

Technical and statistical report

International Investment in Sustainable Infrastructure: The Role of Public–Private Partnerships



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Key messages

International investment in sustainable infrastructure – including both hard infrastructure sectors like transport and energy, and soft infrastructure sectors such as health, education, water, and sanitation – remains insufficient in both volume and distribution. Sectoral and geographical diversity is lacking, with the poorest and smallest countries often bypassed despite their urgent financing needs.

Public private partnerships (PPPs) offer significant potential to help close the sustainable development goals (SDG) financing gap. Among PPPs, *international* PPPs – those involving international investors as project sponsors, and the focus of this report – are relatively significant contributors to investment in developing economies. Their impact is particularly notable in the least developed countries (LDCs), where they account for roughly one-third of all PPP projects, compared with less than 20 per cent in other developing economies.

Nevertheless, international investment in PPPs in developing countries remains insufficient. Two major imbalances shape international PPP activity: sectoral and geographical. From a sectoral perspective, since 2015, renewable energy has been dominant, accounting for over 70 per cent of projects. While this reflects strong momentum in sustainable infrastructure it also highlights limited diversification into other critical sectors such as transport, and social infrastructure. Geographically, activity remains highly concentrated, with ten developing countries, led by Brazil, India, Chile, Viet Nam and the Philippines, accounting for nearly 60 per cent of all international PPP projects. In contrast, many smaller or lower income economies remain largely excluded from international PPP flows.

Structural constraints, such as high perceived risks and limited institutional capacity, continue to hinder progress. Unlocking the full potential of PPPs requires long-term government planning, strengthened regulatory frameworks, robust institutional frameworks and dedicated PPP units with sufficient authority to manage complex projects. In addition, it requires improved project bankability. Risk mitigation instruments, often provided by multilateral development banks (MDBs), can support this and help build investor confidence.

The findings of this report highlight four critical dimensions that must be addressed to advance international investment in sustainable infrastructure: robust legal frameworks, integrated planning and contract design, innovative financing mechanisms, and strengthened implementation and management capacity.



Legal and regulatory frameworks

Establishing clear and predictable legal frameworks for PPPs is essential to attract international investment. Countries with robust PPP laws and dedicated implementing agencies tend to secure more international projects. The number of international PPP projects can grow by as much as 50 per cent in the immediate years following the adoption of PPP legal frameworks. Legal clarity enhances investor confidence and reduces risks, especially in high-risk environments.

Dispute resolution mechanisms must be carefully designed. PPPs are disproportionately represented in investor-State dispute settlement (ISDS) cases, particularly in infrastructure sectors, highlighting the need for dispute-prevention mechanisms and balanced contract design. Their long-term nature and exposure to regulatory changes make them more vulnerable than other investment modalities, as seen in the surge of renewable energy-related claims following policy reforms. Reforming international investment agreements (IIAs) and incorporating dispute-prevention and mediation clauses can help safeguard regulatory flexibility and reduce exposure to costly litigation.

Planning, prioritization, and contract writing

Planning challenges are a frequent cause of project failure. Because PPPs in soft infrastructure sectors such as health, education, water and sanitation, need careful structuring to safeguard affordability, equity and universal access, they show a relatively high incidence of planning-related disruptions, accounting for over 30 per cent of project failures. Strengthening planning processes and coordination across institutions is essential to improve implementation rates in sectors with public service responsibilities.

Institutional capacity and project governance are critical. While many countries have established legal frameworks for PPPs, translating these into practice remains a significant challenge. Addressing this requires the development of operational capacity, particularly through the establishment of dedicated PPP units with the technical expertise to plan, structure, and manage complex projects. Transparent procurement and contract disclosure foster public trust and accountability, which are vital for sustaining private investment, especially from overseas.

Most infrastructure investment remains domestic and government-led. To broaden the investor base and accelerate progress toward the SDGs, countries should consider strengthening the role of investment promotion agencies (IPAs) in preparing and promoting sustainable infrastructure projects. This is particularly important in underinvested sectors such as water and sanitation, healthcare and education, as well as in vulnerable economies that face persistent challenges in attracting adequate capital. For example, nearly 60 per cent of small island developing States (SIDS) have received fewer than three international PPP projects over the past 25 years. LDCs are also largely missing out on international projects, with only a small number of countries consistently engaging international investors for infrastructure development.

Balanced contracts enhance bankability and reduce project risks. Long-term offtake agreements, minimum revenue guarantees, performance-based viability risk (PVR) contracts, and viability gap funding can help improve bankability by reducing the likelihood of delays, renegotiations, and cancellations. In addition, government-backed payment mechanisms improve revenue predictability and attract investment. Instruments such as Power Purchase Agreements (PPAs) and PVR contracts can serve as effective risk-sharing tools, increasing the appeal of investments, particularly in non-energy sectors.



Effective de-risking and innovative financing instruments

Securing financing for PPP projects remains a key challenge for developing countries, especially LDCs, limiting their ability to advance infrastructure and achieve the SDGs.

Blended finance, which combines development finance institution (DFI) and public funding with private capital, is still limited in scale but continues to grow. DFIs including national, bilateral and multilateral sources of funds, together with targeted government interventions such as equity contributions, grants, or concessional loans, can significantly reduce the cost of capital, especially in high-interest-rate environments.

Blended finance structures enable the funding of projects that the private sector may be unwilling or unable to support on its own, particularly in contexts of elevated borrower or country risk. For example, 38 per cent of DFI-supported syndicated loans are directed to high-risk countries or to those rated “below investment grade” by international credit rating agencies.

DFIs including MDBs play a key role in mobilizing private capital in non-investment-grade economies. Their involvement signals stability and improves financing terms – lowering borrowing costs (loan spreads) by almost 80 basis points, enabling longer maturities (by over two years) and larger tranches (by 36 per cent) for private investors in subsequent transactions. Targeted support for LDCs and SIDS remains a priority, particularly through concessional finance, guarantee schemes and regional project preparation facilities.

Government equity participation and export credit agency (ECA) guarantees can further reduce borrowing costs and enhance project creditworthiness. However, their support is often concentrated in specific, high-value, low-risk projects, typically aligned with the interests of home-country investors and contractors. Striking an effective balance between public actors (including DFIs, ECAs and governments) and the private sector is critical to expand the sectoral and geographical reach of international PPPs.

Implementation and management

Effective implementation requires sound project governance, policy stability, and institutional coordination. Many international PPPs face setbacks due to financial constraints and government interventions.

Small-scale PPPs offer high-impact solutions in underserved regions and should be supported through tailored policies, financing tools, and capacity-building for subnational authorities. For vulnerable economies, these projects help build institutional capacity and confidence to manage larger international PPPs over time. They also strengthen local capital markets, foster innovation, and expand access to essential services when aligned with inclusive governance and local development priorities.

Smaller domestic PPPs experience fewer challenges than larger projects. Less than one per cent of PPPs valued under \$20 million encounter major setbacks, compared to over 5 per cent of projects exceeding \$1 billion.

UNCTAD can leverage its convening power through platforms such as the World Investment Forum to promote policy frameworks that integrate the proven benefits of small-scale PPPs alongside large projects. By facilitating knowledge exchange, fostering partnerships, and promoting best practices, UNCTAD helps countries strengthen policy frameworks and build capacity for sustainable infrastructure development.



Introduction

a. Background and objectives

The global investment landscape is at a critical juncture. Despite numerous global commitments, frameworks, and agendas aimed at accelerating financing for sustainable development, international investment in the sustainable development goals (SDGs) remains insufficient, lacks sectoral and geographical diversity, and continues to bypass many of the poorest countries most in need of financing.

Developing countries are facing an annual SDG financing gap estimated at \$4.3 trillion, with infrastructure investment accounting for a significant share of this shortfall. This gap continues to widen amid geopolitical instability, macroeconomic uncertainty, and fiscal pressures. Notably, investment in renewable energy alone accounts for more than half of the total, at \$2.2 trillion per year (UNCTAD, 2023; UNCTAD, 2024a). The global infrastructure investment gap is projected to surpass the \$15 trillion by 2040, underscoring the scale of the challenge (McKinsey & Co 2025; Global Infrastructure Outlook, 2024; Ramey, 2020).

Tackling this challenge requires innovative and scalable financing mechanisms. Public-private partnerships (PPPs) have long been promoted as a means to mobilize long-term private investment, technical expertise, and operational capacity particularly in countries facing fiscal constraints, infrastructure deficits, and limited borrowing space. Since the mid-1990s, the adoption of PPPs in developing economies has accelerated, driven by liberalization, privatization, and

the growing involvement of multilateral development banks (MDBs) and other development finance institutions (DFIs) in addressing infrastructure financing gaps. This momentum has continued, with PPPs increasingly regarded as a strategic mechanism to advance development amid tightening public budgets, especially following the 2008 global financial crisis (Engel et al., 2022). Despite substantial policy attention and the active involvement of multilateral institutions in helping countries address infrastructure financing gaps, international investment flows into PPPs remain sluggish. The research in this report highlights that the volume and pace of FDI mobilized through PPPs in developing countries is not rising fast enough to support sustainable development objectives, especially in the poorest and most vulnerable economies. This is particularly concerning given the critical role PPPs are expected to play in closing infrastructure and service provision gaps where public resources are insufficient and private capital is crucial.

This disconnect is not due to a lack of analysis or ambition. Numerous frameworks, toolkits, and institutional recommendations already exist to guide countries in developing effective PPP programmes.¹ Yet, many developing countries still face institutional and structural challenges in managing PPPs. The effectiveness of PPPs depends on sound legal frameworks, transparent procurement, strong institutional capacity, and well developed financial markets. When well structured, PPPs can enhance fiscal sustainability by spreading costs over time and attracting private investment. Limited legal and fiscal expertise, weak project

¹ See for example the World Bank's *Guidance on PPP Legal Frameworks* (2022), UNECE's Principles, standards, guidelines, and evaluation principles for PPPs (2023) (available at <https://unece.org/ppp/products>), and EBRD regulatory principles (2024).



management, and underdeveloped capital markets hinder effective implementation, especially in LDCs and SIDS (ADB, 2008; IBRD, 2017; UNCTAD, 2011 and 2025a). Even middle-income countries often struggle with politicized procurement and inadequate stakeholder engagement (IBRD, 2017).

Moreover, weak oversight and poor project design can lead to fiscal risks and undermine public trust. PPPs can introduce contingent liabilities that may obscure the true level of public debt unless they are transparently disclosed – ideally in the annex of national budgets. In light of debt sustainability concerns, governments should exercise caution when adopting PPPs, ensuring that fiscal risks are properly assessed and reported.

Furthermore, institutional readiness, including dedicated PPP units and clear regulatory frameworks, is essential for successful implementation. To help address these persistent challenges and unlock greater private investment, MDBs and DFIs play a key role in enabling PPPs, particularly in high-risk environments. Their support through concessional finance, technical assistance, and risk mitigation helps improve project design, reduce investment risk, and mobilize private capital at scale. MDBs and DFIs participation also often extends the maturity of syndicated loans and increases the number of participating lenders which are essential factors for financing large, complex, and long-gestation infrastructure projects (Broccolini et al., 2021, Avellan et al. 2024).

