



Accelerating renewables investment in Indonesia:

Shared use of the transmission network

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**Policy
Report**

Energy

April 2025

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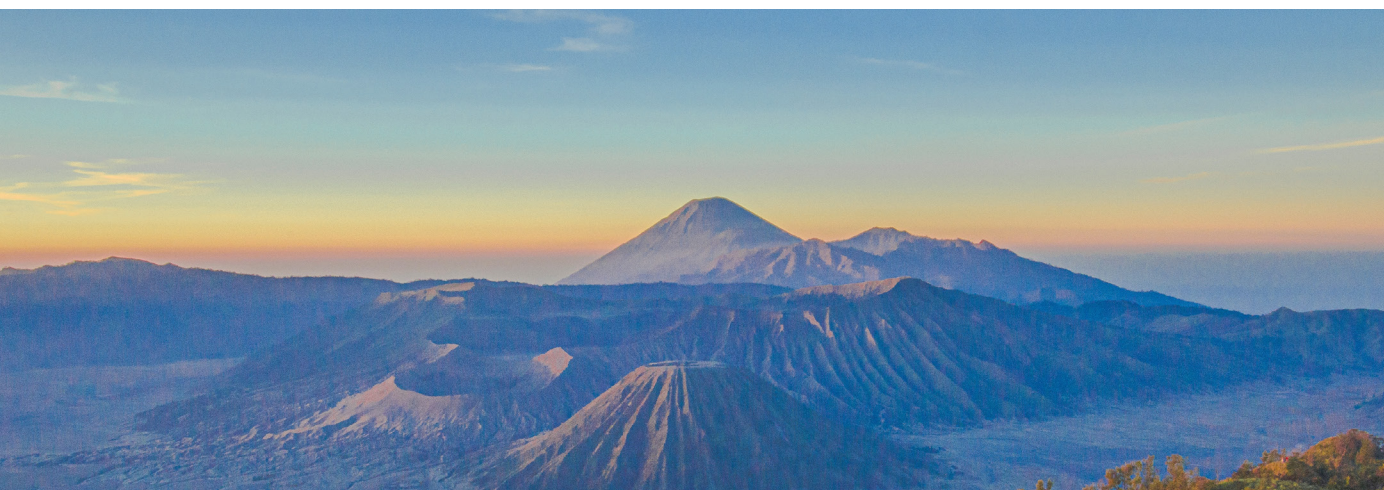


Executive summary

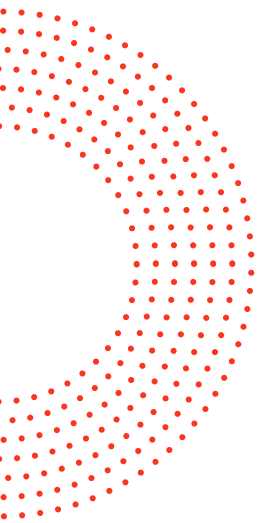
Accelerating Indonesia's roll out of renewable electricity is essential to the country's coal phase out plan¹, achieving its 2060 net zero target, and to usher in green economic growth as part of President Prabowo Subianto's "Together Indonesia Advances Towards a Golden Indonesia 2045" vision².

As Indonesia strives to drive up its renewable generation capacity, with a target of an additional 75GW on the grid by 2040, the country must attract private investment to successfully accelerate its energy transition³. Several energy policies aim to shape Indonesia's direction between now and 2040 – the New and Renewable Energy Bill (*RUU EBET*), the National Energy Plan (*KEN*), and the state utility's electricity supply business plan (*PLN RUPTL*). It's critical that these initiatives boost renewable energy goals and attract more private investment in the country's energy system.

There are two key barriers currently blocking corporate investment in Indonesia's renewable future: the limited number of renewable procurement options open to companies, and the geographic distance between Indonesia's rich renewable resources, which have sufficient scale to supply industrial centres, and the places where these companies are based.



- 1 Widanto, S. (2024, November 13). Indonesia to build 75GW of renewable energy in the next 15 years, COP29 envoy says. Reuters. reuters.com/business/energy/indonesia-build-75-gw-renewable-energy-next-15-years-cop29-envoy-says-2024-11-12/
- 2 Sakti, R. E. (2024, October 20). *Astacita, Prabowo-Gibran Government Vision Towards Golden Indonesia 2045*. Kompas. kompas.id/baca/english/2024/10/20/en-astacita-visi-pemerintahan-prabowo-gibran-menuju-indonesia-emas-2045
- 3 Widanto, S. (2024, November 13). Indonesia to build 75GW of renewable energy in the next 15 years, COP29 envoy says. Reuters. reuters.com/business/energy/indonesia-build-75-gw-renewable-energy-next-15-years-cop29-envoy-says-2024-11-12/



The joint utilisation of transmission and distribution lines, globally known as power wheeling, offers a promising solution that could unlock significant private investment in renewables in Indonesia from large, international companies committed to using 100% renewable electricity. This includes the 130+ businesses in Climate Group's RE100 campaign that operate in Indonesia⁴, who represent 3TWh of electricity demand per year⁵.


Joint transmission network utilisation is a scheme which allows non-utility stakeholders open, non-discriminatory access to public utility grid infrastructure, through which they can deliver electricity from private generation sources to private customers, subject to a transmission service charge. This approach enables different stakeholders to use grid infrastructure owned by the state electricity utility to deliver electricity from generation sources to load centres.

The current regulations and laws on the power supply business in Indonesia allow for a basic form of joint transmission network utilisation. However, structured correctly, this platform for corporate renewable procurement in Indonesia would be a win-win, helping corporates achieve their renewable energy targets, while offering a predictable, long-term revenue stream for PT Perusahaan Listrik Negara (PLN), the state utility. In this policy report, we outline how, with the right structure and incentives, PLN can lease its transmission lines to private sellers and buyers.



4 RE100, Climate Group. (n.d) RE100. there100.org/

5 RE100 2023 Annual Disclosure Report. (2024, March 6). there100.org/our-work/publications/re100-2023-annual-disclosure-report



The recommendations in this report set out how this approach can help Indonesia meet its ambitious renewables targets and grid investment plans. In summary, we recommend that the Government of Indonesia and relevant ministries:

- **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 upcoming New and Renewable Energy Bill (RUU EBET).** This scheme will facilitate new renewable energy supply under Articles 29A and 47A through network utilisation cooperation⁶.
 - **Integrate a joint transmission and utilisation scheme into PLN's Electricity Supply Business Plan (RUPTL PLN).** PLN's RUPTL should be adapted to allow a regulated private party access to PLN's transmission network.
- **Uphold the key principles of the market and ensure PLN remains integral:**
 - **Balance of electricity supply and demand** whilst facilitating renewable electricity integration.
 - **Development of a fair and transparent cost structure** for renewable and green services.
 - **Management of system planning and operation**, including REC verification, cost transparency, and contractual complexities.
- **Under existing market regulations, develop and implement a joint transmission network utilisation scheme that has the following principles:**
 - **Transmission access:** Renewables developers should be able to connect facilities to industrial consumers via the national grid.
 - **Fair and transparent tariffs:** Transmission tariffs should reflect true service costs without bearing additional generation or distribution costs, and ideally be set by an independent regulator.
 - **Reliable interconnections:** Renewables projects should be interconnected to the national grid within reasonable timeframes, at a reasonable cost, and in alignment with grid standards to minimise instances of curtailment.
 - **Clear contractual agreements:** Generation companies should agree to minimum supply commitments, comply with grid codes, and contribute to balancing costs if necessary.
- **Work towards longer term regulatory transformation that maximises the potential of joint transmission network utilisation in Indonesia:**
 - **Introduce upfront charges for grid strengthening and capacity enhancement.** A transparently formulated, upfront transmission enhancement charge could support PLN to finance necessary infrastructure upgrades.
 - **Establish a quota system for joint transmission network utilisation and develop a comprehensive renewable electricity plan.** An annual quota system would provide clarity for renewable developers and consumers, ensure efficient use of and clarity on transmission network capacity, support the stability of the electricity network, and lead to a more seamless integration of renewable energy sources into the grid.
 - **Create a separate transmission subsidiary and independent tariff regulator.** The Government of Indonesia should consider the establishment of a separate subsidiary under PLN responsible for managing transmission operations, therefore creating a clearer company balance sheet, easier determination of transmission tariffs, and the possibility for the transmission company to become a separate fundraising vehicle.

As Indonesia's neighbors, including Vietnam and Malaysia, introduce similar systems and mechanisms, enhancing their international competitiveness and driving renewables growth, Indonesia must act quickly on joint transmission network utilisation to remain an attractive market for foreign investment in the region.

⁶ IESR. (2024, May 20). *Power Wheeling Will Open Renewable Energy Investment Opportunities in Indonesia*. Institute for Essential Services Reform (IESR). iesr.or.id/en/power-wheeling-will-open-renewable-energy-investment-opportunities-in-indonesia/

Context: Renewable electricity and ‘Golden Indonesia 2045’

The 8th President of the Republic of Indonesia, Prabowo Subianto, has set a grand vision for the country in his plan - “Together Indonesia Advances Towards a Golden Indonesia 2045”⁷.

Within this vision, President Prabowo sets out a goal of 8% economic growth in the third year of his presidency, emphasising that this must be done in line with Indonesia’s net zero commitment⁸. With Indonesia’s economic growth stalling at 5% in recent years, ramping up investment is integral to achieving higher growth targets⁹. Access to renewable energy has been key in attracting funding from multinational companies around the world, as shown by recent investments from Microsoft¹⁰ and Amazon¹¹.



