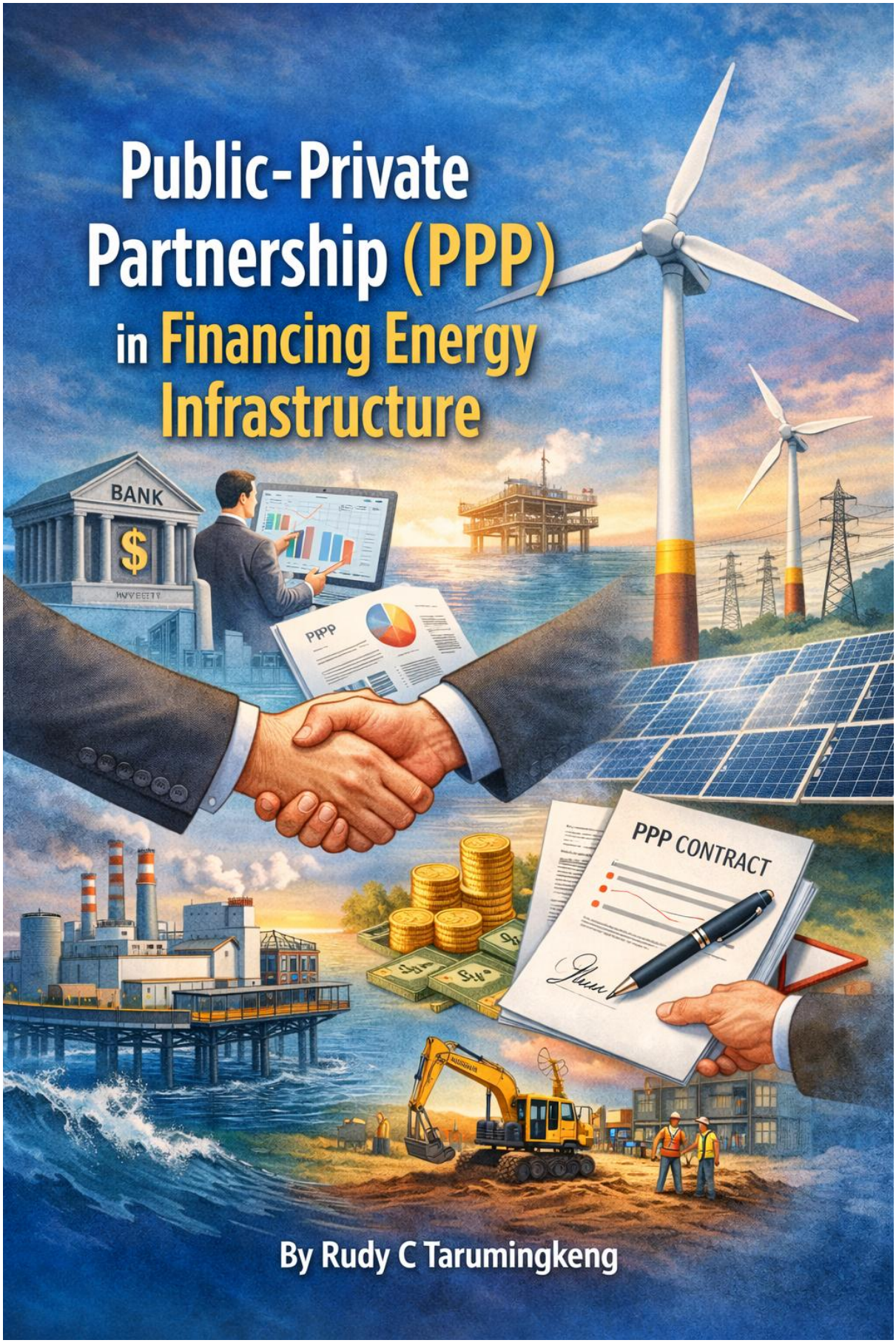
Public-Private
Partnership (PPP)
in Financing Energy
Infrastructure
BANK
$
PPP
PPP CONTRACT
By Rudy C Tarumingkeng