The recent adoption of the “Compromiso de Sevilla” at the Fourth International Conference on Financing for Development underscores the global urgency to rethink investment models. It calls for scaling up partnerships that align with national development strategies, are embedded in strong governance systems, and prioritize long-term development impact over short-term returns. The outcome document also highlights the need to reform the international financial system,

improve debt sustainability, and mobilize both public and private capital to close the \$4.3 trillion annual SDG financing gap.

Amid persistent financing gaps and the pressing need to accelerate investment in sustainable infrastructure, this report offers a timely and original analytical contribution to understanding how private capital can be mobilized for SDG-aligned infrastructure. This study fills a critical gap in the literature by shedding light on key challenges and opportunities in PPPs, the enabling policy and regulatory frameworks, and the evolving role of MDBs and DFIs in catalyzing private investment. It explores critical questions, including: What is the current landscape of private capital investment in infrastructure that contributes to the achievement of the Sustainable Development Goals (SDGs)? What trends and structural conditions influence the success or failure of PPP models across regions and sectors? And how do domestic and international policy, legal, and regulatory environments shape PPP outcomes? The report also examines the role of MDBs in mitigating risk and catalyzing private finance, as well as the evolving intersection between PPPs and international investment agreements (IIAs), including trends in investor–State dispute settlement (ISDS) cases brought under IIAs. To answer these questions, the report pursues three main objectives:

- Identify some of the key barriers that impede the growth of FDI into PPPs in developing countries, including legal, institutional, financial, and regulatory obstacles.
- Assess common setbacks in international PPP projects, from project preparation and procurement to contract enforcement and risk management.
- Evaluate the role of MDBs and DFIs in enabling improved international PPP outcomes, particularly in reducing the cost of capital, and assess their contributions to capacity building, risk mitigation, and investment mobilization.

Unlocking international private capital is key to building resilient infrastructure and closing the SDG financing gap



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The scope of the report is limited to international PPPs, i.e. PPP arrangements that involve cross-border investment in developing countries. While the broader PPP ecosystem includes domestic partnerships and local capital, this study focuses specifically on the role of international investors and institutions in financing infrastructure for sustainable development.

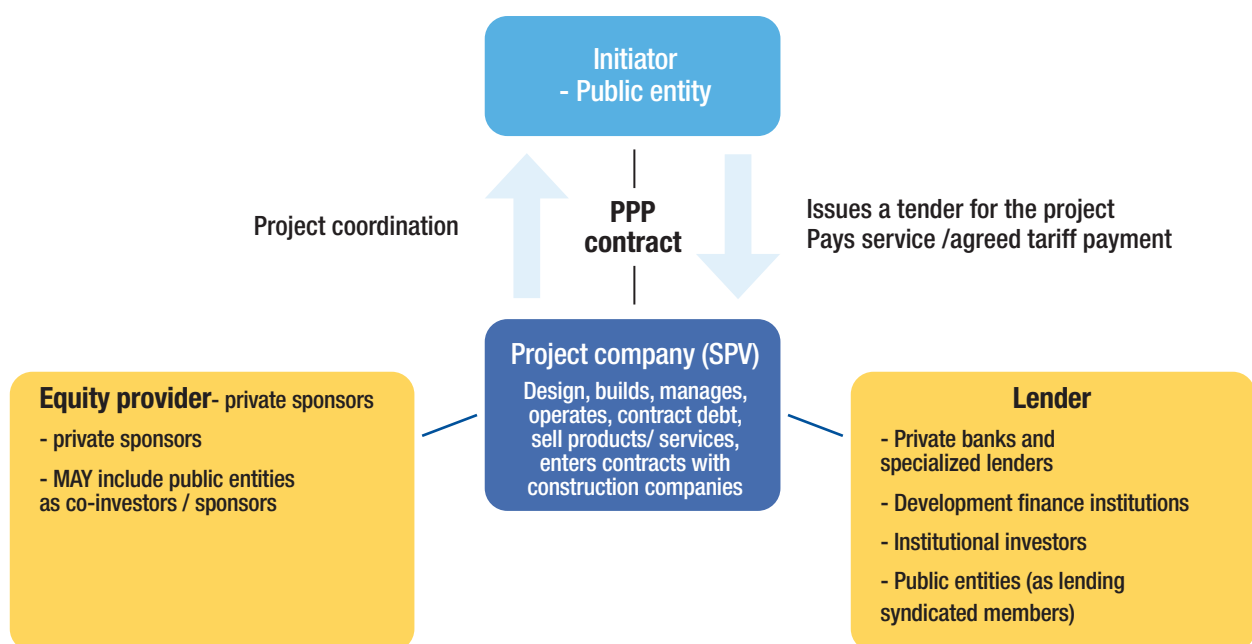
The report is structured in three main parts. The remainder of this introductory section provides the analytical foundation for the report and its conceptual framework, explains the distinction between domestic and international PPPs, and describes the datasets used for the research (further detailed in the annex). It also delimits the scope of the analysis. Part I then reviews the international PPP landscape, tracing its evolution and identifying current trends across regions, income groups, and sectors. Part II explores key features of international PPPs, focusing on the use of diverse de-risking mechanisms and the prominent roles played by governments and development finance institutions. Part III examines the main challenges hindering

the growth of international PPPs, including the high cost of capital, operational and financing setbacks, and legal and dispute settlement risks. It highlights how blended finance and technical support help address these constraints. The final section presents policy implications and recommendations.

b. Analytical scope

PPPs are cooperative arrangements between a government agency and a private-sector company used to finance, build, and operate projects such as public transportation networks, ICT infrastructure, or hospitals (see Annex for further details). Typically, the private party establishes a Special Purpose Vehicle (SPV) – a project company created specifically to implement the PPP contract (figure 1). The public entity may hold an equity stake in the SPV by contributing capital to the project. Importantly, in a PPP, it is usually the government – not private sponsors – that initiates the project. Private sponsors participate as bidders in a tendering process led by the public sector (Weber et al. 2016).

Figure 1.
Typical structure of a public-private partnership



Source: UNCTAD.

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In a long-term contract between the private sector and a public authority, certain project functions are transferred to the private partner (the SPV) for the provision of a public asset or service. In such arrangements, the private party assumes significant risk and management responsibility, and compensation structured through various mechanisms – including performance-based payments, availability of payments, or take-or-pay provisions – depending on the nature of the project and the allocation of risks. The defining elements for a PPP are thus:

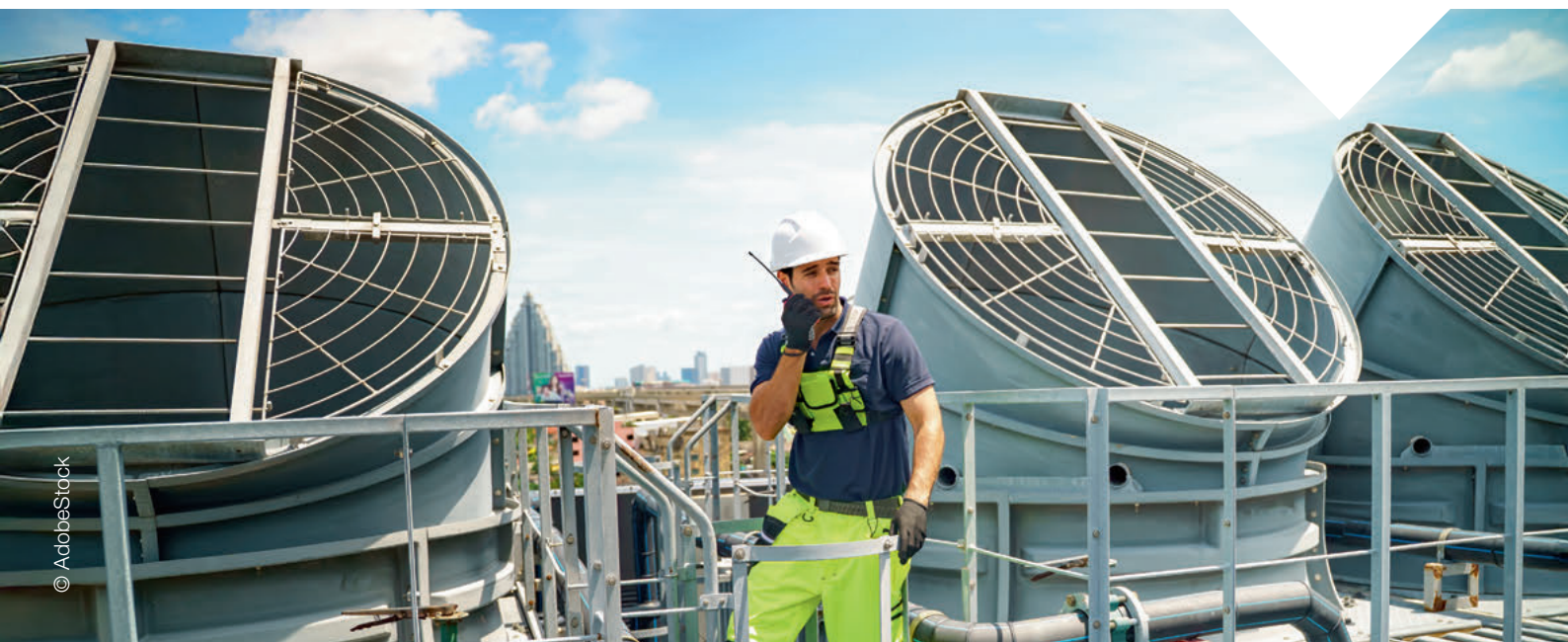
- A long-term contractual relationship, typically 20 – 30 years.
- The provision of a public asset or service.
- A structured mechanism for sharing risks, responsibilities, and rewards.

The functions for which the private party is responsible vary and depend on the type of asset and services involved. These functions may include build, operate, own, finance, maintain and define the types of PPPs. The different arrangements/ contract types can be broadly categorized into three groups, which are not necessarily mutually exclusive (e.g., build-own-operate arrangements may include both private and public ownership:

1. Contracts that foresee full private ownership of the project: a typical contract is the *Build-Own-Operate (BOO)*. In this arrangement, the private partner builds, owns, and operates the facility, bearing commercial and

operational risks, with no transfer back to the government at the end. For example, most of the international projects building new energy generation facilities are BOOs as international investors provide the equity to set up the project company, raise additional finance against the expected cash flows and share risks with local authorities through a Power Purchasing Agreement (PPA). This form of partnership is increasing, and accounts for 70 per cent of international projects and for almost 80 per cent of domestic ones. This trend is driven by the almost exclusive use of this type of contract in the renewable energy sector but also by an increasing use of BOO in the economic infrastructure sector.