- 7 Sakti, R. E. (2024, October 20). *Astacita, Prabowo-Gibran Government Vision Towards Golden Indonesia 2045*. Kompas. kompas.id/baca/english/2024/10/20/en-astacita-visi-pemerintahan-prabowo-gibran-menuju-indonesia-emas-2045.
- 8 Agne, Y. (2024, October 15). *Prabowo Targets Economic Growth of 8 Percent, Here's What Experts Say*. TEMPO.CO. en.tempo.co/read/1928978/prabowo-targets-economic-growth-of-8-percent-heres-what-experts-say
- 9 Azzahra, N. (2024, November 21). *Indef Projects Indonesia's Economic Growth to Stagnate at 5% Next Year*. TEMPO.CO. en.tempo.co/read/1943958/indef-projects-indonesias-economic-growth-to-stagnate-at-5-next-year
- 10 Kimball, S. (2024, May 1). *Microsoft signs deal to invest more than \$10 billion on renewable energy capacity to power data centers*. CNBC. cnbc.com/2024/05/01/microsoft-brookfield-to-develop-more-than-10point5-gigawatts-of-renewable-energy.html
- 11 *Carbon-free energy* (n.d). Amazon. sustainability.aboutamazon.com/climate-solutions/carbon-free-energy

Indonesia has immense renewable energy potential, estimated to be close to 3.7TW¹², but despite this only 0.3% is currently being used within the energy mix¹³. At the G20 in November 2024, President Prabowo announced a commitment to retire coal-fired power plants by 2040, alongside a 75GW commitment to new renewables¹⁴. With Indonesia potentially needing investments of at least \$1.2 trillion USD between now and 2050 for clean energy, storage, and transmission networks, the country must seek broader investment sources, especially through unlocking access to private capital¹⁵.

This paper outlines the potential of a joint transmission network utilisation scheme to ramp up renewables investment in Indonesia. The benefits of joint transmission network utilisation will be outlined first, followed by an overview of Indonesia's electricity regulatory frameworks and the barriers to implementing joint transmission network utilisation. To conclude, we propose a set of principles and recommendations on how to gradually implement a joint transmission network utilisation mechanism in Indonesia.

RE100 brings together the world's largest and most influential companies committed to 100% renewable electricity, including 133 RE100 member companies who have operations in Indonesia. These companies consume 3TWh of electricity per year in Indonesia, all of which must switch to renewable electricity by 2050 at the latest if they are to meet their renewables targets.



- 12 Directorate General of New, Renewable Energy and Energy Conservation. (2021, November 23). *Indonesia's NRE Development in Energy Transition towards Net Zero Emission, Presented by Director of Various New Renewable Energy at Roundtable Discussions on the topic of "Post-COP26: What We Know and The Impact on Indonesia"*. Ministry of Energy and Mineral Resources (MEMR). britcham.or.id/wp-content/uploads/2021/11/Chrisnawan-Anditya-Director-of-Variou-of-New-and-Renewable-Energy-of-Ministry-of-Energy-and-Mineral-Resources.pdf
- 13 Rizki Yusrial, M. (2024, December 12). *Indonesia's Renewable Energy Utilization Very Low at Just 0.3%: Energy Ministry*. TEMPO.CO. en.tempo.co/read/1952051/indonesias-renewable-energy-utilization-very-low-at-just-0-3-energy-ministry
- 14 Widanto, S. (2024, November 13). *Indonesia to build 75GW of renewable energy in the next 15 years, COP29 envoy says*. Reuters. reuters.com/business/energy/indonesia-build-75-gw-renewable-energy-next-15-years-cop29-envoy-says-2024-11-12/
- 15 Anantha Lakshmi, A. (2025, January 14). *Indonesia's ambition to quit coal hinges on policy reforms*. FINANCIAL TIMES. ft.com/content/58e46243-7f2f-42f2-be92-5ba3b660c108

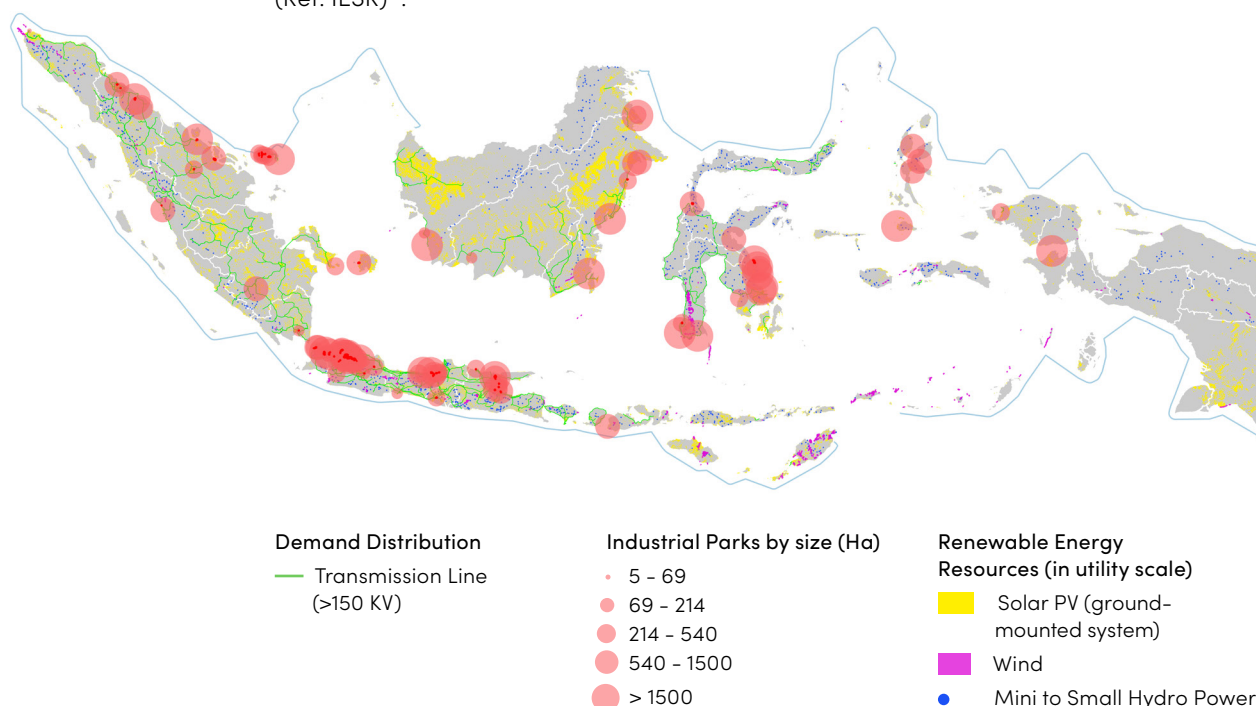
1. The benefits of joint transmission network utilisation for Indonesia and PLN

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:

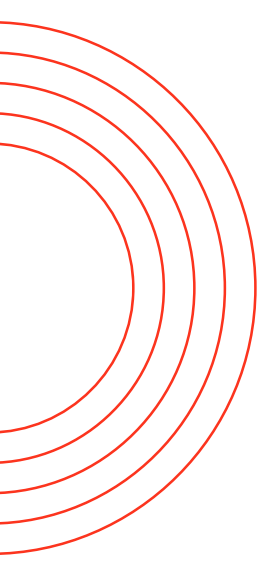
Accelerating Indonesia's renewables rollout without burdening the national budget

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/



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 demand¹⁷.

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 countries¹⁸. 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 Indonesia¹⁹.

- 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



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 IEEFA²⁰. 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

Additionally, a joint transmission network utilisation mechanism offers a reliable and steady cash flow for PLN. Fixed-term contracts between suppliers and buyers ensure predictable, long-term income that can contribute to the cost of transmission investment and operations. A reasonable, transparent charge for transmission services will help PLN to recover the cost of upgrading and maintaining grids, whilst preserving power quality in areas that serve these renewable electricity customers. Such agreements not only bolster PLN's financial stability but also enhance its ability to invest in grid infrastructure and expand its services.

More broadly, Indonesian energy demand is predicted to at least triple by 2050²² and grow by 5% annually, partially driven by increased electrification and industrial growth²³. To accommodate this, the grid must both modernise and expand. PLN will have to create clear plans and secure funding to implement transmission expansions and upgrades without overly burdening the company's balance sheet.

Renewable energy projects, especially onshore wind and solar, can be built and commissioned relatively quickly, meaning significant progress can be made in the short-term towards meeting projected energy demand. The Just Energy Transition Partnership's (JETP) Comprehensive Investment and Policy Plan recommends credible, coordinated planning for new renewable capacity, alongside investments aimed at strengthening PLN's grid capacity²⁴. A properly designed joint transmission network utilisation mechanism would support the state utility in maintaining and upgrading their transmission assets through an additional revenue source.



- 22 BloombergNEF, (2022, November 11). *Net-Zero Transition Potentially a \$3.5 Trillion Investment Opportunity for Indonesia*. BNEF. about.bnef.com/blog/net-zero-transition-potentially-a-3-5-trillion-investment-opportunity-for-indonesia/
- 23 Setyawati, D., Sucahyo, R. (2024, December 4). *Indonesia phasing out coal by 2040 requires ramping up renewables*. EMBER. ember-energy.org/latest-insights/indonesia-coal-phase-out-2040/
- 24 Indonesia Just Energy Transition Partnership (JET-P). (2023). *Comprehensive Investment and Policy Plan (CIPP)*. jetp-id.org/cipp

2. Overview of Indonesia's existing position on joint transmission network utilisation

2.1 Current regulatory frameworks

Currently, regulations and laws overseeing the power supply business within Indonesia allow for the implementation of a joint transmission network utilisation mechanism.