By:
Prof Ir Rudy C Tarumingkeng, PhD
Professor of Management NUP: 9903252922
Rector, Cenderawasih State University, Papua (1978-1988, dan
Head, AGRO Manokwari Campus, (now Universitas Papua Manokwari)
Coordinator, CIDA/DIKTI SFU Burnaby BC Canada 1988-1991
Rector, Krida Wacana Christian University, Jakarta (1991-2000)
Chairman, Board of Professors, IPB-University, Bogor (2005-2006)
AI - Data Analyst, dan Chairman Academic Senate, IBM-ASMI, Jakarta 2024-

---

rudyct75@gmail.com
11 Maret 2026

PUBLIC-PRIVATE PARTNERSHIP (PPP) IN FINANCING ENERGY INFRASTRUCTURE

Introduction

Public-private partnership, or PPP, has become one of the most discussed instruments in the financing of modern infrastructure, especially in sectors that require very large capital, long asset lives, technological sophistication, and stable operating systems. Energy infrastructure fits all of these characteristics. Power plants, transmission lines, gas networks, storage facilities, district energy systems, charging infrastructure, and renewable-energy parks all require substantial upfront investment, careful risk allocation, and long-term contractual credibility. At the same time, governments face fiscal constraints, competing social priorities, debt pressures, and the need to accelerate both energy access and decarbonization. In such a setting, PPP is often presented as a practical bridge between public objectives and private capital. The World Bank's PPP Reference Guide defines a PPP broadly as a long-term contract between a private party and a government entity for providing a public asset or service, where the private party bears

significant risk and management responsibility and remuneration is linked to performance. (PPP Resource Center)

The appeal of PPP in the energy sector has become stronger in the current decade because energy investment needs are rising quickly. The IEA reported that global energy investment was set to exceed USD 3 trillion in 2024 for the first time, with around USD 2 trillion going to clean energy technologies and infrastructure, and the electricity sector attracting especially strong investment. The IEA's 2025 update further indicated that investment in the electricity sector is set to reach about USD 1.5 trillion in 2025, roughly 50% higher than total spending on bringing oil, gas, and coal to market. These figures show that the financial challenge is not marginal; it is systemic. (IEA)

Yet the need for capital alone does not justify PPP. PPP is not simply a budget substitute, nor is it automatically superior to traditional public procurement. It is a governance and financing arrangement whose success depends on project structure, legal credibility, institutional capability, revenue design, tariff policy, and political stability. Many PPPs have failed because governments used them merely to move liabilities off-budget, because risks were transferred unrealistically, or because demand assumptions proved too optimistic. The World Bank's PPP Resource Center stresses that strong legal foundations, careful project preparation, and disciplined procurement are essential to successful PPPs. (PPP Resource Center)

In the specific context of energy infrastructure, PPP has acquired even greater importance because the sector is in transition. Countries are not only trying to expand supply; they are also modernizing grids, integrating renewables, improving efficiency, expanding access, and reducing emissions. The IEA has emphasized that scaling private finance for clean energy in emerging and developing economies is indispensable, since annual investment in these economies needs to

more than triple by the early 2030s, and by much more if China is excluded. In Southeast Asia alone, annual average energy investment over the last three years was about USD 72 billion, but would need to rise to over USD 130 billion by the end of the decade to align with a more ambitious transition path. (IEA)

This essay argues that PPP can play a major role in financing energy infrastructure, but only when it is treated as a disciplined institutional instrument rather than a generic slogan about private-sector participation. The discussion below explains the concept of PPP, why it is relevant in energy infrastructure, the major models used, the economics of risk allocation, the role of government, bankability, regulatory issues, the specific relevance of PPP in clean-energy transition, typical pitfalls, and the conditions under which PPP can genuinely support national energy development.

Understanding PPP in the Infrastructure Context

A PPP is fundamentally a long-term arrangement through which a public authority and a private party share responsibilities for delivering infrastructure assets or services. What distinguishes PPP from ordinary outsourcing is not merely the participation of private firms, but the allocation of construction, financing, operational, demand, and performance risks over the life of the asset. The World Bank's Reference Guide emphasizes that significant risk transfer and performance-linked remuneration are central features. In other words, the private party is not just a contractor paid to build something and walk away; it usually remains responsible for a meaningful part of lifecycle delivery. (PPP Resource Center)

In the infrastructure field, PPP lies between two extremes. On one side is traditional public procurement, where the government designs, finances, owns, and typically operates the asset, while private firms are hired only for construction or supply. On the other side is full privatization, where

infrastructure is transferred to private ownership and operation with limited ongoing public contracting. PPP instead creates a hybrid structure: the state retains strategic authority and public-interest obligations, while the private side brings finance, technology, management discipline, and in many cases operating expertise.

