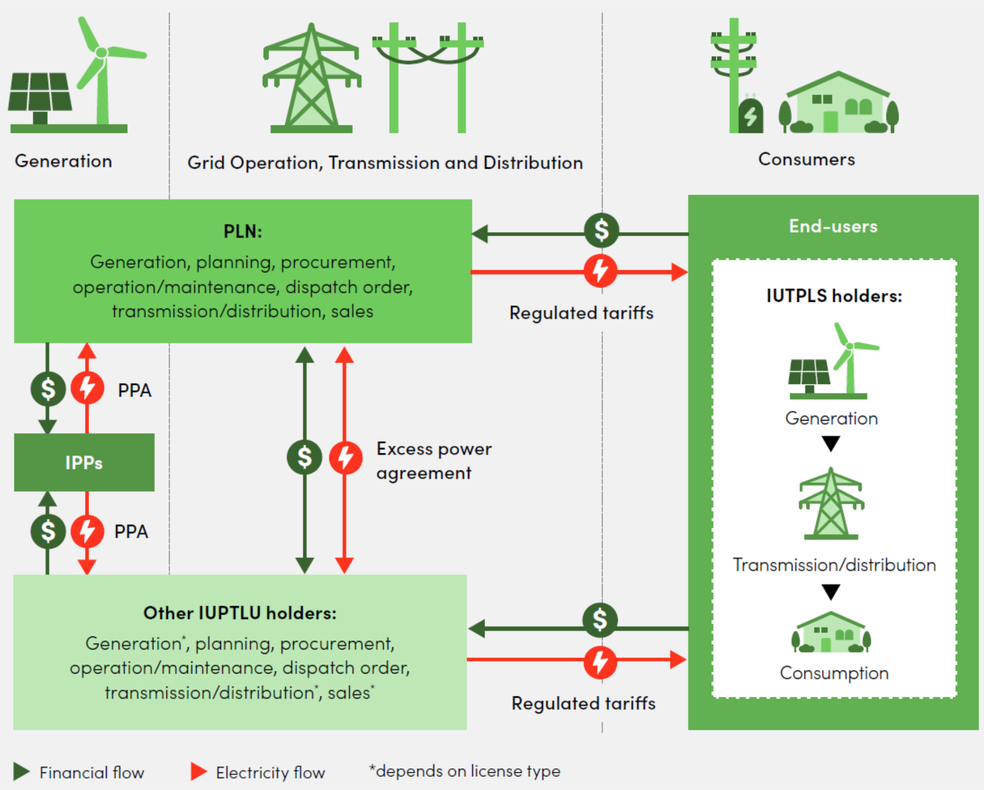


Source: Agora Energiewende, NewClimate Institute, Energy Research Institute. (2024)

- Power supply for public interest is managed by state/regionally owned enterprises, with **priority given to the state utility provider PLN**
- The Electricity Supply Business Plan (RUPTL) serves as the implementation document of PLN's electricity supply business activities, with government supervision coming from the MEMR, MSOE, and MoF

Policy and governance of Indonesia's power system: a single buyer–single business area system

- Electricity supply activity should be conducted in an integrated manner (Electricity Law Article 10): **there can be only a single buyer & seller in a single business area (*wilayah usaha* or *wilus*)**
- For PLN's *wilus*, private participation is limited to only the generation side using the independent power producer (IPP) business model.
- All wilus license holders are required to submit their electricity supply business plan (RUPTL) to MEMR, who also approves electricity tariffs to the end-users
- Two types of electricity supply business activities:
  - Public use, requiring IUPTLU license
  - Own use, requiring IUPTLS license



Existing regulatory framework on joint transmission network utilisation

Electricity Law (Law 30/2009)	Transmission lease tariffs are determined based on a healthy business principles	Transmission lease tariffs are approved by the government	Transmission lease tariffs and mechanisms will be further elaborated by the **relevant government regulation (GR)**	
Business Activities on Electricity Supply (GR 14/2012 jo 23/2014)	Transmission/ distribution owner should/could open up opportunities for joint network utilisation	Joint transmission & distribution network utilisation is implemented **based on the available capacity of the network**	Detailed mechanism will be elaborated in the **relevant ministerial regulation**	
Implementation of Electricity Business (MEMR Regulation 11/20221)	Joint transmission & distribution network utilisation can be implemented to: (1) improve grid reliability, (2) transfer power from generation to load point	Joint transmission & distribution network utilisation can be implemented based on: **(1) available network capacity, (2) grid code compatibility**	Negotiated tariffs and terms for joint network utilization **include grid quality and power transfer cost.**	The government approves the agreed terms within 30 working days.
National General Electricity Plan	Joint transmission & distribution network utilisation (or power wheeling) is described as one of the transmission and distribution network development strategies			
PLN's Electricity Supply Business Plan 2021-2030 (RUPTL PLN 2021-2030)	Private involvement on transmission projects is allowed through mechanisms such as build-own-transfer (BOT), build-lease-transfer (BLT), or **power wheeling (joint transmission utilisation)**	Power wheeling (joint transmission utilisation) serves as an option to: **(1) optimize transmission assets, (2) accelerate generation capacity**	Power wheeling (joint transmission utilisation) option can be considered based on: **(1) economic benefit, (2) limited PLN investment capacity, (3) private company's permitting flexibility**	Power wheeling (joint transmission utilisation) should be implemented within current regulations