The Government of Indonesia regulates the electricity power supply business through Law No. 30/2009 on Electricity (Law 30/2009), stating that power supply for public interest is managed by state and regionally owned enterprises (SOEs and ROEs respectively) with priority given to the state utility provider PLN (Article 11)²⁵. The law also stipulates that the private sector, cooperatives, and communities can participate in the power supply business, by providing electricity for either public or private interest.

Alongside this, the law regulates the authority of the Government to determine policies and plans, grant permits, guide and supervise, impose sanctions, and determine electricity and grid tariffs – underpinning the authority of the Government in decisions on power system infrastructure. This was detailed further in the Government Regulation of the Republic of Indonesia No. 14/2012 on Business Activities of Electricity Supply (GR 14/2012)²⁶, which was later amended by the Government Regulation of the Republic of Indonesia No. 23/2014 (GR 23/2014)²⁷.



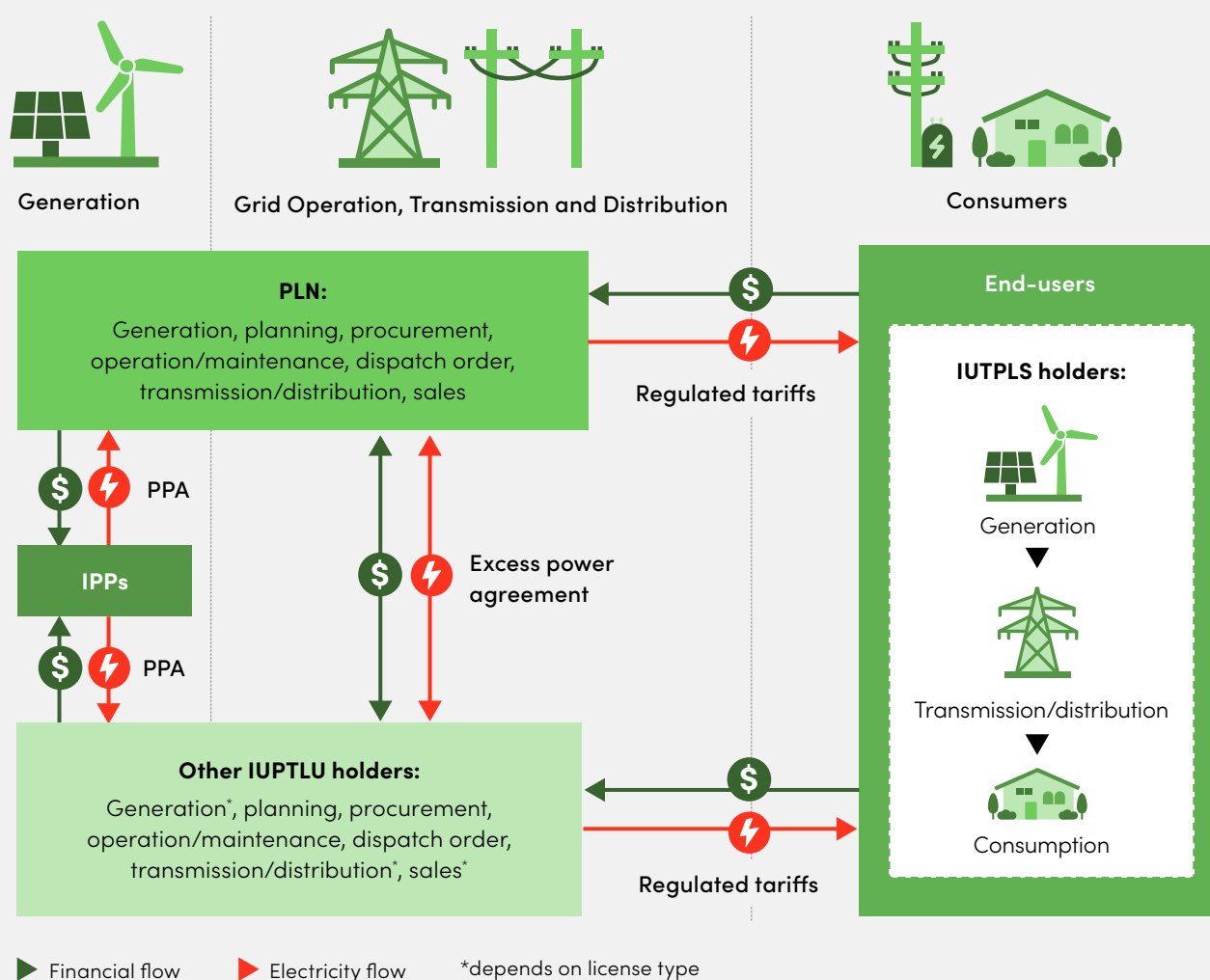
- 25 Pemerintah Indonesia. (2009, 23 Oktober). *Undang-Undang Nomor 30 Tahun 2009 tentang Ketenagalistrikan*. Kementerian Energi dan Sumber Daya Mineral. gatrik.esdm.go.id/assets/uploads/download_index/files/9ef73-03.uu-30-2009-tentang-ketenagalistrikan.pdf.
- 26 Pemerintah Indonesia. (2012, 13 Februari). *Peraturan Pemerintah Nomor 14 Tahun 2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik*. Kementerian Energi dan Sumber Daya Mineral peraturan.bpk.go.id/Details/5226/pp-no-14-tahun-2012
- 27 Pemerintah Indonesia. (2014, 14 April). *Peraturan Pemerintah Nomor 23 Tahun 2014 tentang Perubahan atas Peraturan Pemerintah Nomor 14 Tahun 2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik*. Badan Pemeriksa Keuangan Republik Indonesia. peraturan.bpk.go.id/Home/Details/5460/pp-no-23-tahun-2014

Following the implementation of these laws and regulations, the Ministry of Energy and Mineral Resources (MEMR) issued Regulation No. 11/2021 on Implementation of Power Business, which separates the power supply business into two provisions, namely²⁸.

- **Business activities providing electricity for the public interest (UPTLU)**, including generation, transmission, distribution, and/or the sale of electricity. The participating parties are required to hold the business activity license providing electricity for the public interest (IUPTLU).
- **Business activities providing electricity for self-interest (UPTLS)**, including generation, transmission and/or the distribution of electricity. The participating parties are required to hold the business activity license providing electricity for self-interest (IUPTLS).

A simplified structure of Indonesia's electricity market is presented in **Figure 2**.

Figure 2: Indonesia electricity market structure (IESR)²⁹.



28 Pemerintah Indonesia. (2021, 11 Juni). *Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 11 Tahun 2021 tentang Pelaksanaan Usaha Ketenagalistrikan*. Kementerian Energi dan Sumber Daya Mineral. jdih.esdm.go.id/dokumen/view?id=2175.

29 IESR analysis. (2025). *Indonesia electricity market structure* [Original figure]. IESR.

The principle of joint transmission network utilisation is mentioned in GR 14/2012 and GR 23/2014, outlining a clause that regulates the joint use of transmission and distribution lines through a lease mechanism³⁰.

A clause in MEMR Regulation 11/2021 also states that the private sector, through *UPTLS*, can collaborate with SOEs to jointly use transmission and distribution lines to distribute electricity for self-interest, linking electricity from generation source to load centres³¹. This can be done through a lease mechanism, generating revenue for transmission owners through a transmission charge.

Globally this is better known as *power wheeling*.



- 30 Pemerintah Indonesia. (2012, 13 Februari). *Peraturan Pemerintah Nomor 14 Tahun 2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik*. Kementerian Energi dan Sumber Daya Mineral peraturan.bpk.go.id/Details/5226/pp-no-14-tahun-2012; Pemerintah Indonesia. (2014, 14 April). *Peraturan Pemerintah Nomor 23 Tahun 2014 tentang Perubahan atas Peraturan Pemerintah Nomor 14 Tahun 2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik*. Badan Pemeriksa Keuangan Republik Indonesia. peraturan.bpk.go.id/Home/Details/5460/pp-no-23-tahun-2014
- 31 Pemerintah Indonesia. (2021, 11 Juni). *Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 11 Tahun 2021 tentang Pelaksanaan Usaha Ketenagalistrikan*. Kementerian Energi dan Sumber Daya Mineral. jdih.esdm.go.id/dokumen/view?id=2175.