The energy sector is especially compatible with PPP because many energy assets have identifiable revenue streams, large-scale engineering characteristics, and long service lives. Power projects can generate cash flows through tariffs or power purchase agreements. Transmission projects can be remunerated through regulated availability payments or network charges. Renewable-energy parks can operate under concession frameworks or auction-backed contracts. Energy-efficiency infrastructure can even use savings-based payment models. This does not mean PPP is appropriate for every energy asset, but it means the sector has structural features that make long-term contracts feasible.

However, feasibility is not the same as desirability. A project should become a PPP only if this structure creates better value-for-money, better lifecycle performance, or faster and more sustainable delivery than ordinary public procurement. The World Bank PPP guidance repeatedly emphasizes the importance of appraisal across the PPP cycle, from identification and preparation to procurement and contract management. (PPP Resource Center)

Why Energy Infrastructure Often Needs PPP

There are at least five major reasons why governments turn to PPP in energy infrastructure.

First, energy projects are capital-intensive. Large thermal plants, transmission corridors, hydroelectric schemes, LNG terminals, offshore wind assets, solar parks with storage, and district heating networks require large upfront commitments that can strain public balance sheets.

PPP allows the public sector to mobilize private capital alongside public support rather than relying entirely on sovereign borrowing.

Second, energy infrastructure often requires specialized technical and operational capability. Private developers, utilities, manufacturers, and project sponsors may have stronger expertise in engineering design, procurement management, plant operations, digital controls, and lifecycle maintenance. In such cases, PPP is not only about money but also about competence.

Third, many governments want to accelerate infrastructure rollout without waiting for fiscal space to improve. This is particularly relevant for countries pursuing electrification, renewable expansion, or grid modernization. The EBRD's Energy Sector Strategy for 2024–2028 argues that greater momentum in the energy transition requires a coordinated ramp-up of investment in renewables, efficiency, storage, and grid expansion, enabled by strong policy response. PPP can be one of the channels through which that ramp-up becomes financeable. (EBRD)

Fourth, PPP can improve project discipline by forcing early attention to bankability, risk allocation, and lifecycle performance. A project that cannot attract private lenders or sponsors under realistic assumptions may reveal weaknesses in tariff policy, demand estimation, legal enforceability, or procurement quality. In that sense, PPP can act as a stress test for project realism.

Fifth, PPP can help align public goals with market incentives when designed well. For example, renewable auctions with long-term offtake contracts, availability-based transmission concessions, or distributed-energy concessions in underserved regions can channel private initiative toward public service outcomes.

Still, these advantages exist only potentially. PPP can also create hidden liabilities, tariff pressure, renegotiation risk, and political controversy if

misdesigned. The point is not that PPP is inherently superior, but that it can be useful where long-term contractual delivery and disciplined risk allocation improve outcomes.

Common PPP Models in Energy Infrastructure

PPP is not a single model. In energy infrastructure, several contractual forms are commonly used.

One common structure is the **Build-Own-Operate (BOO)** or **Build-Own-Operate-Transfer (BOOT)** model. Under BOOT, a private sponsor finances, builds, and operates an energy asset for a concession period before transferring it to the public authority. Independent power producer projects are often structured in a BOO or BOOT-like fashion, especially where there is a long-term power purchase agreement.

A second model is the **Design-Build-Finance-Operate (DBFO)** arrangement, where the private side handles integrated lifecycle delivery and may be paid through tariffs, offtake contracts, or availability payments.

A third model is the **concession**, under which a private operator gains the right to finance, rehabilitate, expand, and operate infrastructure, often recovering costs through user fees or regulated charges.

A fourth model is the **management or lease-type PPP**, though this is less capital-deep and often involves operational participation rather than substantial private financing.