Overcoming current barriers on joint transmission & distribution network utilisation

1

Single buyer-seller requirement:

- Single buyer requirement prohibit direct electricity transaction between generator companies and energy off-taker
- Direct electricity sales can only be done with *wilayah usaha or* own use (with IUPTLS license) scheme

2

PLN renewable procurement capacity:

- All generation capacity in the PLN's system need to be specified in the RUPTL and executed using the IPP model or subholding ownership
- Currently limited renewable capacity also limits the number of RECs that can be procured by private off-takers

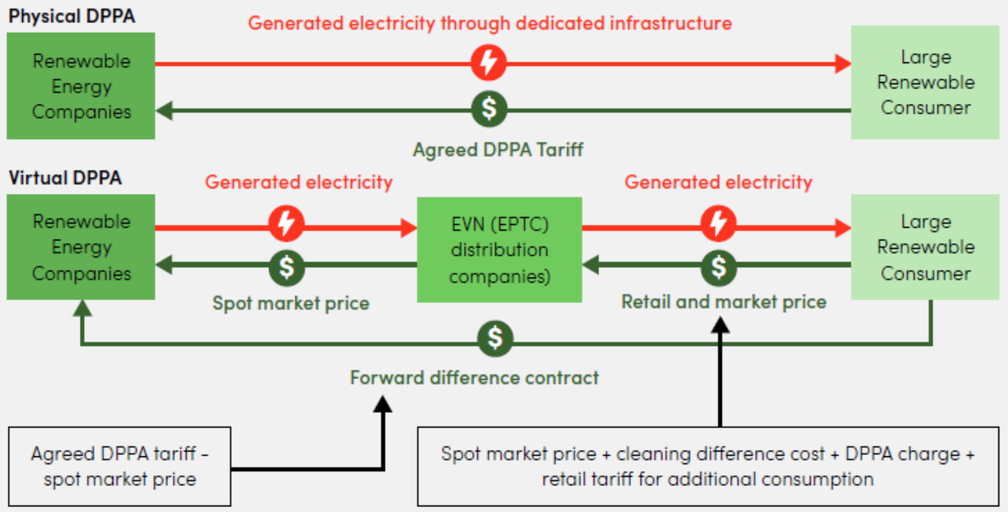
3

Transparency on transmission cost and charges:

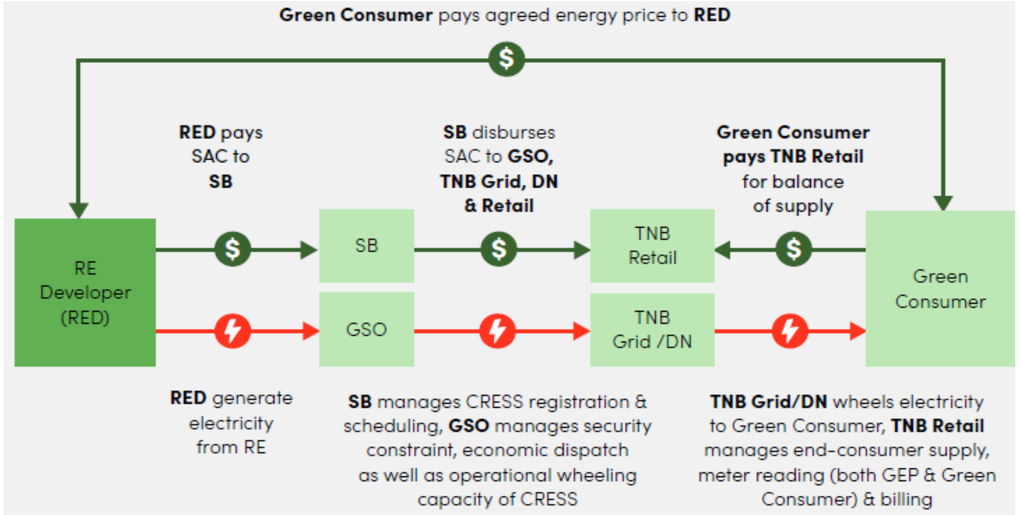
- There is no existing document or formula setting out the charges a private entity would have to pay to engage in a joint transmission network utilisation scheme.