2. Contracts that foresee final full public ownership of the project: a typical contract is the *Build-Operate-Transfer (BOT)*. A government hands overall construction and operations to a private party for a set number of years (often several decades or more). After that period, it is transferred to the government. In addition to BOT contracts, these may include other combinations of functions such as Design-Build-Finance-Operate (DBFO) or Build-Transfer-Operate (BTO). The share of international projects using this type of contract is below 5 per cent and is concentrated in the transport infrastructure construction, with toll roads concession model as a prominent



PPPs bring together capital, expertise, and accountability to deliver sustainable infrastructure and advance the SDGs

example. The use of temporary private ownership contracts is declining. In the leading sector – transport infrastructure – their share fell from approximately 20 per cent of projects in the early 2000s to just 5 per cent over the past five years. This was partly possible through the adoption of purchasing agreements that help allocate risk between partners to other sectors.

- 3. Public – Private shared ownership of the project company:** such models foresee joint participation in the project company (SPV) of the private and the public sector. They are especially prevalent in social infrastructure or projects related to human capital and health sectors where the return profile of investment is highly regulated, such as hospitals, schools, and water management and in high-risk economies such as LDCs, as a means to reduce perceived structural country-risk and attract private investment.

A defining feature of PPPs is the provision of a public asset or service, often in areas that are directly linked to the achievement of the SDGs. Consequently, the sectors analyzed are primarily related to infrastructure:

- Hard or economic infrastructure, which includes power, transportation, telecommunications, and waste and recycling, and is closely related to SDGs 7 (Affordable and Clean Energy), 9 (Industry, Innovation and Infrastructure), and 11 (Sustainable Cities and Communities).
- Renewable energy - encompassing solar, wind, hydroelectric, geothermal, biomass, and green hydrogen energy

sources - is central to advancing SDG 7 and accelerating the energy transition, and a critical component of SDG 13 (Climate Action).

- Soft or social infrastructure, covering sectors such as health, education, water and sewage, and selected public services, including police forces and museums, which contribute directly to SDGs 3 (Good Health and Well-being), 4 (Quality Education), and 6 (Clean Water and Sanitation).
- Industry, comprising commercially oriented projects that either operate under a PPP contract or involve the provision of public assets or services, and which support productive capacity and decent job creation in line with SDGs 8 (Decent Work and Economic Growth) and SDG 9.

Given the increasing role of international PPPs as a vehicle for foreign investment in sustainable infrastructure, this report focuses specifically on cross-border projects. An international PPP implies that at least one sponsor (owner of the project's equity) in the project finance deal is a foreign resident (Viné et al. 2021). Whenever this foreign equity share is above 10 per cent this is considered FDI. The equity investors in the project company are typically denominated sponsors, distinguishing them from those providing project financing through various forms of debt. Sponsors may include engineering or construction companies, utilities companies, financial services companies and infrastructure funds (UNCTAD, 2025a).





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Part I. The international PPP landscape

1. Evolution of international PPPs

PPPs have long been promoted as a strategic tool to mobilize private investment, technical expertise, and operational capacity – especially in developing economies facing fiscal constraints and infrastructure deficits as discussed earlier. Since the mid-1990s, PPP adoption has accelerated, driven by liberalization, privatization, and the growing role of MDBs and DFIs. This momentum intensified after the 2008 global financial crisis, as PPPs became central to development strategies amid tightening public budgets.

Over the past two decades, however, PPPs have undergone a notable evolution. Once hailed as a panacea for closing infrastructure gaps and mobilizing private finance without straining public budgets, they are now more widely understood as complex, multifaceted instruments influenced by law, governance, market dynamics, and international development agendas. This shift is also reflected in literature.

At their core, PPPs aim to allocate risks and responsibilities between public and private actors in ways that ensure long-

term service delivery, value for money, and fiscal sustainability (World Bank, 2017; Engel et al., 2020). Existing research underscores that PPP performance depends on complementary factors such as institutional capacity, political will, macroeconomic stability and credible project pipelines. Countries with stable regulatory environments, effective procurement procedures, and sound fiscal governance tend to attract more international PPPs (UNCTAD 2011, Hammami et al., 2006; OECD, 2023). Institutional capacity and fiscal constraints are also key determinants of policymakers' decisions to adopt PPPs, especially in developing countries (Reyes-Tagle and Karl, 2016). In this context, MDBs can play a catalytic role, particularly in developing economies: their participation enhances creditworthiness, extends loan maturities, and helps mobilize private finance potentially leveraging up to seven times their own investment (Broccolini et al., 2021; Gurara et al., 2020).

A recurring theme is the importance of governance and long-term fiscal discipline. PPPs can shift costs off-budget and outside conventional public finance rules, but this flexibility may come at the expense of fiscal transparency and future obligations.

International investment in PPPs remains below its potential



The attractiveness of PPP projects is shaped by regulatory frameworks, risk allocation mechanisms, and financing arrangements

Studies caution that PPPs should not be seen as fiscal shortcuts; rather, robust appraisal and oversight mechanisms are needed to avoid contingent liabilities and renegotiations (IMF, 2006; Engel et al., 2020). Tools like present value-of-revenue (PVR) contracts are proposed to mitigate renegotiation risks by linking project duration to revenue performance.

Risk allocation remains central to PPP design. Efficient PPPs bundle design, construction, operation, and maintenance under a single contract, incentivizing long-term performance and innovation. However, the public sector must retain oversight and absorb risks it is best placed to manage, such as political or regulatory changes, while the private sector bears commercial and operational risks (European Investment Bank, 2023; OECD, 2023). Misallocated risks, opaque procurement, or weak contract enforcement have led to high-profile failures, triggering fiscal burdens or contract renegotiations that weaken incentives and accountability (Guasch, 2004; Engel et al., 2020). Sector-specific dynamics also shape PPP adoption. In sectors such as renewable energies, international PPP activity accelerated in the 2010s due to falling technology costs, national and international climate regulations, and rising demand for green infrastructure (UNCTAD, 2023, UNECE, 2022; World Economic Forum, 2025). The growing focus on environmental, social, and governance (ESG) standards and SDG alignment has reinforced this trend, with PPPs increasingly assessed based on their contribution to inclusion, resilience, and climate goals rather than pure financial metrics (World Bank, 2022; UNCTAD, 2023). Conversely, traditional sectors such as transport remain dominated by user-pay PPPs with established risk-sharing models and legal precedents.

In recent years, the international PPP agenda has evolved. A new generation of partnerships i.e. “PPPs for the SDGs” which prioritize access, equity, environmental sustainability, replicability, and stakeholder engagement have been promoted as a guiding framework for sustainable infrastructure development (UNECE, 2022).² These principles align with a shift away from project count toward project quality. Global institutions increasingly promote performance-based criteria, stakeholder consultation, and transparent contract management as key components of effective PPP frameworks (World Bank, 2022; OECD, 2023).

However, the success of PPPs hinges on multiple factors, including the existence of a stable legal framework, transparent procurement processes, and capable public institutions. Without these, PPPs can become fiscal liabilities rather than solutions. Numerous studies suggest that upstream improvements to the institutional environment can impact downstream PPP investments. The success and attractiveness of PPP projects across various sectors and regions are often shaped by regulatory frameworks, risk allocation mechanisms, and financing arrangements. In Latin America, political and social will, along with institutional capacity are significant predictors of PPP investment (Casady and Suárez-Alemán 2025). PPPs that are well structured can contribute to long-term fiscal sustainability by distributing costs over the lifecycle of a project, thereby reducing upfront public expenditure (ADB et al., 2016). However, this advantage is conditional on rigorous value-for-money assessments and effective contract management, especially given that private financing often carries higher costs than sovereign borrowing. On the contrary, weak

² UNECE's normative outcomes are developed through its government-led drafting groups and adopted by the Working Party on PPPs. Flagship tools include the PIERS methodology, which evaluates PPPs against the SDGs using criteria that ensure projects deliver value for people and value for the planet. Other tools include Guidelines on PPP and infrastructure finance midway to 2030, digital transformation, green and sustainable procurement, and improving PPP delivery. Guidelines on fiscal sustainability and affordability are currently under development. See the UNECE website (<https://unece.org/unece-and-sdgs>) and the Working Party agenda for updates.



oversight can lead to costly renegotiations, corruption, or off-balance-sheet liabilities that undermine public finance (OECD, 2010).

The design and execution of PPPs must therefore be grounded in institutional readiness. Countries with established PPP frameworks and dedicated implementing agencies have consistently demonstrated better outcomes in terms of project quality, investor confidence, and financing volumes. For example, Latin American countries with PPP laws and project pipelines have attracted more robust investment flows, especially in transport, renewable energy, and healthcare (IBRD, 2017; OECD, 2023).

A PPP legal framework comprises the policies, procedures, institutions, and rules that govern the entire PPP lifecycle: from identifying and assessing projects to selecting, prioritizing, budgeting for, and procuring them (World Bank, 2017). A foundational step in establishing this framework is the articulation of a national PPP policy, which typically outlines the rationale, objectives, scope, guiding principles, and governance arrangements of the PPP programme. Central to this framework is a robust legal foundation that enables the government to engage in PPPs and sets clear boundaries for their implementation. This may include dedicated PPP legislation, relevant public financial management rules, or sector-specific laws and regulations. By clearly defining roles and responsibilities and establishing transparent rules for structuring, financing, and managing projects, PPP laws create a stable and predictable environment that encourages private sector participation in public infrastructure development.

Two major global developments significantly influenced the wave of PPP law adoption globally. The 2008 global financial crisis was one of the catalysts, prompting governments, especially those under fiscal stress, to seek private capital for infrastructure through PPPs. In response, many countries either introduced new PPP laws or strengthened existing ones to attract investment. This momentum was reinforced by the adoption of the 2030 Agenda for Sustainable Development in 2015. It emphasized the role of PPPs as a tool to close infrastructure financing gaps while highlighting the need for fair risk-sharing and other governance mechanisms. As a result, PPP legislation surged globally: from 2000 to 2022, 99 countries enacted PPP laws, with a notable spike in developing countries, 26 of which adopted new laws between 2014 and 2016 alone.

Patterns of PPP legal framework adoption differ across regions. Developed economies, particularly Europe and North America, adopted PPPs in the 1990s, leading to mature systems shaped by incremental legal reforms and institutional support (e.g., the European PPP Expertise Center (EPEC) in the European Union). In Canada there is a federal PPP unit, while in the United States the approach is at state-level. In contrast, developing economies accelerated PPP law adoption later, in the 2000s, often influenced by regional cooperation and multilateral development banks. Latin America moved comparatively early in formalizing PPPs, with 16 countries adopting dedicated legislation between 2004 and 2022. In Asia, 23 countries adopted such legislation between 2010 and 2020, supported by regional frameworks and institutional support from organizations such as the Association of Southeast Asian Nations (ASEAN) and the Asian Development Bank. In Africa PPP legislation has expanded rapidly in recent years, with 42 countries having enacted laws by 2023.

The adoption of PPP legal frameworks signals commitment and transparency to investors



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Since 2020, the pace of new PPP law enactments has slowed markedly, indicating a shift in focus from creating laws to implementing them. Policymakers are increasingly turning attention to the effectiveness of existing PPP frameworks – ensuring that the laws translate into successful, sustainable projects on the ground. Many countries are conducting reviews of their PPP policies to introduce second-generation reforms emphasizing value for money, social inclusion, and climate resilience in PPP projects. Provisions are being added or updated to require feasibility studies, stakeholder consultations, and integration of Environmental, Social, and Governance (ESG) standards (Aizawa, 2018).