2.2 Barriers to joint transmission network utilisation

Despite the fact that joint transmission network utilisation can be implemented within Indonesia's current electricity market and regulations, it has not been used yet due to three main barriers:

- 1 Single seller and buyer requirements**
- 2 Challenges for PLN in procuring renewable energy sources rapidly and repeatedly**
- 3 A lack of transparency around transmission costs, tariffs, and charges**



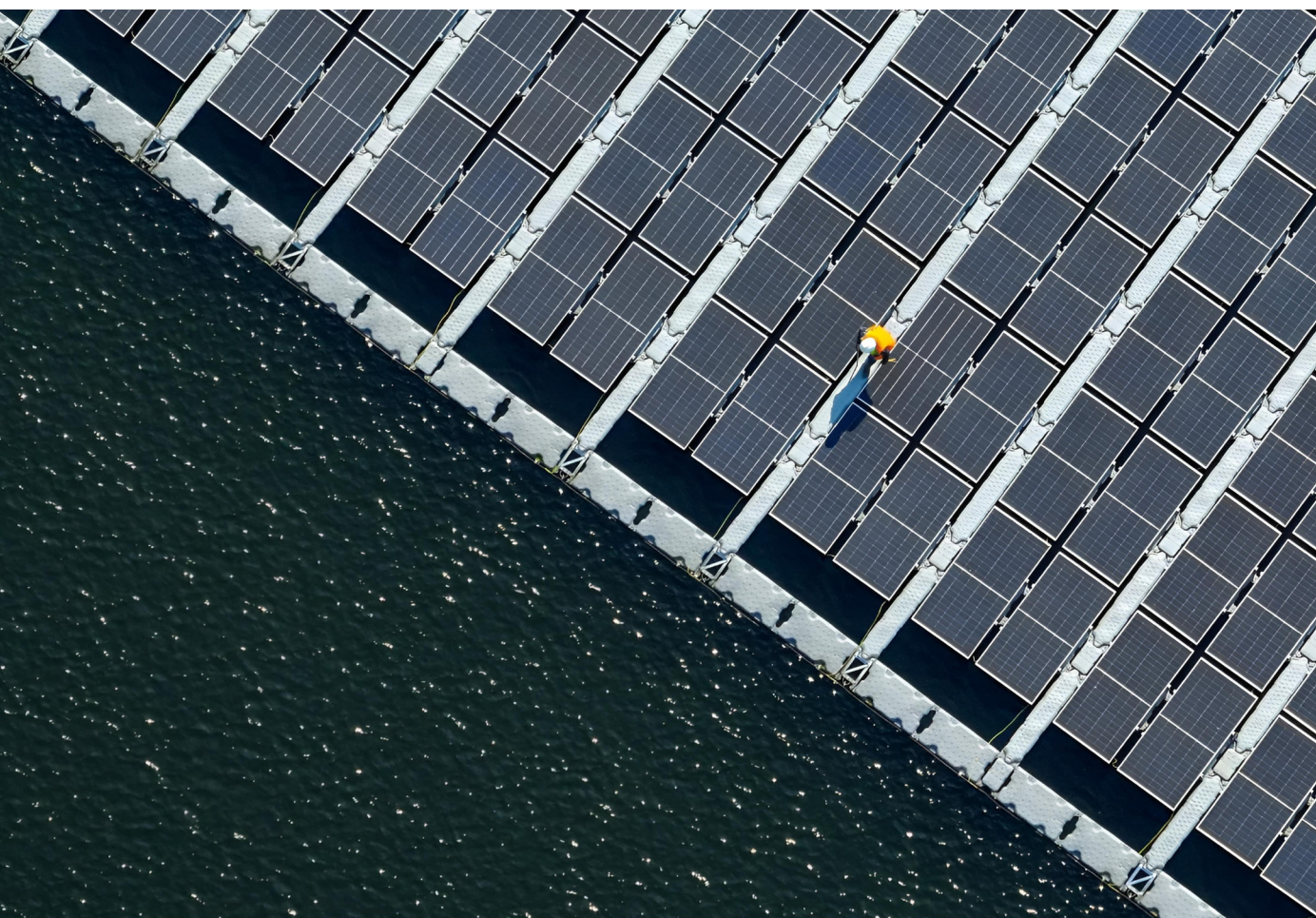
Indonesia's state utility PLN provides integrated utility services across generation, transmission and distribution. Under the current format, no direct electricity sales from private generators to corporate consumers are permitted. The private sector can only produce, distribute, and sell electricity directly to the consumer if they hold Electricity Supply Business Area (*Wilus*) and *UPTLU* permits.

Yet the *Wilus* scheme is designed for the private sector to participate in supplying electricity to areas that cannot be reached by PLN or areas such as industrial centres. Participation from the private sector, cooperatives, and communities in the power supply business is allowed, but common practice obligates private energy producers and suppliers to sell electricity to PLN as a **single off-taker**.



Single off-taker

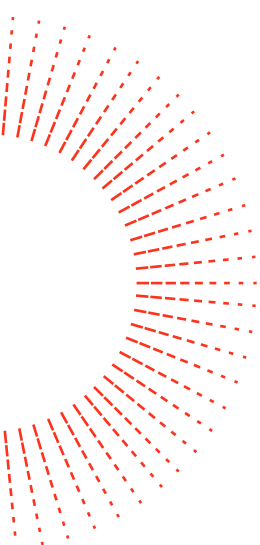
A sole entity that purchases all output from producers or suppliers in a given market.



Given high corporate demand for clean energy and the Government's aspiration to achieve the additional 75GW renewable energy capacity by 2040, PLN would need to develop or procure greater numbers of renewable energy projects year-on-year. However, PLN currently faces significant capital and resource constraints, which hinder its ability to provide a steady supply of renewable energy.

Furthermore, current regulations require PLN to participate in many aspects of the renewable energy transaction. This not only adds layers of administrative complexity but also creates a transparency barrier between the cost of renewable power generated, and the cost at which customers must purchase it. Under the existing framework, PLN either makes direct investments into renewables or enters into long-term power purchase agreements (PPAs) with independent power producers, thereby assuming long-term liabilities. This model also generates renewable energy certificates (RECs) through transactions that involve PLN's procurement process, adding further demands on PLN's capacity.

A well-structured joint transmission network utilisation framework would enable third parties to finance and develop renewable projects independently. By doing so, PLN could focus on its role of ensuring grid stability and efficient operations, while investors benefit from a more transparent and streamlined process. This shift is likely to appeal to companies committed to rapid clean energy access – such as members of the RE100 initiative – by reducing administrative burdens, clarifying costs, and enhancing the overall investment climate in Indonesia.



There are ongoing claims that, despite the provision for *UPTLS* in law, joint transmission network utilisation is not possible due to potential negative impacts that might disrupt power system stability. Although a concern, there are numerous examples across the Southeast Asia region where this has been overcome successfully, such as Malaysia and Vietnam, where suppliers and buyers remain responsible to the Grid Code and respond to orders from the grid operator. These practices could be replicated for Indonesia, and PLN. New renewable generation can be predicted and fed into PLN's dispatch order, and future grid planning. Such planning would be required in Indonesia regardless of private participation in the power supply, given the Government's 2040 75GW renewables target and increasing energy demand.

Finally, a lack of transparency in electricity generation costs, tariffs, and potential charges from transmission access is a key barrier. 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. Without certainty, private power producers are discouraged from participating in the market, and these unclear charges could potentially lead to increased electricity tariffs for consumers if not transparently assessed. Costs for these services should be fair, balanced, and transparently determined, reflecting costs of investment, operations, and services.



3. Recommendations: A proposed joint transmission network utilisation mechanism for Indonesia

The implementation of joint transmission network utilisation offers many valuable opportunities to Indonesia, as detailed earlier in this paper. However, a well-balanced strategy is required to address the interests of all stakeholders, including PLN and large energy consumers.

To capitalise on such opportunities, this paper recommends that the Government of Indonesia and relevant ministries:

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

The integration of joint transmission network utilisation into long-term energy planning in Indonesia is key. Therefore, this paper recommends that language supporting a regulated joint transmission network utilisation scheme is integrated into relevant national policies and plans, with particular focus on the below:

- **Incorporate language supporting a regulated joint transmission network utilisation scheme in the New and Renewable Energy Bill (RUU EBET).** This scheme will facilitate new renewable energy supply under Articles 29A and 47A through network utilisation cooperation³².
- **Integrate a joint transmission network utilisation scheme into PLN's RUPTL.** PLN's Electricity Supply Business Plan (*RUPTL PLN*) should be adapted to allow a regulated private party access to PLN's transmission network. The plan should specify available transmission capacity for each subsystem to support the below mechanism as recommended.

The following sections outline recommendations on the key principles and attributes a joint transmission network utilisation mechanism could embody in Indonesia.



32 IESR. (2024, May 20). *Power Wheeling Will Open Renewable Energy Investment Opportunities in Indonesia*. Institute for Essential Services Reform (IESR). iesr.or.id/en/power-wheeling-will-open-renewable-energy-investment-opportunities-in-indonesia/



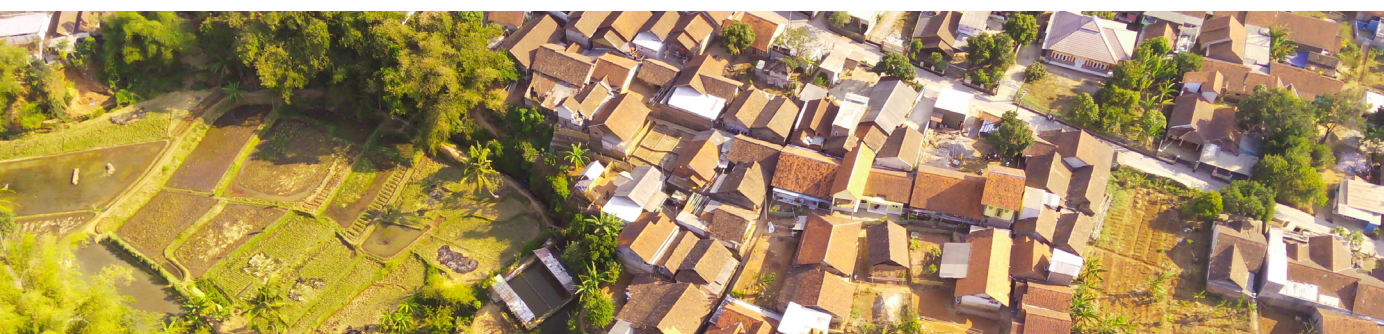
3.2 Uphold the key principles of the market

Given PLN's multiple roles as market operator, grid operator, and utility provider, any joint utilisation of transmission and distribution infrastructure must align with the principles of Law 30/2009 which regulates the electricity power supply business in Indonesia.