A fifth model, increasingly relevant in energy transition, is the **auction-backed contractual PPP**, especially for renewables. In such systems, government or regulators run competitive procurements and private developers build projects backed by standardized long-term contractual arrangements.

What matters more than labels is the economic logic behind the contract: who finances what, who gets paid by whom, which risks sit where, and how performance is measured. Two projects may both be called PPPs while having very different structures and very different fiscal implications.

Risk Allocation: The Core of PPP Economics

The central principle of PPP is that risk should be allocated to the party best able to manage it. This sounds simple but is often the hardest part of project structuring.

Construction risk is often transferred to the private side because private sponsors, EPC contractors, and their lenders usually have stronger incentives and tools for managing delays, cost overruns, and performance failures. Operational risk can also be transferred where the private operator has control over maintenance, staffing, and efficiency.

But not all risks can or should be transferred. Political risk, force majeure, change in law, currency convertibility, and some off-taker risks often remain partly or largely with the public side, especially in emerging economies. Demand risk can be especially contentious. In some energy assets, such as merchant generation or EV charging networks, traffic or demand risk may be difficult for the private party to bear fully without high returns or public support. In others, especially essential network infrastructure, availability-payment models may be more appropriate than fully market-based demand exposure.

This is where many PPPs go wrong. Governments sometimes try to transfer too much risk in order to reduce apparent public exposure. The result is either no investor interest, very high pricing, or later renegotiation. Conversely, if government retains nearly all risk while giving the private side protected returns, then the structure may become an expensive form of borrowing disguised as PPP.

Well-designed energy PPPs therefore require rigorous financial modeling, scenario analysis, and legal clarity. Bankability is not produced by optimism; it is produced by credible allocation of risks that private capital can actually price.

Revenue Models and Bankability

A PPP is bankable when lenders and investors believe the project's revenues are sufficiently predictable relative to its risks. In energy infrastructure, this usually depends on one of four broad revenue models.

The first is **user-pay**, where revenues come directly from tariffs or usage charges. This can work for some distribution systems, charging infrastructure, gas networks, or energy-service models, but it is politically sensitive because affordability matters.

The second is **off-take backed**, especially common in power generation. A power purchase agreement with a credible off-taker can make a project financeable by stabilizing cash flows. This is why independent power projects have often been among the most successful forms of energy PPP.

The third is **availability-based payment**, where the public sector pays the private partner for keeping the asset available at agreed performance levels, regardless of usage volume. This can be suitable for transmission lines or other strategic infrastructure with strong public-interest value.

The fourth is **hybrid revenue**, combining user fees, public support, viability-gap funding, guarantees, or concessional finance.

The IEA's work on clean-energy finance in emerging and developing economies makes clear that mobilizing private capital depends heavily on reducing risk and improving project structures. Clean-energy investment needs in these economies are enormous, but many projects

struggle not because the technologies are unproven, but because financing conditions remain weak and policy risks remain high. (IEA)

Thus, bankability is as much a governance problem as a financial one. A project may be technically sound but unbankable because tariffs are frozen unpredictably, currency risk is unmanaged, or contractual enforcement is doubtful. In such cases, the issue is not lack of private appetite in the abstract; it is lack of institutional credibility.

The Role of Government in Energy PPP

Government plays a decisive role in PPP because energy infrastructure is politically and economically strategic. The state is not only the contracting authority. It is also often the regulator, planner, guarantor, tariff setter, land-acquisition facilitator, environmental approver, and sometimes the off-taker through a state-owned utility.

This makes public capacity extremely important. The World Bank's PPP Resource Center and PPP cycle materials emphasize project preparation, procurement quality, legal frameworks, and contract management as core government functions. (PPP Resource Center)

In the energy sector specifically, government has at least seven critical responsibilities.

First, it must define energy policy direction. Investors need to know whether the country is prioritizing renewables, gas transition, transmission expansion, storage, or universal electrification.

Second, it must ensure a legal framework that allows long-term contracts to be signed, enforced, and protected from arbitrary change.

Third, it must establish a regulatory framework for tariffs, market access, technical standards, and network integration.

Fourth, it must perform or supervise high-quality project preparation, including feasibility studies, environmental and social due diligence, and value-for-money assessment.

Fifth, it must manage contingent liabilities. PPP can create long-term payment obligations or guarantees that are not always visible in annual budgets.