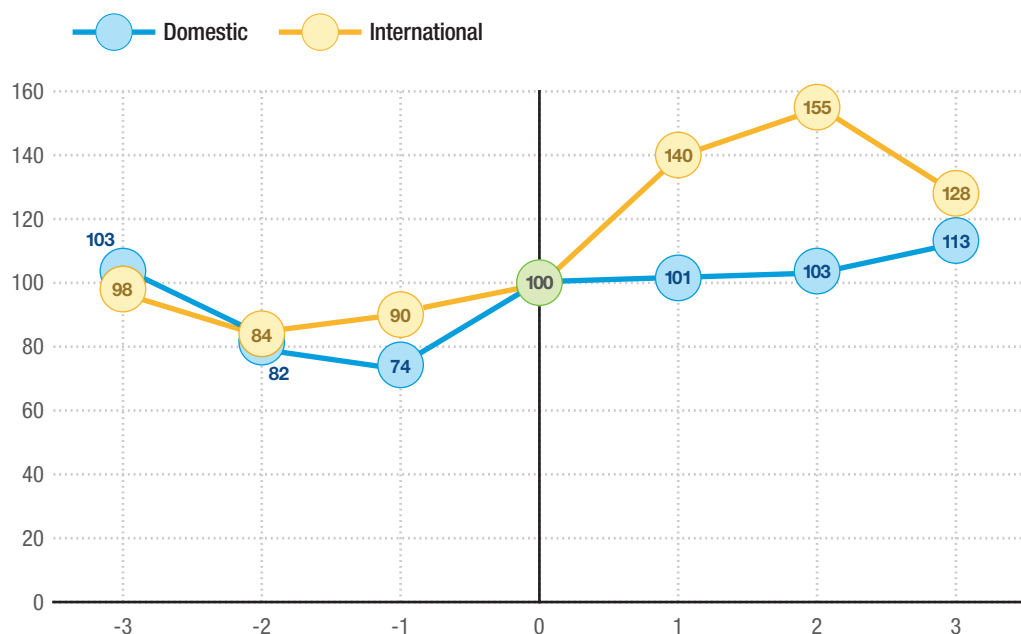
The adoption of PPP legal frameworks by developing countries sends a clear signal to investors by providing a clear set of rules and improved mechanisms for risk allocation, which often leads to a surge

in project activity (figure 2). This effect is more pronounced for international projects, suggesting that a legal framework is especially instrumental for attracting cross-border investment. For both domestic and international PPPs, after an initial period of growth, the number of investment projects stabilizes. This trend can be attributed to several factors, including a shift toward more selective and strategic project approvals, as well as a natural deceleration following the investment in the most viable or market-attractive projects. In some cases, governments have also begun refining implementation practices to emphasize quality over quantity, prioritizing long-term value and sustainability. These developments reflect a maturing PPP landscape, where the availability of well-prepared projects and effective regulatory frameworks are critical to sustaining momentum (World Bank, 2024a; see also part III sections 2 and 3).



Figure 2.
Public-private partnership legal frameworks boost international project activity

Number of PPP projects in developing economies: three years before and after adoption of PPP law
(Index: year 0 = 100)



Source: UNCTAD, based on LSEG Data & Analytics and World Bank PPP Legal framework dataset.



While the adoption of PPP laws has played a central role in increasing international PPPs, several other critical factors influence their success and attractiveness. National investment policy measures, such as clear legal frameworks, transparency provisions, and strengthened institutional capacity, create the foundation for private sector engagement. These measures help mobilize capital while ensuring alignment with national development goals. However, the presence of a legal framework alone is not sufficient (UNCTAD, 2015). Despite progress in adopting PPP laws, many countries face ongoing challenges in enforcement and adapting frameworks to evolving needs. Weak institutional capacity often hinders effective implementation, with some PPP units lacking the authority or resources to oversee compliance. Additionally, poorly designed risk-sharing arrangements have led to project failures and fiscal stress, highlighting the need for more balanced and transparent PPP structures.

Beyond legal and institutional aspects, macroeconomic and political stability remain essential prerequisites for attracting international PPPs, as investors seek predictability and risk mitigation. Strong government support and commitment to project delivery also send a clear signal of credibility to markets.

Moreover experience in developing and implementing PPPs, even if limited to small-scale or pilot ones, can help to build investor confidence, especially when accompanied by support from MDBs or development finance institutions, which help de-risk projects and improve bankability of subsequent projects. Additionally, the affordability of tariffs for end users is a key consideration in developing economies, particularly in essential services like water and electricity (Bisbey et al 2025, World Bank, 2025).

International studies show that in rural settings, PPPs can also support sustainable development, provided that local governance structures are effectively engaged (Bjarstig and Sandstrom, 2017).

Sector-specific market dynamics also shape PPP activity. For example, the global surge in renewable energy PPPs has been driven not only by supportive legal reforms but also by declining technology costs, energy transition policies and strengthened climate-related regulations. These market and regulatory shifts have made renewables more commercially viable and attractive to both international and domestic investors.

Ultimately, the academic and policy literature emphasizes that PPPs must be integrated into a country's broader development strategy. International PPPs flourish in environments where a robust legal framework is matched by macroeconomic stability, institutional trust, and sectoral readiness. As countries move beyond first-generation reforms, the challenge lies not in adopting more laws, but in applying them to deliver sustainable, inclusive, and efficient infrastructure outcomes. Despite the substantial literature on PPPs, critical knowledge gaps persist – particularly concerning the structural and financial design of PPPs, and the interaction between legal frameworks, institutional capacity, and international investment regimes. This report seeks to address these gaps by offering a structured, policy-relevant analysis that bridges financial, regulatory dimensions and geopolitical dimensions.

2. Current PPP trends

The landscape of international PPP activity has evolved significantly in recent years. Following the adoption of the SDGs in 2015, there has been a marked increase in international PPP deals, driven by the global push to mobilize private capital for sustainable development. This shift has been especially pronounced in sectors aligned with the SDG agenda – most notably renewable energy, which has seen a surge in investment as it emerged as a priority within sustainable development strategies (figure 3). Policy reforms in many developing countries, along with support



International Investment in Sustainable Infrastructure: The Role of Public–Private Partnerships

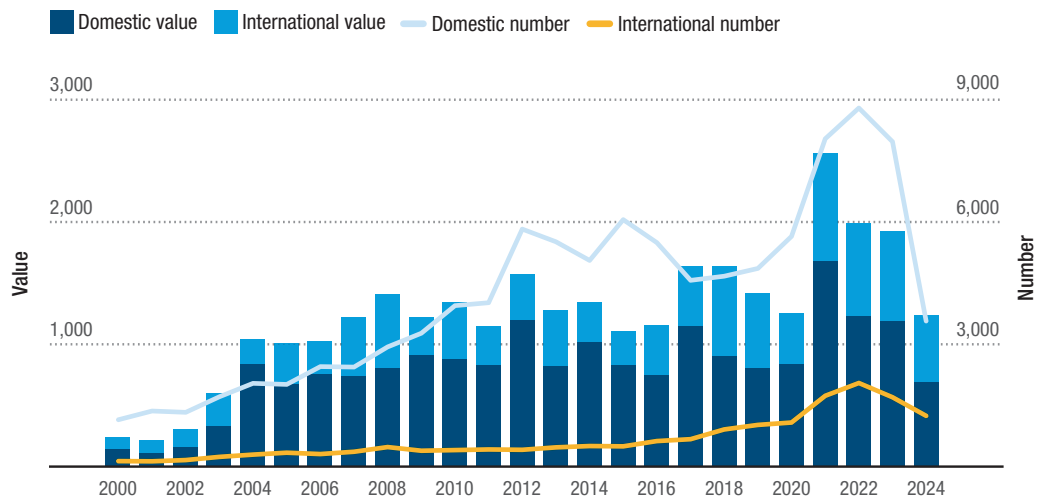
from DFIs, helped de-risk investments and attract foreign sponsors. DFIs, through bilateral loans or guarantees, play a significantly larger role in LDCs than in developing economies. They directly

financed 30 per cent of projects in LDCs and provide loan guarantees for 14 per cent, nearly double their respective shares in developing countries (17 and 7 per cent).



Figure 3.
International public-private partnership deals started growing after 2015

Announced deals by source investment
(Billions of dollars and number)



Source: UNCTAD, based on information from LSEG Data & Analytics.

While domestic PPPs account for a larger share of global deals in most regions, international PPPs play a more prominent role in Africa and in Latin America and the Caribbean, where their shares significantly exceed those of domestic projects (figure 4). In Latin America and the Caribbean, international PPPs account for 16 per cent, compared with just 5 per cent for domestic projects.. These disparities may reflect structural limitations in domestic capital markets and targeted foreign investment strategies in specific infrastructure sectors (see part III). In Africa,

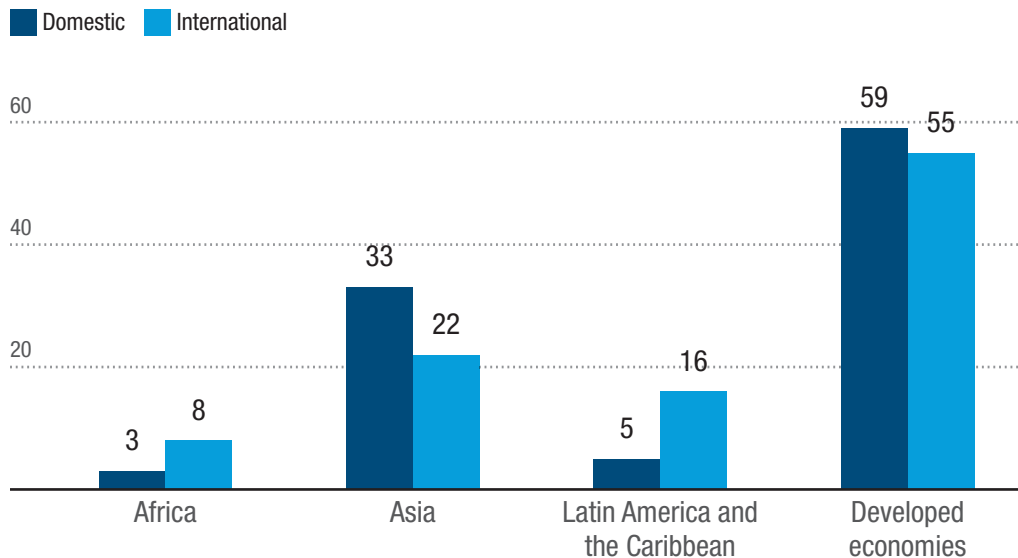
regional initiatives such as the Programme for Infrastructure Development in Africa (PIDA) also influence foreign participation in PPPs. Similar dynamics are observed in Southeast Asia, where ASEAN-led infrastructure programmes attract cross-border investment. More broadly, the success and appeal of PPPs are shaped by enabling regulatory frameworks, effective risk allocation, accessible financing arrangements, and a development strategy (national or regional) that clearly sets out a plan for key infrastructure projects.