Therefore, the proposed mechanism should uphold the key principles of the market and ensure PLN remains integral in the following areas:

- **Balance of electricity supply and demand** whilst facilitating renewable electricity integration.
- **Development of a fair and transparent cost structure** for renewable and green services, 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.

Alongside this, retaining and clarifying the existing procurement mechanisms for corporate renewable buyers is key to fostering a transparent and efficient market. Enhancing pricing transparency and flexibility for RECs³³ and the Green Energy as A Service (GEAS)³⁴ scheme will enable all parties to reach mutually beneficial agreements whilst strengthening overall system credibility. Introducing a joint transmission network utilisation mechanism alongside such existing mechanisms will diversify the landscape, offering corporates greater flexibility to match their varied energy needs including those from energy-intensive industries. By improving current renewable procurement options and introducing a joint transmission network utilisation scheme, Indonesia can enhance its attractiveness for corporate investment in renewables.



3.3 Develop and implement joint transmission network utilisation principles under existing regulations

To attract private sector participation and enable large-scale renewable deployment, joint transmission network utilisation regulations should allow for open access to the transmission grid. This approach would enable PLN to better mobilise external capital in developing renewable generation projects to reach Government targets, instead focusing its efforts on operating, maintaining and, potentially, expanding the grid while keeping it stable.

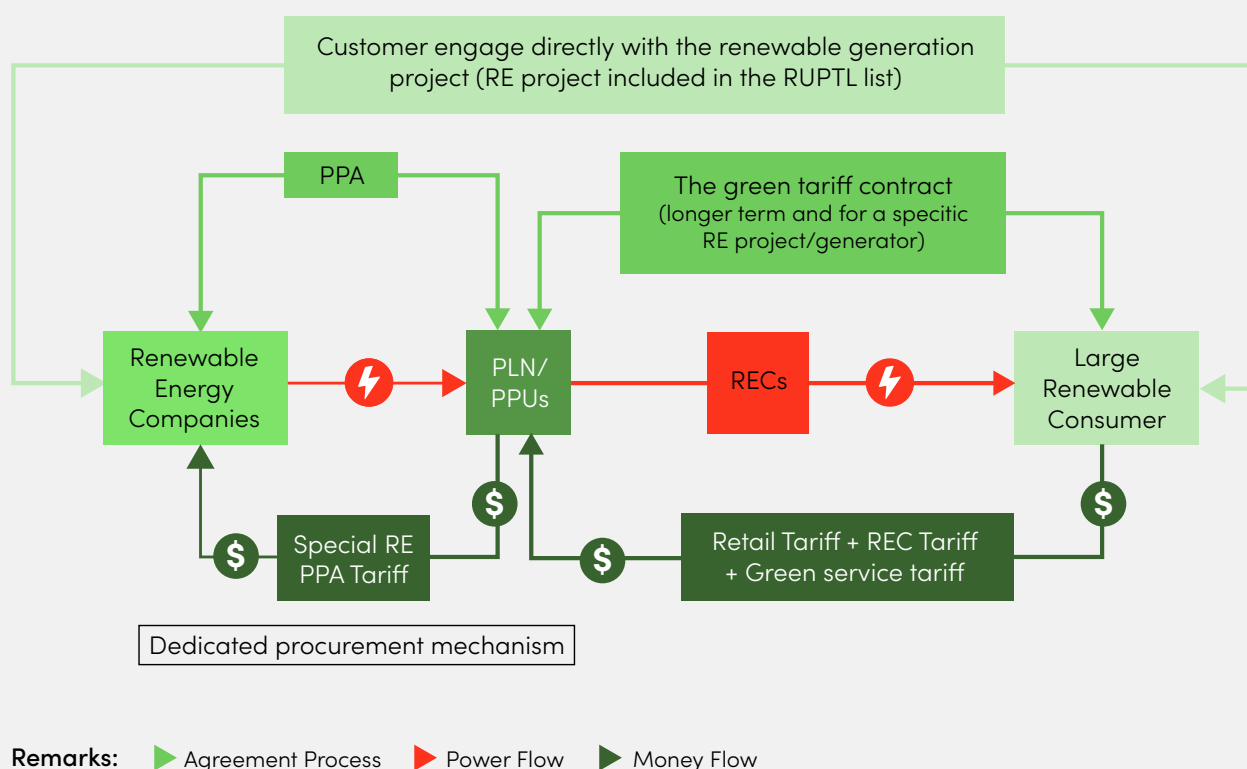
33 RE100, Climate Group. (2023, December). *Financing the Energy Transition: How Governments Can Maximise Corporate Investment*. RE100. there100.org/financing-the-energy-transition

34 Sinta. (2024, June 20). *PLN will supply 210GWh of green energy to H&M Group in 2025*. HEAPTALK. heaptalk.com/sustainability/pln-will-supply-210-gwh-of-green-energy-to-hm-group-in-2025/


Figure 3 below, outlines a proposal for a joint transmission network utilisation mechanism which could be implemented under the current regulatory environment in Indonesia. Key principles for this mechanism include:

- **Transmission access:** Renewables developers should be able to connect facilities to industrial consumers via the national grid.
- **Fair and transparent tariffs:** Transmission tariffs should reflect true service costs without bearing additional costs from the generation or distribution segments, and ideally be set by an independent regulator.
- **Reliable interconnections:** Renewable projects should be interconnected to the national grid within reasonable timeframes, at reasonable cost, and in alignment with grid standards to ensure instances where the system operator curtails grid access to renewables due to over-supply are minimised.
- **Clear contractual agreements:** Generation companies should agree to minimum supply commitments, comply with grid codes, and contribute to balancing costs if necessary.

Figure 3: Proposed scheme for the joint utilisation of transmission and distribution lines in Indonesia (IEEFA and IESR)³⁵.



³⁵ Institute for Energy Economics and Financial Analysis (IEEFA), Institute for Essential Services Reform (IESR). (2025, March) Figure 3: Proposed scheme for the joint utilisation of transmission and distribution lines in Indonesia [Original figure].



Within this proposed framework, PLN maintains its integral role in owning and operating the transmission grid, balancing the demand of large renewable consumers and renewable energy developers. Large renewable energy consumers commit to a certain amount of renewable energy offtake to PLN, which will be under a dedicated joint utilisation mechanism. PLN will transfer the RECs from the renewable developers to the large renewable consumers.

In return, on top of the regulated retail tariff, PLN could charge additional costs for the green services, which should cover costs related to RECs, transmission access, and grid balancing. This could be bundled into a single off-take contract with the consumer.

There are several benefits to the proposed scheme above. It aligns with current regulated electricity tariffs, retains PLN's integrated role, boosts the supply of RECs through private investment, progresses Government renewable capacity targets and adds a potential new revenue stream for PLN. Many of these aspects have already been successfully implemented under the Malaysian and Vietnamese schemes.

However, this approach does have a few limitations. Renewable energy companies and consumers may not find this scheme completely beneficial, as it requires additional procurement capacity from PLN. Additionally, for such a scheme to work, PLN has to be central to the transaction, increasing its liabilities. But there are ways to maximise the benefits of joint transmission network utilisation whilst reducing the burden on PLN's capacity and resources. In the next section, we set out our recommendations on how to maximise the potential of joint transmission network utilisation in Indonesia, including how to bolster the role of PLN.

3.4 Work towards longer term regulatory transformation that maximises the potential of joint transmission network utilisation

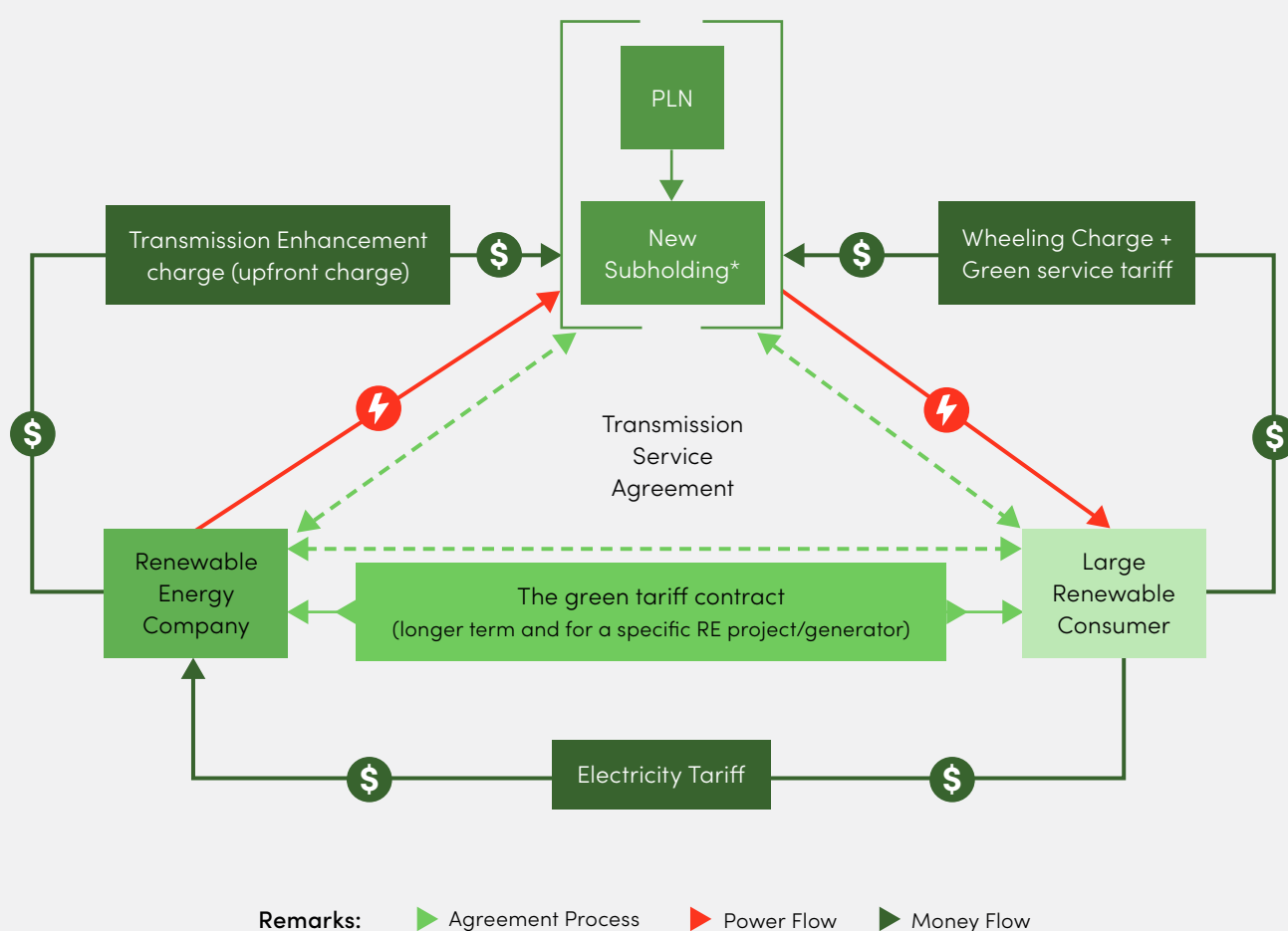
Joint transmission network utilisation can be implemented in the short term within the scope of current Indonesian electricity regulations. But to fully maximise joint transmission network utilisation's potential, a longer-term regulatory evolution could be considered as illustrated in **Figure 4**.