Sixth, it must safeguard public interest. Energy is a public-good-sensitive sector. Governments cannot allow PPPs to undermine access, affordability, or system reliability.

Seventh, it must build institutional continuity. PPP contracts often last twenty to thirty years. Political cycles are much shorter. The credibility of the state therefore depends on institutional, not merely personal, commitment.

Where government capacity is weak, PPP may underperform. Private capital cannot compensate for a dysfunctional planning system, an insolvent off-taker, or unpredictable regulation. It can only operate within the quality of the public framework provided.

PPP in Traditional Energy Versus Clean Energy Transition

Historically, PPP in energy infrastructure was often associated with conventional power plants, gas infrastructure, and large centralized projects. Today, the center of gravity is shifting toward clean-energy systems: solar, wind, storage, transmission upgrades, distributed generation, grid digitalization, green hydrogen pilots, and EV-charging networks.

This changes the PPP landscape in several ways.

First, renewable-energy projects are often more modular and faster to build than traditional thermal plants, making competitive procurement more feasible.

Second, clean-energy systems depend much more on grid infrastructure, storage, and system flexibility. This means PPP opportunities are no longer limited to generation; they increasingly include transmission, smart grids, ancillary services, and digital infrastructure.

Third, policy support becomes more central. Renewable and storage projects are highly sensitive to auction design, interconnection rules, curtailment risk, land permits, and payment certainty.

Fourth, blended finance often becomes more relevant, especially in developing economies. Concessional support, guarantees, and technical assistance can make projects investable without replacing private capital entirely. EBRD's 2024 materials underline how technical cooperation grants and policy-support mechanisms facilitate investments and reforms in energy and infrastructure. (EBRD)

The IEA's World Energy Investment data show that spending on renewable power, grids, and storage is now a major share of total energy investment. This implies that the future of PPP in energy will likely be less about isolated generation assets and more about integrated systems finance. (IEA)

PPP and Grid Infrastructure

One of the most important yet sometimes under-discussed areas for PPP in energy is grid infrastructure. Generation can expand quickly, but without transmission and distribution upgrades, the system cannot absorb new capacity efficiently. Grid infrastructure is harder to structure than generation because revenue models are often regulated, land acquisition is complex, and public-interest considerations are strong.

Still, grid PPPs are increasingly relevant. Availability-based payment structures can work for transmission lines if regulators or governments create stable remuneration mechanisms. Private participation can also

support smart metering, substation modernization, and grid digitalization.

The challenge is that grids are natural-monopoly assets with strong system externalities. This means PPP design must be especially careful. The public side usually retains a large strategic role, and regulatory quality becomes decisive. A poorly designed grid PPP can create high long-term costs or fragmented system operation. A well-designed one can accelerate network expansion and operational efficiency.

Given the global push for electrification and renewables integration, grids may become one of the most important frontiers for PPP in the coming decade.

PPP, Fiscal Space, and the Illusion of "Free Infrastructure"

A persistent misconception is that PPP gives governments infrastructure without real fiscal cost. This is incorrect. PPP changes the timing, visibility, and structure of obligations, but it does not eliminate the underlying economic cost of infrastructure.

If a government enters a long-term availability-payment contract, it is effectively committing future budgets. If it gives guarantees, it creates contingent liabilities. If it promises tariff support or minimum-revenue guarantees, it assumes risk that may later materialize. Therefore, responsible PPP policy requires transparent accounting and fiscal oversight.

The value of PPP is not that it creates free assets. Its real value, when present, lies in better lifecycle performance, disciplined risk transfer, faster delivery, improved technical capacity, and access to pools of capital that governments alone may not mobilize quickly enough.

This is why PPP appraisal matters. Governments need to ask whether PPP offers better value-for-money than public procurement once risk-adjusted costs and fiscal commitments are fully counted. Where the

answer is no, PPP should not be chosen simply because it appears politically convenient.

The Importance of Project Preparation

Many failed PPPs were not fundamentally failures of the PPP concept; they were failures of project preparation. A weak feasibility study, inflated demand forecast, unclear land rights, incomplete environmental analysis, or politically unrealistic tariff assumption can undermine even the most sophisticated contract.