Figure 4.
International public-private partnerships play a more significant role in Africa and Latin America compared to domestic ones

Share of announced deals by destination region relative to global total, 2020-2024
(Percentage of number)



Source: UNCTAD, based on information from LSEG Data & Analytics.

In LDCs, international PPPs are not only relatively more frequent but also significantly larger in value compared to domestic ones (figure 5). This reflects the limited capacity of domestic investors to finance large-scale infrastructure projects. The SDG agenda has amplified the role of international capital in these economies, particularly in social infrastructure sectors such as health, education, and clean energy. Foreign investors, often supported

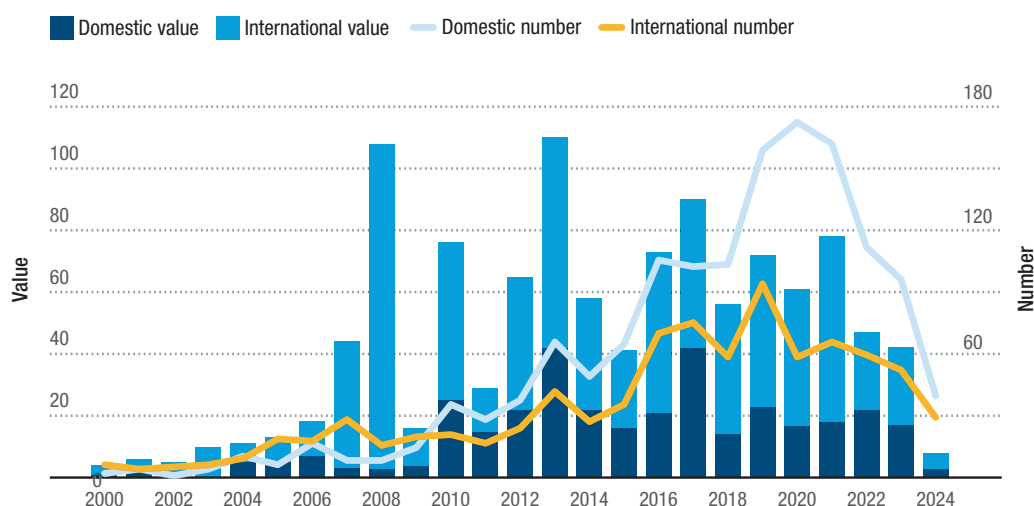
by MDBs or initiatives like China's Belt and Road Initiative, have stepped in to fill critical financing gaps. In comparison, international investment in SDG-relevant sectors grew by 25 per cent between 2015 and 2023, with renewable energy projects nearly doubling in number (UNCTAD, 2025a). However, the distribution remains uneven, with many LDCs still underserved. This underscores the importance of targeted international support and blended finance mechanisms.





Figure 5.
International public-private partnerships in LDCs are twice as large as domestic ones

Announced deals by source of investment in LDCs
(Billions of dollars and number)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Large-scale initiatives such as China's Belt and Road Initiative (BRI), launched in 2013, have further highlighted the role of cross-border infrastructure partnerships in addressing connectivity gaps and catalyzing investment flows (box 1). While PPPs hold significant potential to bridge the SDG financing gap, international investment flows into these arrangements remain insufficient.

Investment in renewable energy surged in recent years, reflecting its prioritization within the SDG agenda (figure 6). However, this growth has not been sustained. Between 2022 and 2024, international PPPs in developing countries declined by 42 per cent in value and 45 per cent in number, largely due to adverse macroeconomic conditions that constrained large-scale infrastructure and energy investments.



Box 1. The Belt and Road Initiative

The Belt and Road Initiative (BRI) is a global infrastructure and development strategy launched by China in 2013. It aims to enhance international connectivity and promote economic cooperation through strategic investments and partnerships spanning over 150 countries and international organizations.

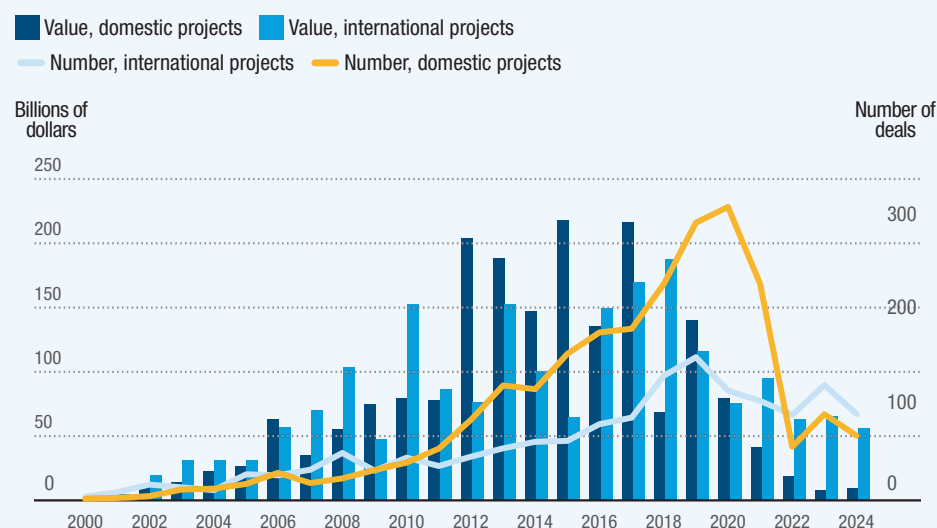
In 2019, just prior to the COVID-19 pandemic, approximately 450 projects associated with the BRI had been announced (box figure 1.1). Most of these projects did not involve equity participation by MNEs from China; instead, they were primarily financed through loans underwritten by host economies. Consequently, few of these projects qualified as FDI. In many cases, the only project owner was the national Ministry of Infrastructure – or a related line ministry, leading to their classification as domestic investments in official databases. Notably, between 2012 and 2017, the value of domestic BRI-related projects exceeded that of international ones.





Box figure 1.1 Projects related to the Belt and Road Initiative are mostly domestic projects

PPPs relates to the Belt and Road Initiative
(Billions of dollars and percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Only projects involving a foreign sponsor within the project company are included in the database assembled for this report. More than half of international BRI projects are in developing Asian economies, with approximately a quarter in Africa and the remainder distributed across Europe (13 per cent) and Latin America and the Caribbean (7 per cent). In the initial years following the launch of the BRI, more than one-third of projects were concentrated in hard infrastructure, including fossil fuel power generation and transportation sectors. However, the focus has since shifted, with recent projects increasingly concentrated in industrial real estate (36 per cent) and renewable energy (33 per cent).

International BRI-related projects reached their peak in 2019, after which activity began to decline - although at a slower rate than that observed in “domestic” projects. As part of the ongoing restructuring of the initiative, the average value of construction projects has decreased, and Chinese contractors are now more frequently required to take equity stakes.

Source: UNCTAD.

Renewable energy continues to dominate international PPP activity, accounting for over 73 per cent of deals since 2015 and reaching a record value of \$275 billion in 2021. However, international investment in renewables has declined since then.

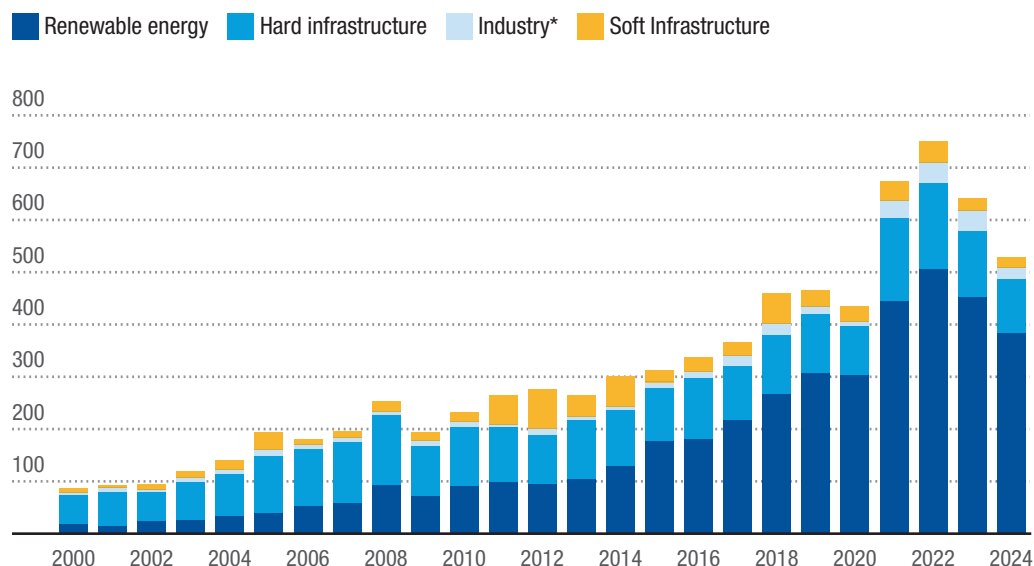
In 2024, the sector experienced a sharp contraction – down 45 per cent in value and 49 per cent in numbers. Preliminary data for 2025 show a stabilization of project finance investment in renewables into developing countries (UNCTAD 2025f).





Figure 6.
Renewable energy has led international public-private partnerships since 2015

International PPP deals in developing economies, by sector
(Number)



Source: UNCTAD, based on information from LSEG Data & Analytics

* Industry: Includes commercially oriented projects that either operate under a PPP contract or involve the provision of public assets or services. Examples include the establishment of Special Economic Zones.

In other sectors, the most significant declines were observed in non-renewable energy (-73 per cent) and transportation infrastructure (-69 per cent). In contrast, telecommunications nearly tripled in deals value despite a 44 per cent drop in project numbers, indicating a shift toward large-scale digital infrastructure (figure 7). The sectoral composition of PPPs has evolved over time. In the early 2000s, international PPP activity was largely concentrated in hard infrastructure sectors, particularly transport. By the 2010s, renewable energy emerged as the leading sector, driven by global energy transition

commitments, legal reforms, and the introduction of risk mitigation tools such as power purchase agreements (PPAs).

Despite this progress, international PPPs in transportation and soft infrastructure remain limited and far short of the needs to meet the global infrastructure divide (UNCTAD, 2025a), often due to complexity, lower returns, and the absence of scalable models. The low number of PPPs in soft infrastructure sectors in part reflects the fact that these are essential public services which are not always suited to profit-oriented models.