Under this mechanism, PLN would facilitate transmission between the renewable generator and the renewable buyer through a Transmission Services Agreement (TSA). The TSA outlines supply obligations on the generator, interconnection regulations, and compliance with PLN's grid code to ensure stability and minimise curtailment risk.



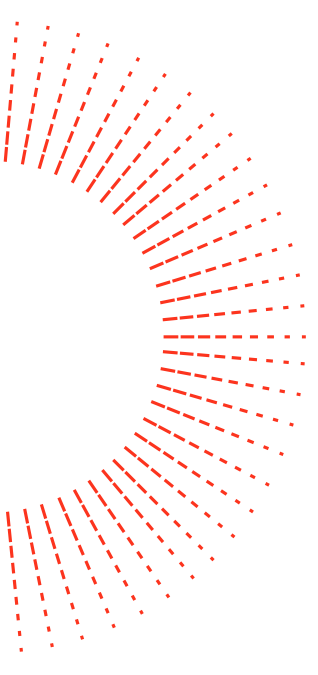
This idealised, long-term scheme would have two additional benefits for PLN. Firstly, **it would lower risk for PLN** enabling it to gradually move away from the risks associated with the obligation to buy electricity from Independent Power Producers (IPPs) via current procurement processes. Secondly, **it would streamline renewable capacity additions** and decrease the manpower needed from PLN in the procurement process, enabling PLN to focus on expanding and optimising the grid.

Figure 4: A proposed, long-term mechanism which would maximise the potential of joint transmission network utilisation in Indonesia (IEEFA)³⁶.



**PLN should establish a special purpose company or ring-fenced entity responsible for managing transmission operations.

³⁶ Institute for Energy Economics and Financial Analysis (IEEFA). (2025, March). *Figure 4: A proposed, long-term mechanism which would maximise the potential of power wheeling in Indonesia* [Original figure].



To effectively implement this mechanism and to ensure it becomes a win-win solution for all stakeholders, we recommend the following:

- **Introduce upfront charges for grid strengthening and capacity enhancement:** Renewable energy developers and consumers should contribute to the costs of grid expansion and reinforcement. An upfront transmission enhancement charge could support PLN to finance necessary infrastructure upgrades. A transparent cost allocation formula should be developed to ensure fairness, with fees based on transmission expansion needs and benefits.
- **Establish a quota system for joint transmission network utilisation and develop a comprehensive renewable electricity plan:** PLN should establish an annual quota system to identify and plan network capacity available for joint transmission network utilisation, helping align transmission planning with renewable energy development. This system would provide clarity for renewable developers and consumers, while ensuring efficient use of transmission networks, supporting the stability of the electricity network, and leading to a more seamless integration of renewable energy sources into the grid.
- **Create a separate PLN transmission subsidiary supported by an independent tariff regulator:** To enhance efficiency and transparency for grid investment and operating costs, the Government of Indonesia should consider the establishment of a separate subsidiary under PLN responsible for managing transmission operations. This would create a clear transmission company balance sheet where assets and costs are clear, leading to easier determination of transmission tariffs. It also opens the possibility for the transmission company to become a separate fundraising vehicle.

An independent tariff body could support the transmission company by regulating transmission tariffs and overseeing high quality grid operations. The transmission tariff should ideally be determined through a transparent, regulator-approved formula which covers PLN's costs in developing, financing, operating and maintaining the transmission infrastructure, as well as expenses for power quality services. Transparently calculated transmission tariff formulas would ensure a level playing field for grid access while ensuring PLN's transmission company has sufficient revenue to operate, maintain, and expand the grid.



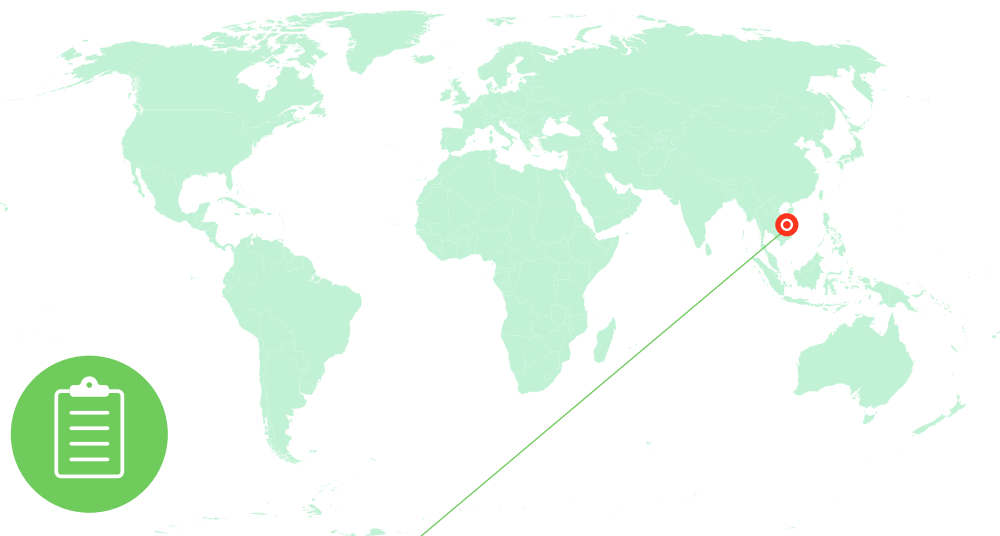
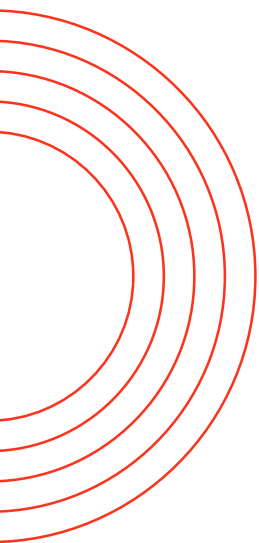
In conclusion, through the adoption of these recommendations, power wheeling can be a win-win between the public and private sector. PLN retains its central role in Indonesia's energy system, whilst benefiting from a new revenue stream through the introduction of transmission charges. The private sector can support the development of new renewable capacity, providing investment to do so, allowing PLN to focus on grid planning, transmission, and distribution to enhance Indonesia's power network. Private sector entities can make progress towards their renewable energy targets, and the Government of Indonesia can make progress towards its economic, national development, and decarbonisation goals.

Appendix: Regional power wheeling case studies

Table 1: A comparison across electricity market structures in Indonesia, Vietnam, and Malaysia.

	Indonesia	Vietnam	Malaysia
Market structure	Vertically-integrated single buyer	Unbundled single-buyer	Unbundled single-buyer
Regulated end-user tariff	Yes	Yes	No
Independent market and grid operator entities	No	Yes	Yes
Spot market mechanism	No	Yes	Yes
Private investment in transmission and distribution	Yes, for UPTLU license holder, separate from the PLN transmission network	Yes, through physical DPPA, permitted to be separate from the Electricity Vietnam (EVN) transmission network	Yes, only for distribution licenses (DLs) holders
Direct PPA/third-party access/power wheeling	No	Yes	Yes





Vietnam

Vietnam's electricity market is an **unbundled single-buyer market** with EVN as the main holding authority in the power sector. EVN owns three generating companies, five regional distribution companies, and an independent single-buyer company (Electricity Power Trading Company/EPTC). The National Load Dispatch Centre is also an independent grid operator under EVN, although there has been an effort to reform the grid operator to be directed under the Vietnamese Ministry of Industry and Trade (MoIT) since 2023. MoIT is also responsible in regulating the retail tariff to the EVN's distribution companies.

On 3 July 2024, Vietnam issued its Direct Power Purchase Agreement (DPPA) decree for renewable energy between private project developers and consumers, after a successful pilot period³⁷. This allows renewable energy generators to sell their power to corporate consumers, using either self-constructed, owned, and operated transmission facilities or via state-owned utility lines. The Vietnamese government established a DPPA mechanism exclusively for renewable energy in August 2024, allowing both physical and virtual/financial DPPA, with the structures and differences between these two options outlined in **Figure 5**.