The World Bank's PPP framework places strong emphasis on the PPP cycle because preparation, procurement, and contract management are just as important as financial closure. (PPP Resource Center)

For energy infrastructure, project preparation must typically include technical design, resource assessment where relevant, off-taker analysis, network studies, environmental and social safeguards, legal due diligence, stakeholder consultation, and detailed financial modeling. It must also include a clear understanding of which risks are bankable and which require public mitigation.

In clean-energy PPP, interconnection and curtailment analysis is especially important. A renewable project may look excellent on paper, but if grid connection is delayed or network congestion leads to significant curtailment, revenues may collapse. Likewise, storage projects depend heavily on market rules and dispatch frameworks, not just battery cost assumptions.

Thus, preparation is not a preliminary formality. It is the stage at which the basic truth of the project is discovered.

PPP in Emerging and Developing Economies

PPP has a particularly important, but also particularly delicate, role in emerging and developing economies. On the one hand, these countries

often have the greatest need for new energy infrastructure and the least fiscal room to finance it solely from public budgets. On the other hand, they often face higher interest rates, weaker institutional frameworks, exchange-rate volatility, and state-owned utilities with fragile finances.

The IEA has stressed that private finance must scale dramatically in these economies for clean-energy transitions to succeed. Yet this will not happen automatically. The gap between global capital availability and project-level financeability remains wide. (IEA)

This is why multilateral development banks and development-finance institutions matter. They can provide political-risk insurance, guarantees, concessional loans, technical assistance, and credibility effects that crowd in private investment. EBRD and World Bank materials both show that public institutional support and policy reform often accompany energy investments rather than standing outside them. (EBRD)

For countries in Southeast Asia, Africa, and parts of Latin America, PPP may therefore work best as part of a broader financing ecosystem that includes development banks, sovereign support, utility reform, and regulatory strengthening. Purely commercial PPP without such support may be difficult for projects with high development value but weak short-term bankability.

Common Problems and Critiques of PPP in Energy

PPP has several well-known problems that deserve frank attention.

One problem is **renegotiation**. If contracts are poorly prepared or politically unrealistic, they may be renegotiated soon after award, undermining competition and transparency.

A second problem is **currency mismatch**. Revenues may be in local currency while debt is in foreign currency, exposing projects to macroeconomic volatility.

A third problem is **off-taker risk**, especially when the buyer is a financially weak public utility.

A fourth problem is **social resistance**, particularly when tariffs rise or land acquisition is contentious.

A fifth problem is **complexity and transaction cost**. PPP preparation takes time, legal expertise, financial structuring, and institutional coordination. Small projects may not justify these costs unless bundled.

A sixth problem is **political opportunism**. Governments may overuse PPP to create the appearance of rapid infrastructure delivery while pushing obligations into the future.

A seventh problem is **misallocation of risk**. If the private partner bears risks it cannot control, pricing rises or the project fails. If the state bears almost everything, PPP becomes poor value.

These problems do not prove that PPP is ineffective. They show that PPP is demanding. It works badly when treated casually.

PPP and Energy Justice

Energy infrastructure is not only an economic asset; it is part of social welfare and national development. Therefore PPP in energy must be judged not just by financial closure, but also by public outcomes: access, affordability, reliability, sustainability, and long-term service quality.

This is especially important in rural electrification, mini-grid deployment, clean cooking infrastructure, and low-income urban energy systems. Private participation may help scale services, but public design must ensure that vulnerable communities are not excluded because they are less profitable. PPP can be compatible with social objectives, but only if contracts and subsidy mechanisms are designed accordingly.

In this sense, PPP should be understood as a governance arrangement in pursuit of public value, not merely a private-investment pipeline.

Strategic Conditions for Successful PPP in Energy Infrastructure

From the discussion above, several conditions stand out as essential.

There must be a credible legal and regulatory framework. Contracts must be enforceable, tariffs or payment systems must be reasonably predictable, and sector governance must be coherent.

There must be careful project selection. Not every energy asset should be a PPP. Some projects are better financed and operated publicly.

There must be realistic risk allocation. Risks should go where they can actually be managed.

There must be strong project preparation and transparent procurement. This reduces renegotiation and improves credibility.