Lessons learned from the Southeast Asia region

Vietnam



Malaysia



	Indonesia	Vietnam	Malaysia
Market structure	*Vertically-integrated single buyer*	*Unbundled single buyer*	*Unbundled single buyer*
Independent market and grid operator entities	*No*	*Yes*	*Yes*
Regulated end-user tariff	*Yes*	*Yes*	*No*

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Recommendations:
A Proposed Joint Transmission Network Utilisation Mechanism for Indonesia

A joint transmission network utilization mechanism can be implemented in Indonesia's current regulatory environment.

1. Integrate language supporting a regulated joint transmission network utilisation scheme into relevant national policies and plans

Incorporate language supporting a regulated joint transmission network utilisation scheme **in the New and Renewable Energy Bill (RUU EBET)**

Integrate a joint transmission network utilisation scheme **into PLN's RUPTL**

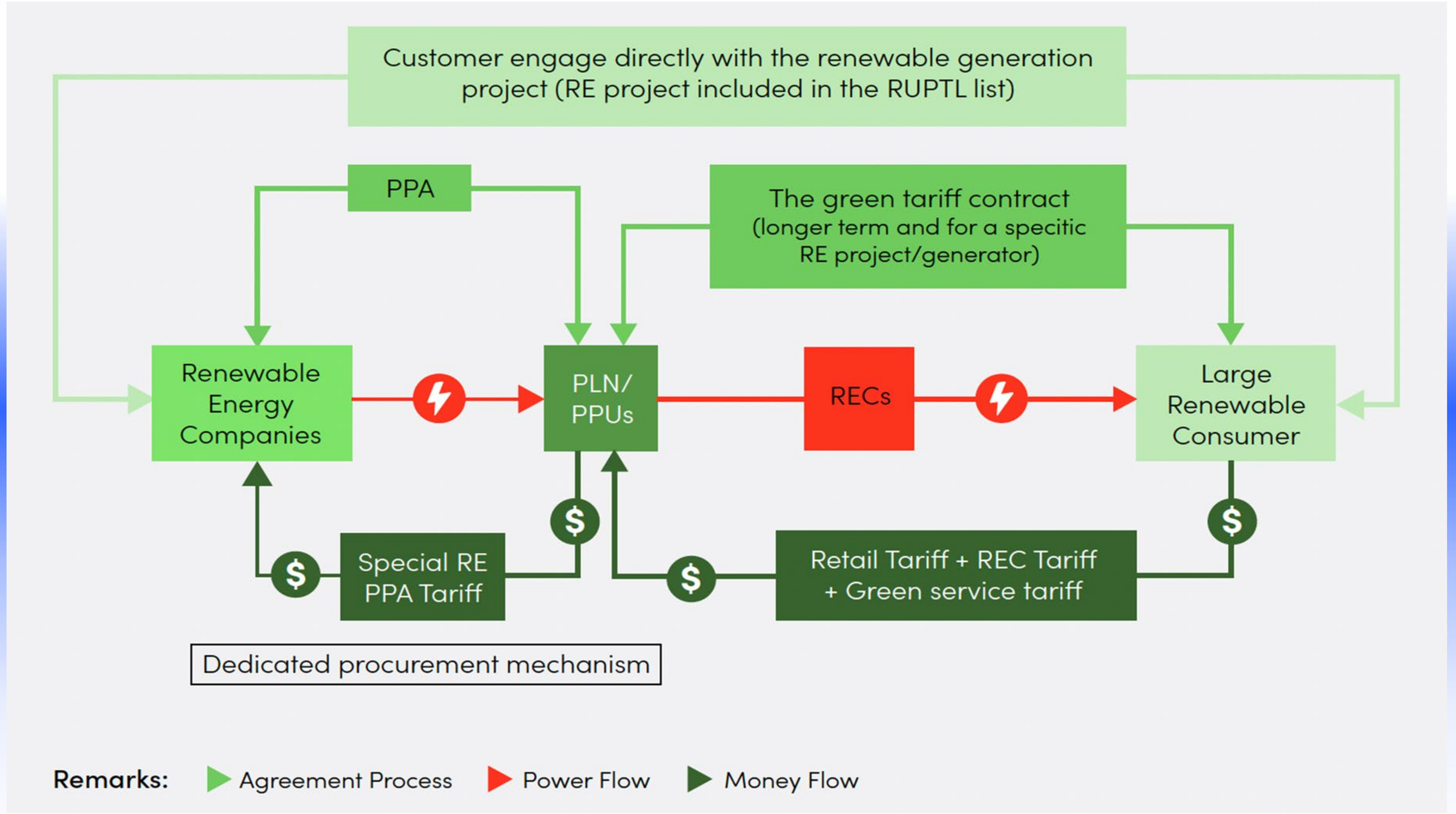
2. Uphold the Key Principles of the Market