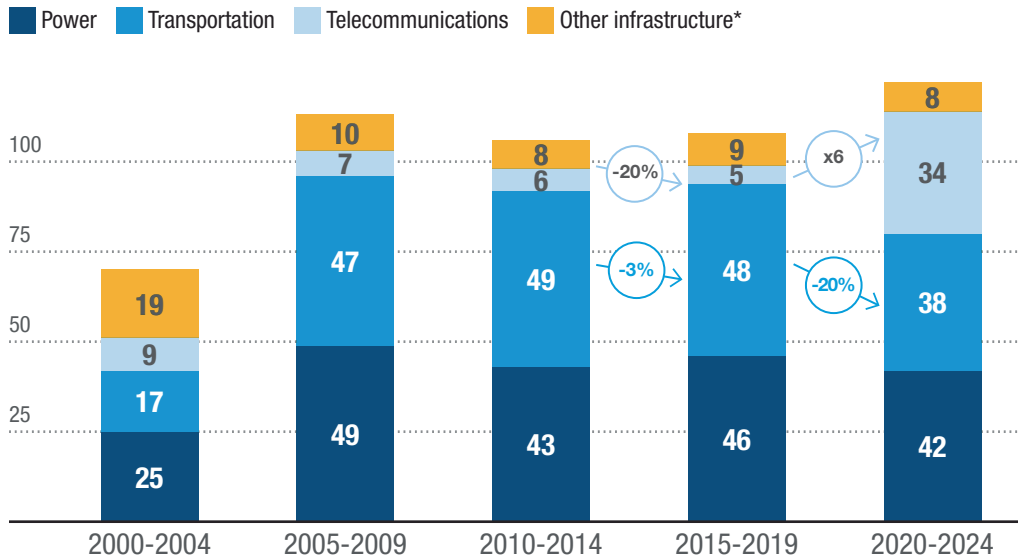




Figure 7.

Rapid growth of public-private partnerships in telecommunications is accelerating hard infrastructure investment in developing economies

International PPP deals in hard infrastructure in developing economies by sector and growth rate, average
(Number and percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Other infrastructure includes “oil and gas pipeline”, “waste and recycling” and “agriculture and forest”.

Regional trends reveal further disparities. Between 2022 and 2024, Asia emerged as the primary hub for international PPPs in developing economies, accounting for over 50 per cent of all deals during the period (figure 8). Latin America and the Caribbean ranked second, with renewables comprising 77 per cent of projects despite an overall decline in activity. In Africa, renewable energy also led, accounting for 66 per cent of international PPPs. The presence of regionally active development banks such as the Asian Development Bank, the region’s position in global value chains and initiatives such as the BRI, have played a catalytic role in financing and structuring infrastructure projects.

Among the ten largest markets, Brazil and India saw the strongest growth – sixfold and threefold increases in project numbers since 2017. However, the underlying drivers of this growth likely differ significantly, reflecting Brazil’s reliance on the Brazilian Development Bank (BNDES) and the distinct national financing priorities of each country. Southeast Asian countries like Viet Nam and the Philippines also experienced broad-based growth. Chile, though smaller in scale, showed steady progress following its 2010 PPP law reform. Chile’s institutional and regulatory reforms have played a key role in enabling the expansion of PPPs in infrastructure, particularly in sectors such as transport and energy, by improving risk allocation, transparency, and long-term financing mechanisms (Engel et al., 2020).

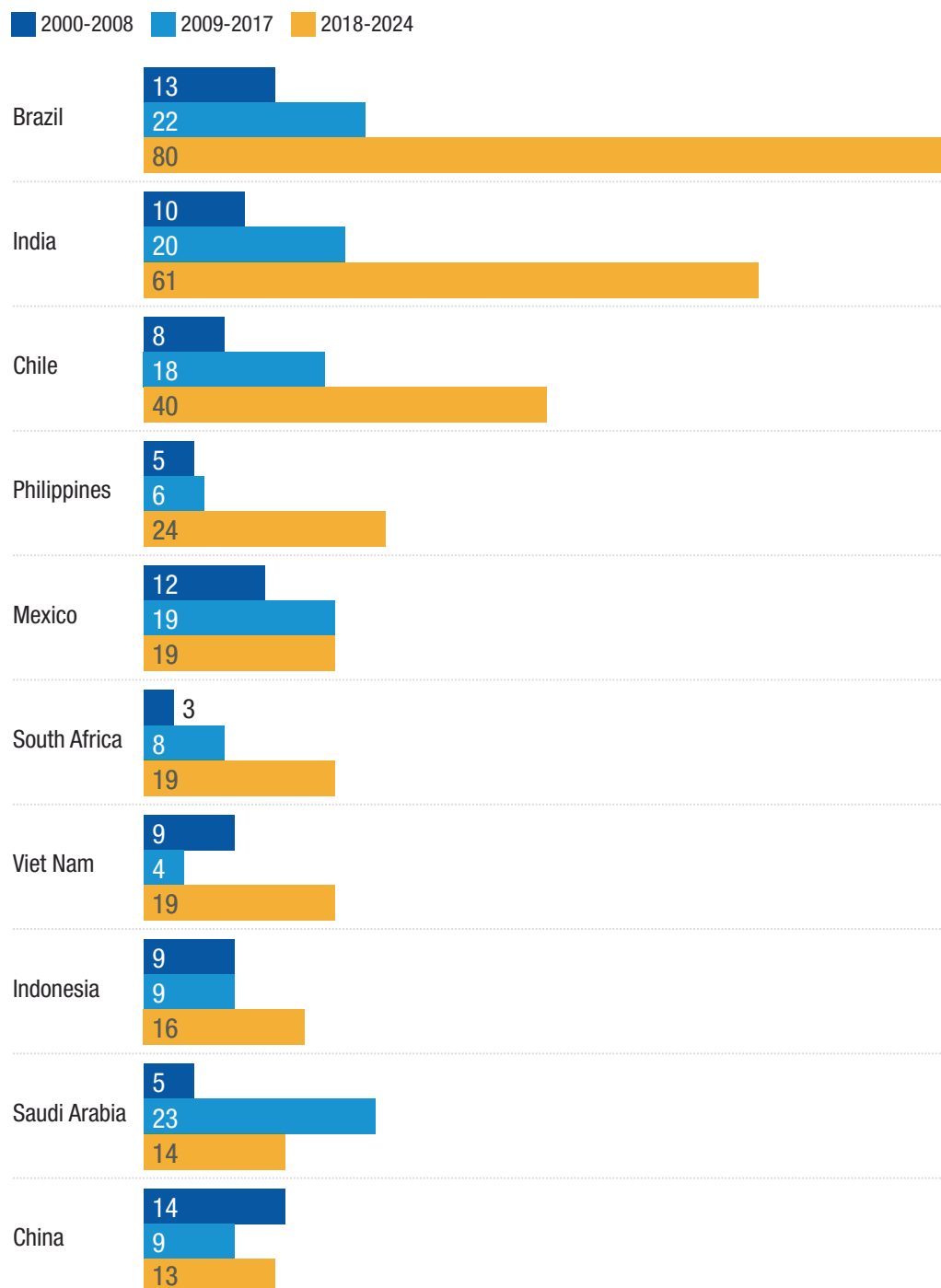




Figure 8.

Brazil and India have become regional and global hubs in international public-private partnerships

Average annual number of international PPP deals in developing economies, by period



Source: UNCTAD, based on information from LSEG Data & Analytics.



Despite overall growth, many developing economies remain excluded. Since 2000, 32 countries – representing 20 per cent of the total – have recorded three or fewer international PPP deals (table 1). SIDS are particularly underserved, with 73 per cent having three or fewer projects. These countries face unique challenges, including limited market size, high vulnerability to climate change, and constrained public service capacity. LDCs also show low PPP activity, primarily due to institutional weaknesses and high capital costs. In contrast, most landlocked developing countries (LLDCs) have engaged more

actively, with only 4 out of 30 recording minimal activity. This limited participation is often linked to small market size, project scale constraints, and institutional capacity challenges, including difficulties in managing complex concessional finance arrangements and mobilizing co-financing (UNDESA and UNDRR, 2022). SIDS also face heightened vulnerability to climate-related disasters and require targeted investment in adaptation and mitigation efforts (UNCTAD, 2022), particularly in resilient infrastructure and energy transition projects that support sustainable development and climate resilience.



Table 1.
Developing economies with three or fewer international public-private partnership deals since 2000, by subgroup
(Number)

Country grouping	Number of economies with three or fewer international projects since 2000	Total number of economies
Small island developing states	22	38
Least developed countries	12	44
Landlocked developing countries	4	32
Total	32^a	

Source: UNCTAD, information from LSEG Data & Analytics.

Note: ^a Total number of countries without double-counting. Some countries belong to more than one grouping.





2

Part II. Key features of international public-private partnerships

1. Diverse de-risking mechanisms

The financing of infrastructure through PPPs in developing countries involves a diverse set of actors and instruments. Understanding how these projects are structured particularly the role of foreign equity, blended finance, and public institutions – is essential to assessing their effectiveness and scalability. This section examines the composition of PPP financing, the extent to which blended structures help attract international investors, and whether the participation of DFIs, export credit agencies (ECAs), and public authorities contributes to mitigating risks, lowering the cost of capital and eventually attracting private investment. There are numerous DFIs operating on either a global, regional or national basis. These state-backed institutions share a common goal: to promote the economic development of a given country or region through lending and other forms of support, such as advisory services for financial institutions in developing markets. MDBs are considered

a distinct class of financial institution due to their multilateral shareholder base.

Some national development banks (NDBs) from developed countries – often referred to as bilateral development banks, such as British International Investment – BII (United Kingdom) or the Dutch Entrepreneurial Development Bank – FMO (Netherlands) – focus on overseas development, reflecting the priorities of their respective governments. In contrast, many NDBs in developing markets operate in recipient countries and concentrate on attracting inward investment. In recent years, some NDBs have been structured as Green Investment Banks, which help mobilize private finance for climate-related infrastructure by reducing investment risks and supporting long-term sustainability (Volz and Lee, 2024). More broadly, national development banks can play a key role in catalyzing climate finance by leveraging their public mandate and local expertise to crowd in private investment (Smallridge et al., 2013). ECAs, while also publicly backed, provide financing with a focus on advancing national economic interests abroad.



International Investment in Sustainable Infrastructure: The Role of Public-Private Partnerships

Financing sustainable infrastructure in developing countries typically involves a mix of public and private capital, structured through complex arrangements that reflect the risk profile and financial viability of each project. PPPs often combine equity, debt, and concessional finance from governments, DFIs, and ECAs. In many cases, the private sector leads financial structuring and capital raising, while public actors play a critical role in de-risking investments and enhancing project bankability. Debt finance is typically raised through non-recourse project finance mechanisms, especially for large projects and in developing economies (Sawant, 2010; Hainz and Kleinmeier, 2012). This mechanism limits risks for the sponsors (equity investors) as the project company's obligations are ring fenced from those of the equity investors, and debt is secured on the cash flows of the project, rather than on equity investors' consolidated, corporate balance sheets.

Private sector investment in developing economies is often held back by a range of perceived risks. These include macro-financial risks, such as currency volatility, inflation, credit risk, and underdeveloped financial markets; political and regulatory risks, including weak investor protection, uncertain property rights, and unstable legal frameworks; and technical and sector-specific risks, which are particularly relevant for large-scale infrastructure projects.