There must be attention to fiscal sustainability. PPP obligations and guarantees should be transparently monitored.

There must be an institutional ecosystem, including capable contracting agencies, regulators, utilities, finance ministries, and where appropriate, multilateral partners.

There must be public-interest safeguards. PPP success is not measured only by investor returns but by reliable and affordable infrastructure delivery.

And finally, there must be policy alignment with the energy transition. Projects that lock in obsolete systems or undermine climate and resilience goals may be financially attractive in the short term but strategically harmful in the long term.

Conclusion

PPP can play a significant role in financing energy infrastructure, especially at a time when global investment needs are immense, public budgets are constrained, and the energy system is being transformed by

decarbonization, electrification, and technological change. International evidence shows that energy investment is expanding rapidly, especially in electricity, clean power, grids, and storage, while emerging and developing economies still need a major scale-up in both public and private finance. (IEA)

Yet PPP is not a magic formula. It is neither free money nor a substitute for the state. It is a structured partnership that can mobilize private capital and expertise when public institutions are capable of preparing projects well, allocating risk intelligently, regulating fairly, and protecting the public interest. In energy infrastructure, this means PPP works best when it is embedded in sound policy, credible regulation, financially viable sector institutions, and long-term planning.

The most useful way to think about PPP is not as privatization by another name, and not as a fiscal shortcut, but as a disciplined instrument of infrastructure governance. Used well, it can accelerate delivery, improve lifecycle performance, support innovation, and expand the financing base for energy systems. Used badly, it can create long-term liabilities, public backlash, and stranded development ambitions.

For countries navigating energy transition, the challenge is therefore not whether to use PPP in principle, but where, when, and how to use it well. That requires governments to move beyond the rhetoric of partnership and toward the harder work of institutional design. If they do so, PPP can become an important vehicle for financing the energy infrastructure that modern economies now urgently need.

Glossary

Availability payment
A payment mechanism in which the public authority pays the private partner for making infrastructure available at agreed performance standards, regardless of actual demand volumes. This model is often used when governments want to transfer construction and operating risk without fully transferring market-demand risk. It is especially relevant for transmission and other strategic network assets. (PPP Resource Center)

Bankability
The extent to which a project is sufficiently structured, risk-mitigated, and revenue-secure to attract debt and equity financing on acceptable terms. In energy PPP, bankability depends on contract enforceability, tariff or offtake certainty, risk allocation, and institutional credibility. The IEA emphasizes that scaling private finance in emerging and developing economies requires policy action to address real and perceived risks that raise financing costs. (IEA)

Build-Own-Operate (BOO)
A PPP or private-infrastructure structure in which the private party finances, builds, owns, and operates the asset, usually under a regulatory or contractual framework that defines service obligations and revenue arrangements. The World Bank's PPP guidance treats ownership and functional responsibilities as key dimensions in distinguishing PPP structures. (PPP Resource Center)

Build-Own-Operate-Transfer (BOOT)
A PPP structure in which the private partner finances, builds, and operates an infrastructure asset for a concession period and then transfers it to the public authority at the end of the contract. It is common in power and other utility projects with long-term revenue arrangements. (PPP Resource Center)

Concession
A long-term contractual arrangement under which a private party is

granted the right to finance, rehabilitate, build, operate, and sometimes expand infrastructure, usually recovering costs through user charges or regulated revenue. In PPP practice, concessions are one of the classic forms of infrastructure partnership. (PPP Resource Center)

Contingent liability

A potential future public financial obligation that materializes only if certain events occur, such as minimum-revenue guarantees, termination payments, exchange-rate support, or government guarantees in a PPP contract. PPP can reduce immediate cash outlays but still create significant long-term fiscal exposure. (PPP Resource Center)

Design-Build-Finance-Operate (DBFO)

A PPP model in which the private partner is responsible for designing, constructing, financing, and operating the asset over a defined contract term. Payment may come from users, an offtaker, or the public authority, depending on the project structure. (PPP Resource Center)

Energy infrastructure

The physical systems needed to produce, transport, store, and deliver energy, including generation plants, grids, substations, pipelines, storage systems, charging infrastructure, and associated control systems. The IEA's investment reporting shows that electricity-sector infrastructure now attracts very large global capital flows, reflecting the scale of current energy transformation. (IEA)