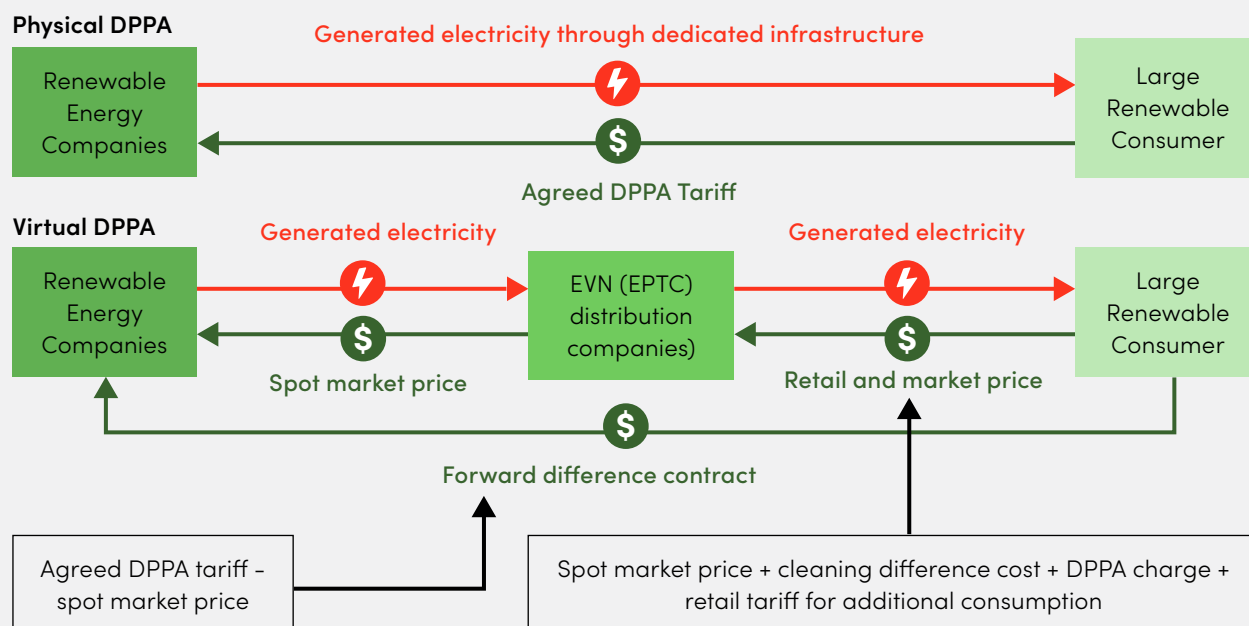


Unbundled single-buyer market

An electricity market structure where generation, transmission, and distribution are separated (unbundled) into distinct entities, but a single buyer (typically a state-owned utility) remains responsible for purchasing electricity from multiple generators and selling it to distributors or end-users.

³⁷ Hauber, G. (2024, July 29). *Vietnam's direct power purchase agreement (DPPA) decree could catalyze a new era for renewable energy*. Institute for Energy Economics and Financial Analysis (IEEFA). ieefa.org/resources/vietnams-direct-power-purchase-agreement-dppa-decree-could-catalyze-new-era-renewable

Figure 5: Direct power purchase agreement mechanism in Vietnam (IEEFA)³⁸.



Through the physical DPPA, renewable energy companies are granted permission to build dedicated transmission and distribution infrastructure to connect the generated electricity to the consumer, with the total tariff agreed bilaterally.

Virtual DPPAs give renewable energy generation companies access to the national grid through the existing wholesale **spot market mechanism**. To provide assurance to the revenue of renewable energy companies, a forward difference contract is agreed with the large renewable consumer offsetting the difference between spot market price and the agreed DPPA tariff between the two parties. Large renewable consumers also pay EVN further charges (a market and retail price, which includes a spot market price, a clearing difference cost, and a DPPA charge, also known as a ‘wheeling’ charge. Separately, if the buyer needs additional supply from the grid, it is charged the ordinary retail tariff.

According to estimates compiled by the World Resources Institute, in the six months since Vietnam’s DPPA rule was adopted, private company interest in developing or buying renewable energy through the DPPA mechanism has exceeded 5,600MW³⁹.



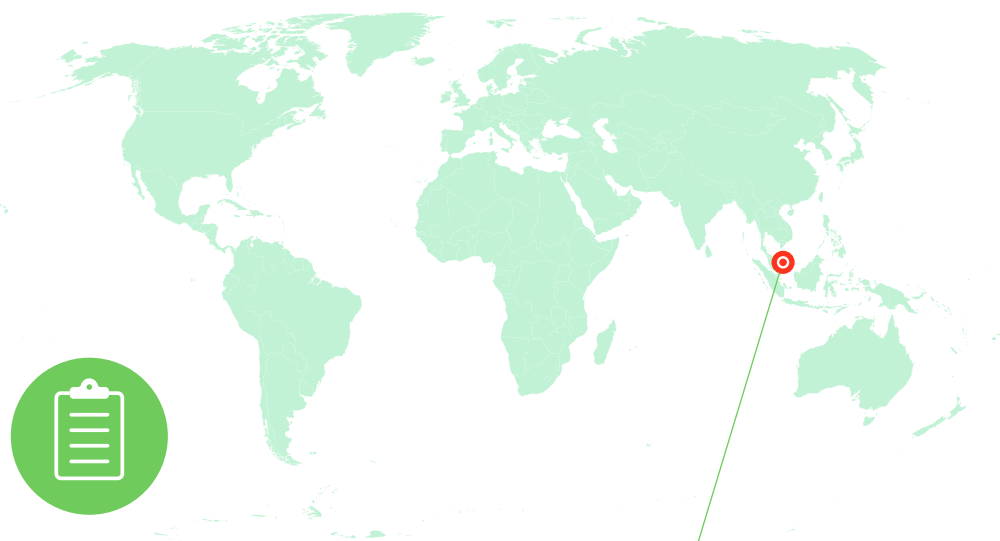
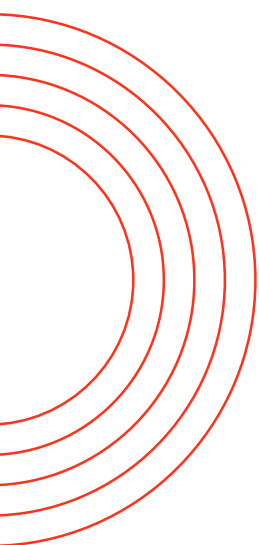
Spot market mechanism

A spot market mechanism is a system whereby electricity is bought and sold for immediate delivery, typically within a short time frame, and prices are determined by supply and demand in real time.

³⁸ Institute for Energy Economics and Financial Analysis (IEEFA). (2025, March).

Figure 5: Direct power purchase agreement mechanism in Vietnam [Original figure].

³⁹ Nguyen, T., Apanada, M. J. (2024, November 1). *Vietnam’s Renewable Energy Policy Is Spurring Decarbonization of Global Brands*. World Resources Institute (WRI). [wri.org/insights/vietnam-direct-power-purchase-agreement](https://www.wri.org/insights/vietnam-direct-power-purchase-agreement)



Malaysia

Malaysia's electricity market is also an unbundled single-buyer market. Tenaga Nasional Berhad (TNB) acts as the main electricity authority for power generation, transmission and retail distribution, resembling PLN in Indonesia. However, unlike PLN in Indonesia, TNB has been unbundled into generation, transmission and distribution entities, with oversight by an independent regulator for purposes of promoting planning, investment and cost transparency.

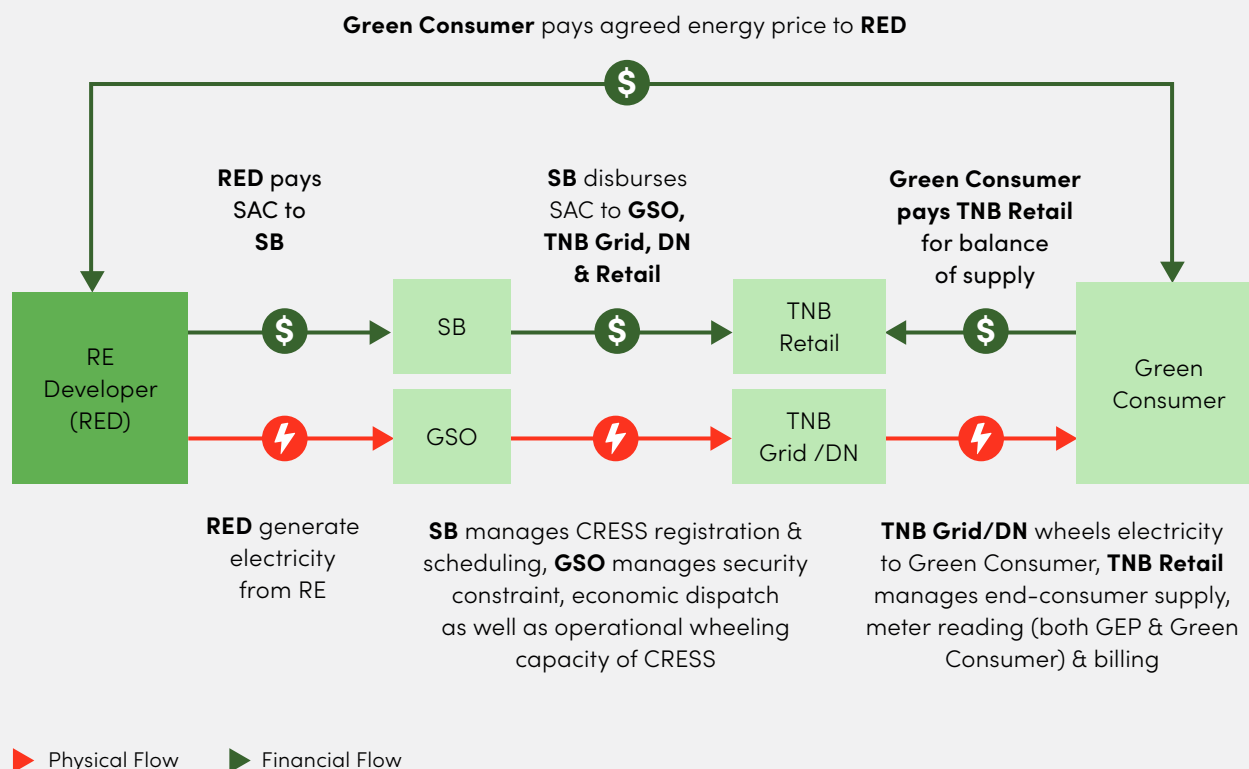
On 26 July 2024, Malaysia introduced the Corporate Renewable Energy Supply Scheme (CRESS) which aims to enhance corporate access to green electricity through open grid systems, allowing third parties to supply or purchase electricity through the existing grid network⁴⁰. In September 2024, the Malaysian Energy Commission released CRESS guidelines, allowing private companies to procure bulk renewable electricity directly from renewable energy developers (RED)⁴¹.