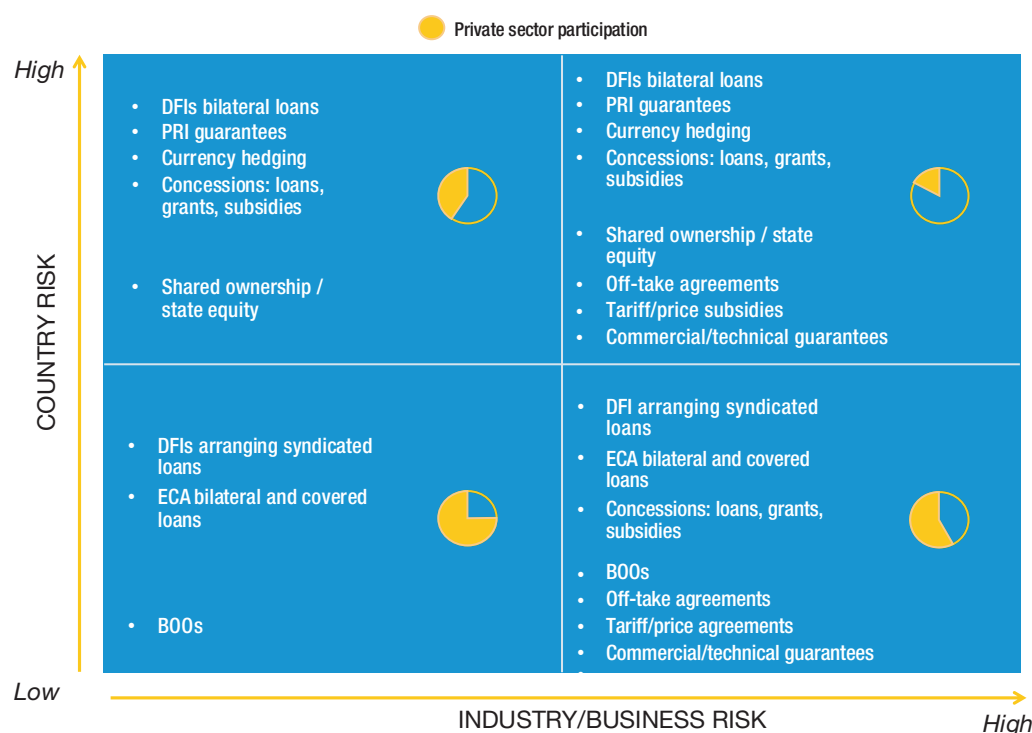
In sectors where public interests are prominent – such as health, water, and education – there is a higher likelihood of government intervention through permits, price controls, or volume restrictions. Additionally, financial and business risks – including demand uncertainty, price fluctuations, and cash flow volatility – can make it difficult for investors to secure adequate funding.

To address these challenges, a range of instruments has been developed to mitigate risk while maintaining incentives for private sector participation, whether through equity or debt financing.

To support the analysis of financing structures, the report introduces a typology of risk categories and associated mitigation strategies commonly employed in PPPs (figure 9). This typology distinguishes between country-level and industry-level risks and maps the instruments typically deployed to address them. In addition to the intervention of public authorities, DFIs and ECAs with instruments such as guarantees, concessional loans, and equity injections, some de-risking mechanisms are embedded in the contractual and governance structure of the project itself. Collectively, these instruments play a critical role in ensuring sufficient financial returns on investment, while reinforcing public oversight mechanisms to safeguard the public interest.



Figure 9.
De-risking strategies for successful delivery of infrastructure projects



Source: UNCTAD.

Note: Country risk includes macro-financial risks (currency and inflation risk), credit risk (and political and regulatory risks), laws and applicable legal frameworks around investor protection (including protection of property rights, stability of legal environments, international investment agreements (IIAs)). Industry/business risks include technology, demand and price risks. Estimations on the private participation based on the share of international investment in total investment and the share of investment that requires public support.

There are several strategies that project sponsors may adopt to mitigate project-related risks:

- i. *Structuring the governance or contractual form of the PPP*, which determines the balance of control between private investors and public authorities.
- ii. *Establishing a network of contracts with third parties to help mitigate business risks*. These may include operation and maintenance agreements, engineering, procurement and construction (EPC) contracts, and purchasing and selling agreements. Notably, selling (offtaking) agreements may substantially reduce cash flow volatility.
- iii. *Modifying the capital structure or adjusting the debt-to-equity ratio*, as lenders often require higher equity contributions for projects with elevated risk profiles.
- iv. *Engaging DFIs and other development finance entities*, including ECAs, to enhance financial resilience and credibility.
- v. *Incorporating insurance and guarantee providers* to mitigate specific country or project-related risks.

Some instruments are tailored to address specific risks, while others can be embedded into the capital or contractual structure to target particular aspects. Finally, certain instruments involve significant trade-offs. For example, projects with

higher leverage – that is, a greater use of debt relative to equity – typically face a higher cost of capital (Corielli et al., 2010). State interventions – such as equity participation within a shared-ownership PPP model – can effectively reassure the private sector of policy stability and public support for a project. However, in less risky environments or when such interventions are overly extensive, such interventions may discourage private investors, who might fear losing control over the project or facing excessive public interference (James & Vaaler, 2018). In lower-risk economies but technologically demanding sectors, such as renewables or hydrogen, Build–Own–Operate (BOO) contracts can provide private investors with stronger incentives to deploy innovative, high-tech solutions (Byoun and Xu, 2014). These private-control contracts are often paired with offtake agreements to mitigate market volatility (Corielli et al., 2010; Byoun et al., 2013; Vaaler et al., 2008).

In addition to contractual and financial structures, technological characteristics within sectors also shape the financing appeal of international PPPs. For instance, solar energy projects are typically modular, scalable, and quicker to implement, with relatively predictable risk profiles. These features make them more attractive to international investors and lenders. In contrast, hydropower and geothermal projects often involve greater complexity, longer gestation periods, and higher upfront costs, which can deter private participation despite their long-term resilience and lower lifecycle costs. These differences also influence the scope for domestic capability development and spillover effects. While simpler technologies may facilitate rapid deployment, more complex projects can offer deeper opportunities for local skill-building and industrial linkages, provided that appropriate policy and institutional frameworks are in place.

Building on the discussion of risk mitigation and institutional involvement, high country-level risks – whether macroeconomic or

political – often require mitigation through the involvement of MDBs and specialized multilateral agencies, typically working in coordination with local authorities. Through their active engagement and technical assistance MDBs can influence outcomes with governments in a way that other DFIs and private sector banks cannot (Avellan et al., 2024, Broccolini et al 2021, Gurara et al., 2020). This helps explain the presence of MDBs in riskier environments (see next section) and highlights their distinct role compared with other investors. In vulnerable economies, financial markets are often shallow, making bilateral concessional loans and public grants more feasible than public–private co-investment through loan syndicates. In such contexts (in the upper part of figure 9), a range of de-risking instruments is required to attract the limited pool of available private capital. These may include guarantees, blended finance, and political risk insurance (PRI), which can be offered by both public and private entities (UNCTAD 2025b and c).

In general, investors and lenders will adjust the capital structure and in particular the debt-to-equity share (debt gearing ratio) to the risks perceived in each project. Equity investors assume more risks as they are last in line to be paid- after all operating expenses and debt repayments. Lenders might require a higher share of equity financing to minimize their own risk. Projects located in countries with higher sovereign risk ratings and a better credit profile tend to have higher levels of project leverage – more debt as a percentage of total capital – indicative of lower overall risk (Esty 2002). In contrast, international projects in developing countries will need to have a higher involvement of equity capital covering more than a quarter of the project cost in LDCs (figure 10). In LDCs, the debt gearing ratio might still be relatively high despite host government equity injections in almost half of the PPPs projects. This can occur if the project's debt level is also very high, or if the government's equity stake is relatively small compared to the overall project size or debt.

Elevated country-level risks, including macroeconomic and political risks, often require risk-mitigation support from specialized multilateral agencies

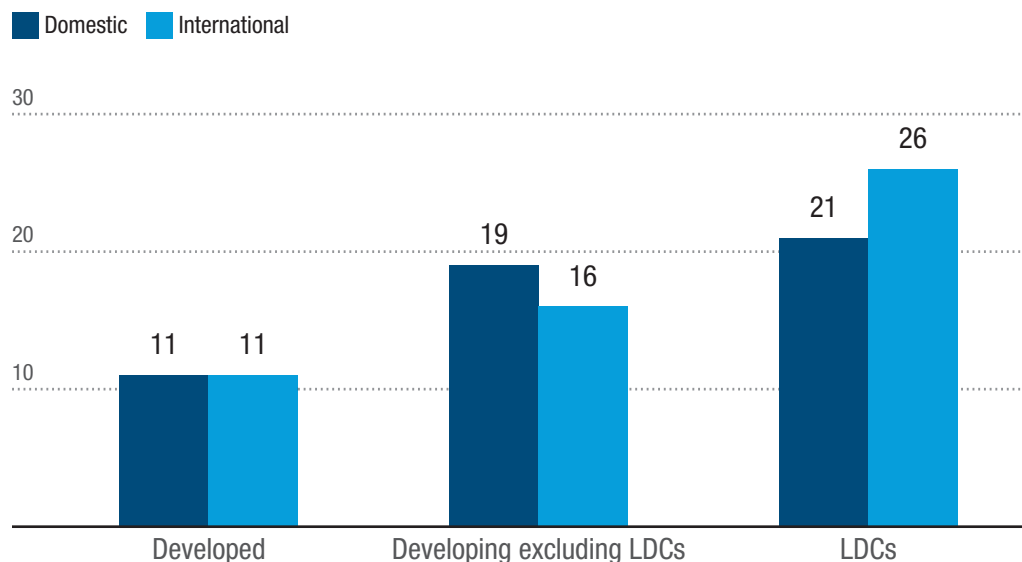




Figure 10.

The share of equity financing in developing economies is higher

Average share of equity financing, 2000–2024
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Calculated only on PPP projects with relevant data. Equity share = 100 – leverage.

The leverage has been increasing over time, driven by the growing importance of renewable energy projects and the simultaneous decline in average project size. In developed economies, leverage has exceeded 90 per cent over the past five years.

The debt-to-equity ratio could vary also across sectors. PPP projects in highly regulated industries are generally considered safer and therefore tend to exhibit higher debt shares. In advanced economies, sectors such as renewable energy, utilities, and telecommunications are perceived as low risk, which has recently led financial companies to emerge as leading equity investors, replacing construction firms as well as telecommunications and utility MNEs (UNCTAD, 2025a). In the power sector, for instance, offtake agreements usually in the form of power purchase agreements (PPAs), are widespread, and central to the success of PPPs (see box 2). These agreements reduce cash flow volatility, allowing lenders to permit higher

debt-to-equity ratios for project sponsors (Corielli et al., 2010; Gatti, 2023).