Balance of electricity supply and demand whilst facilitating renewable electricity integration

Development of a fair and transparent cost structure for renewable and green service, including transmission charges, grid balancing charges, and renewable energy certificate (REC) payments

Management of system planning and operation, including REC verification, cost transparency, and contractual complexities

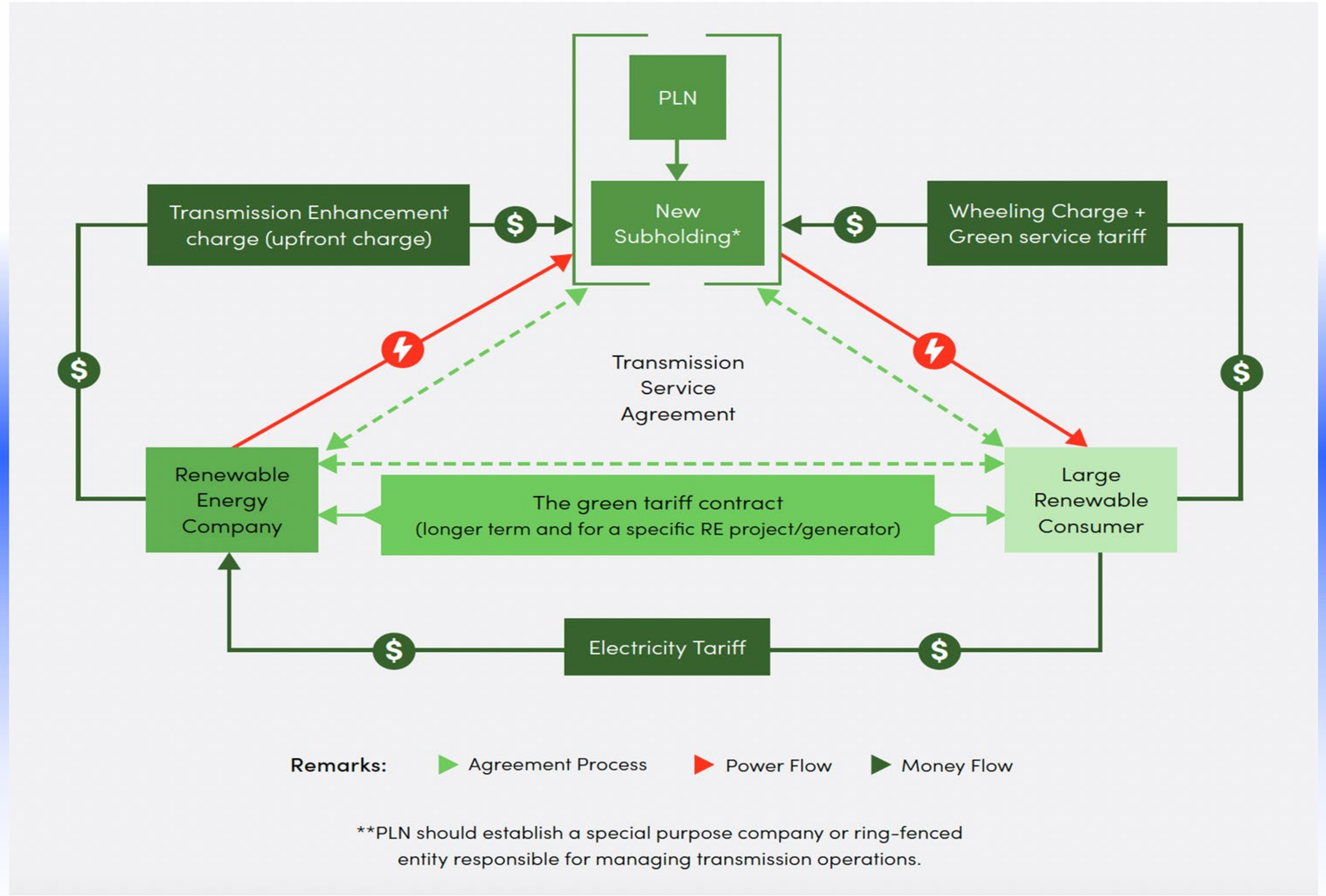
3. Proposed Scheme for Joint Transmission Network Utilisation Principles under Existing Regulations



Key principles

- Transmission access
- Fair and transparent tariffs
- Reliable interconnections
- Clear contractual agreements

4. Proposed Long-term Mechanism to Maximize the Potential of Joint Transmission Network Utilisation in Indonesia



To effectively implement this mechanism, <u>we recommend the following</u>:

- **Introduce upfront charges** for grid strengthening and capacity enhancement
- **Establish a quota system** for joint transmission network utilisation and develop a comprehensive renewable electricity plan
- **Create separate PLN transmission subsidiary** supported by an independent tariff regulator