⁴⁰ Lim, M., Razak, F. A. (2024, August 14). *Malaysia: Introduction of the Corporate Renewable Energy Supply Scheme (CRESS)*. Baker McKenzie. globalcompliance.news.com/2024/08/14/malaysia-introduction-of-the-corporate-renewable-energy-supply-scheme-cress/

⁴¹ Suruhanjaya Tenaga Energy Commission. (2025, March 1). *GP/ST/No.40/2024(Pindaan 2025) Guidelines for Corporate Renewable Energy Supply Scheme (CRESS)*. st.gov.my/my/web/industry/details/16/25

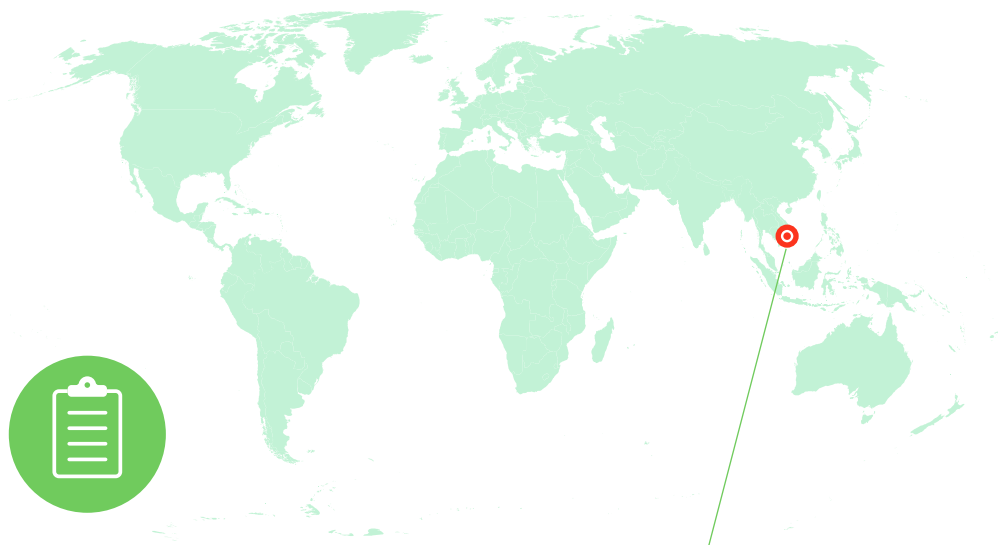
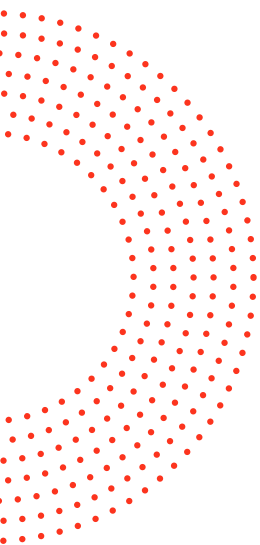
Figure 6: Malaysia's CRESS mechanism (IEEFA)⁴².



Renewable energy developers pay a transmission system access charge to TNB, in its role as a single buyer and grid system operator, and the generated electricity will be managed into the grid using a regulated spot market mechanism under the New Enhanced Dispatch Agreement (NEDA). The consumer then pays TNB under a Corporate Renewable Energy Supply Agreement (CRESA) and an agreed electricity price under a bilateral agreement with the renewable energy developers. Under CRESS, private renewable generators are charged a system access charge (SAC) of MYR 20sen/kWh if the generator can provide firm power to the grid, rising to MYR 45sen/kWh if the power supplied requires firming support services from TNB. The key attraction of this scheme is that the renewable developer and the renewable consumer can independently agree the price of power for the renewables they develop, settling the difference between their rate and the SAC. Alongside this, TNB receives compensation for its transmission lines and services compliant with national regulations. TNB has announced that it would invest \$10.3 billion USD over three years from 2025, to enhance the grid, improve operations, accommodate new connections under CRESS, and assure reliability⁴³.

⁴² Institute for Energy Economics and Financial Analysis (IEEFA). (2025, March). *Figure 6: Malaysia's CRESS mechanism* [Original figure].

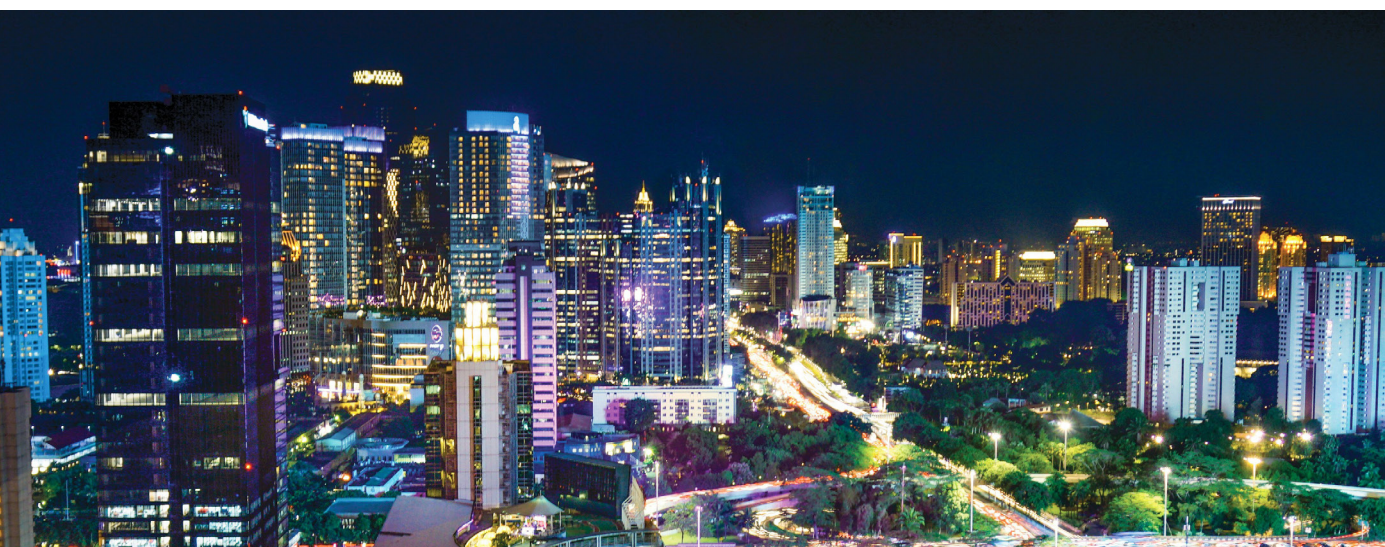
⁴³ Aziz, A., and Zainul, I. F. (2024, November 6). *Government mulls independent installers to speed up roll-out of battery storage*. The Edge Malaysia. theedgemalaysia.com/node/731978.



The wider context in Southeast Asia

While Vietnam and Malaysia have adopted a single-buyer mechanism, unbundling and ring-fencing has differentiated these markets from Indonesia's power market. Both single buyer and grid operator are independent entities from the state-owned utility company. This means, the grid is providing a facilitation service, rather than providing a traditional, fully vertically integrated approach.

Both Malaysia and Vietnam also use spot market-like mechanisms to encourage renewable energy developers into the electricity market, a mechanism that is currently unavailable in Indonesia. Under Malaysia and Vietnam's models, direct negotiations between renewable developer and renewable buyer are possible, allowing the parties to arrive at an acceptable base price for the electricity and other critical terms of service, without undermining the authority of the utility. Such an arrangement can speed up the process of renewable additions to the grid, from concept all the way to connection.



CLIMATE GROUP RE100

RE100 is a global initiative bringing together the world's most influential businesses committed to 100% renewable electricity. Led by Climate Group, our mission is to drive change towards 100% renewable grids, both through the direct investments of our members, and by working with policymakers to accelerate the transition to a clean economy. The initiative has over 400 members, ranging from household brands to critical infrastructure and heavy industry suppliers. Our members represent an annual electricity consumption higher than that of the South Korea. RE100 was established in partnership with CDP.



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