Energy transition

The long-term restructuring of energy systems away from high-emission and less efficient forms toward cleaner, more resilient, and more electrified systems. In financing terms, it increases demand for large-scale investment in renewables, grids, storage, and efficiency. The EBRD's 2024–2028 Energy Sector Strategy is explicitly centered on accelerating this transition while supporting growth and social development. (EBRD)

Independent power producer (IPP)
A privately owned electricity generator that sells power under contractual, regulated, or market-based arrangements, often under long-term power purchase agreements. Many IPP projects are structured using PPP-like or project-finance principles, especially where public utilities or governments act as off-takers. (PPP Resource Center)

Off-taker risk
The risk that the entity purchasing electricity or energy services—often a public utility—fails to pay, delays payment, or becomes financially unstable. This is one of the most important risks in energy PPP and heavily affects lender confidence. The World Bank PPP materials and IEA clean-energy finance work both imply the importance of credible payment structures and counterparty strength. (PPP Resource Center)

Power Purchase Agreement (PPA)
A long-term contract under which a buyer agrees to purchase electricity from a generator according to specified pricing, quantity, and performance terms. In many energy PPPs, the PPA is the central bankability instrument because it stabilizes expected revenue. (PPP Resource Center)

Project finance
A financing technique in which lenders rely primarily on the cash flows of the project itself for repayment, rather than on the sponsor's full balance sheet. Energy PPPs often use project finance because the assets are large, long-lived, and contract-based. (PPP Resource Center)

Public-Private Partnership (PPP)
A long-term contract between a private party and a government entity for providing a public asset or service, in which the private party bears significant risk and management responsibility and remuneration is linked to performance. This is the World Bank PPP Reference Guide's broad working definition. (PPP Resource Center)

Risk allocation
The assignment of specific project risks—such as construction, operating, demand, currency, political, or force-majeure risk—to the party best able to manage them. It is the core economic principle of PPP design. Poor risk allocation is one of the main causes of project failure or renegotiation. (PPP Resource Center)

State utility
A publicly owned electricity or energy company that may serve as generator, transmitter, distributor, or off-taker. In many countries, the financial health and governance quality of state utilities strongly influence the success of energy PPP. The World Bank's transition-finance work explicitly links clean-energy scaling to utility performance and reform in several countries. (IEA)

Transmission PPP
A PPP arrangement applied to electricity transmission assets, often using concession or availability-payment structures. It is increasingly important because renewable-energy expansion depends on grid build-out and modernization. The IEA's broader electricity-investment analysis shows that grids remain a critical investment frontier. (IEA)

Value for money
An assessment of whether a PPP structure delivers better overall outcomes than traditional public procurement after considering lifecycle cost, risk transfer, service performance, and fiscal implications. PPP should not be chosen merely to defer public spending. (PPP Resource Center)

Viability gap funding
A public financial contribution used to make socially valuable but financially weak PPP projects investable. It is often relevant in energy-access, rural, grid, or transition projects where public benefits exceed immediately monetizable returns. (IEA)

References

European Bank for Reconstruction and Development. (2023). *Energy sector strategy 2024–2028*. EBRD. (EBRD)

International Energy Agency. (2023). *Scaling up private finance for clean energy in emerging and developing economies*. IEA. (IEA)

International Energy Agency. (2025). *World energy investment 2025*. IEA. (IEA)

International Energy Agency. (2025). *World energy outlook 2025*. IEA. (IEA)

World Bank Group. (2017/2024 ed.). *PPP reference guide, version 3*. PPP Resource Center. (PPP Resource Center)

World Bank Group. (n.d.). *PPP reference guide – Introduction*. PPP Resource Center. (PPP Resource Center)

World Bank Group. (n.d.). *PPP contract types and terminology*. PPP Resource Center. (PPP Resource Center)

World Bank Group. (2019). *Guidance on PPP contractual provisions*. PPP Resource Center. (PPP Resource Center)

Copilot for this article - Chatgpt 5.2 Thinking. Access date: 11 March 2026. Prompting on Writer's account (Rudy C Tarumingkeng)

https://chatgpt.com/c/69aa40dd-9010-83a1-80e1-865dbf258862