Selling contracts or off-taking agreements enable the project company to sell part or all of its output to a third party that commits to buying unconditionally, at predefined prices and for a given period of time, and de facto assumes part of the market risk. Because these agreements are negotiated by sponsors before seeking funding, they do influence the capital structure of the project by reducing the need for equity of the project (Box 2). While there are a series of advantages to the use of PPAs as a contractual instrument of energy PPPs, they are still complex instruments and can incur a series of risks and other challenges (table 2). In particular, experience in several developing economies has shown that unclear or non-market PPA terms – such as lack of transparency, inflexible pricing structures, or inadequate risk allocation – could undermine bankability and deter private investment, especially in renewable energy projects.





Table 2.
Advantages and challenges of using offtaking agreements

Advantages	Challenges
<i>Revenue stability.</i> Guaranteed payment ensures consistent cash flows that can service debt and attract investors	<i>Complex contract negotiation.</i> Non-standard contracts can involve long negotiation periods, particularly in emerging markets
<i>Bankability.</i> The predictable revenue from offtaking agreements can improve the project's credit profile and allows better access to long-term financing.	<i>Off-taker creditworthiness.</i> If the utility or government off-taker lacks financial health, risk increases significantly.
<i>Hedging mechanism.</i> Offtaking agreements can protect both buyers and sellers from market price volatility.	<i>Currency risk.</i> In developing economies, offtaking agreements are often denominated in foreign currency, exposing local utilities to depreciation risk.
<i>Green credentials.</i> Offtaking agreements, such as PPAs in the renewable energy sector, help corporates, DFIs and institutional investors to align to climate-related goals.	<i>Supply variability risk.</i> Some renewable technologies can be subject to climate variability, and therefore its supply might be affected.
	<i>Rigid terms.</i> Long-term offtaking agreements may become outdated in the face of falling renewable technology costs or policy changes.
	<i>Public burden.</i> Take-or-pay clauses can lock governments into purchasing more energy than needed, especially when transitioning from fossil fuels to renewables.

Source: UNCTAD based on UNCTAD (2023a), ADB (2008); Delmon (2010); Gatti (2023); IRENA and CPI (2023); European Commission (2024); Engel et al. (2020).

The share of foreign equity in PPPs is determined by the industry and host country characteristics, contracts and associated perceived risks. In general, for international PPPs, more than three-quarters (77 per cent) of the equity capital is provided by foreign sponsors, defined as those holding more than 10 per cent of the project company. Geographic variations are relatively minor. Across industries, the ownership share held by foreign investors largely depends on the project's return profile and the terms of the underlying PPP. Contracts with full private ownership of the project (BOO contracts), are typically associated with higher share of equity held by non-residents. For example, in international renewable energy projects,

over 80 per cent of equity is owned by private foreign investors. By comparison, foreign ownership in other infrastructure projects is approximately 70 per cent, while in soft infrastructure projects it is about 67 per cent, as national public entities and state-owned enterprises are more likely to retain ownership stakes.

FDI for the average international renewable project in developing countries would amount to over \$50 million and to more than \$145 million in LDCs due to a larger share of equity and to larger projects (figure 11). Similarly, foreign equity in hard infrastructure would on average total more than \$145 million in developing economies and about \$ 235 million in LDCs.

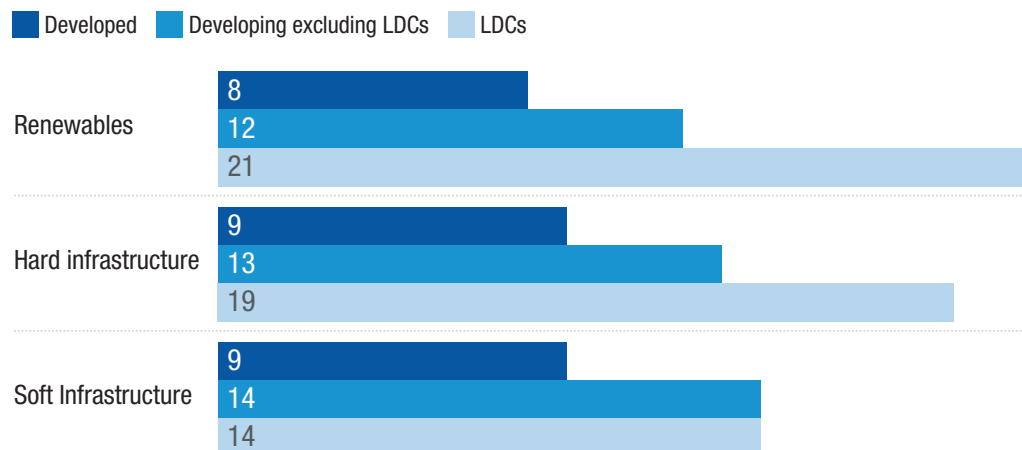




Figure 11.

The share of foreign equity is higher in renewable energy projects and in LDCs

Share of foreign equity, in selected sectors
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Calculated only on PPP projects with relevant data.



Box 2.

Lessons learned from power purchase agreements (PPAs)

Power Purchase Agreements (PPAs) have been frequently used for enabling investment in renewable energy projects. A PPA can be defined as a long-term contract between a power producer and an off-taker (often a state-owned utility company) under which the off-taker agrees to purchase the electricity produced at a pre-agreed rate and timeframe (usually over 15 to 30 years). PPAs are central to the financial viability of most renewable energy PPPs because they provide revenue certainty, improve risk allocation and project bankability (UNCTAD 2023, Gatti, 2023). In fact, the growing use of PPAs has facilitated a shift from equity to debt financing for renewable energy projects in many parts of the world (Box figure 3.1.), by providing predictable revenue streams that enhance bankability (Corielli et al. 2010, IRENA and CPI, 2023). By decoupling investor returns from fluctuating end-user demand, they reduce risk and enhance private sector participation, especially in low-income or uncertain markets.

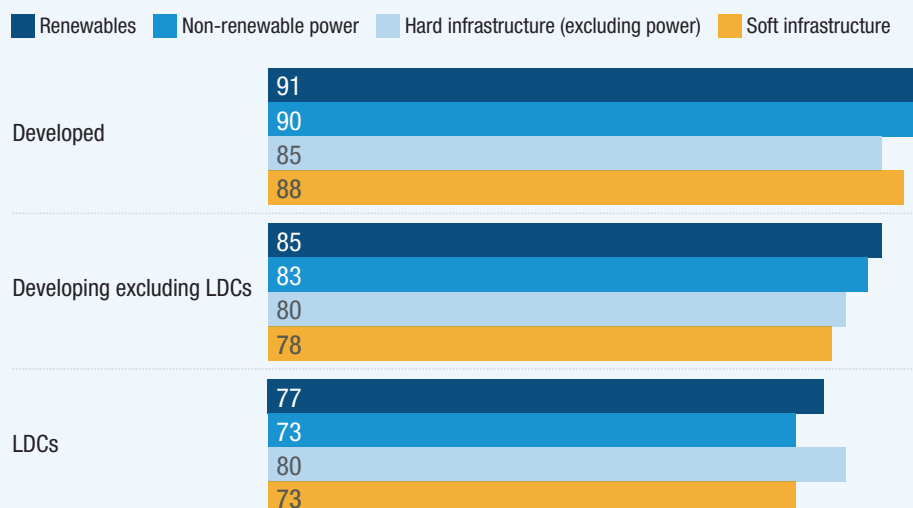
The off-taker should ideally be a creditworthy entity. Off-takers may purchase bulk services (such as water treatment or electricity) and either use them directly or distribute them to end users (ADB, 2008, Delmon, 2010, Gatti, 2023).





Box figure 2.1 The use of PPAs allows higher leverage for power projects

Debt to equity ratio by region and sector
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Although widely used in energy, offtake agreements have also been applied in other sectors through performance-based or volume-based payments:

- Water and sanitation: Bulk water supply PPPs involve governments or utilities purchasing treated water and for desalination and other innovative projects, similar to the energy sector model (Delmon, 2010, Marin, 2009). Also, in this sector, sustainability of PPPs depends on a range of factors including stakeholder engagement, contract design, and long-term planning (Huimin et al., 2019). However, underpriced consumer tariffs remain a challenge for long-term sustainability.
- Transport: In urban transport, take-or-pay clauses and minimum revenue guarantees are used to mitigate demand risk. These often entail the government covering shortfalls if passenger numbers or toll revenues fall below agreed thresholds (Gatti, 2023).
- Industry and critical minerals: In some contexts (e.g. EV battery minerals), governments or public buyers are called to explore offtake-style arrangements to stimulate investment in strategic sectors (IEA, 2025).
- Innovative PPP models: Proposals like PVR contracts offer an alternative to fixed-term PPPs. In these, the concession lasts only until the private partner earns the agreed present value of revenues, reducing demand risk and renegotiations (Engel et al., 2020).

Source: UNCTAD.



Government equity participation in PPP projects signals commitment and can strengthen investor confidence

2. The role of governments and development finance institutions

Blended finance, defined as the strategic use of public or concessional funds to mobilize additional private investment, has emerged as a key instrument to attract international investors to infrastructure projects in developing economies (figures 12 and 13).³ The involvement of DFIs, ECAs, and other public institutions can help mitigate perceived risks and reduce the cost of capital, particularly in high-risk environments.

Risk perceptions translate into higher costs to finance a project, lower financing volumes, or shorter maturities: major barriers to attracting private foreign investors in SDGs-related projects. Creating blended finance structures by involvement of public or development finance institutions lowers these risks, making the investment more attractive to private commercial lenders.

Governments, as well as local or regional public authorities, can support PPP projects through various mechanisms, including equity participation (by acquiring an ownership stake), the provision of non-repayable financial resources (grants), or concessional lending arrangements. About half of international PPP projects in LDCs involve public equity participation, compared with less than one-third in other developing countries and under one-quarter in developed economies. These public equity stakes are often relatively small, representing only a limited share of total project costs, and are primarily intended to signal government support and commitment to the project. Public grants and loans are less common, jointly occurring in less than 10 per cent of the projects.

DFI support may include concessional loans, grants, guarantees, technical assistance and help with arranging financing syndicates. In some cases, DFIs have also acted as sponsors of large infrastructure projects in the most vulnerable economies, although this practice has been declining in recent years. These institutions directly finance nearly a third of international PPP projects in LDCs and provide guarantees or “coverage” for about 14 per cent of the syndicated loans that support them (figure 12). In many cases, this loan “coverage” is linked to the role of DFI as lead arrangers of the syndicate loans. Lead arrangers assess the borrowing firm’s credit quality and negotiate key loan terms with the group of lenders. Acting as lead arranger, DFIs mobilize private investment by bringing guarantees and extending their preferred creditor status to other syndicate participants.

ECAs are government-backed institutions that provide financial support (loans, guarantees, insurance) to enterprises, primarily for exports and investments abroad. While their primary role is to support national companies in their export activities and international investments, their financing can significantly contribute to economic development, particularly for large-scale infrastructure in developing countries and LDCs where they provide a direct loan in 10 per cent of the international PPP projects. These agencies are commonly involved at the request of major foreign sponsors or construction firms. For example, bilateral loans issued by the export credit agency of the Republic of Korea K-Sure – one of the most active globally (UNCTAD 2025b; 2025c) – tend to favour projects that involve either a Korean sponsor or a Korean contractor.

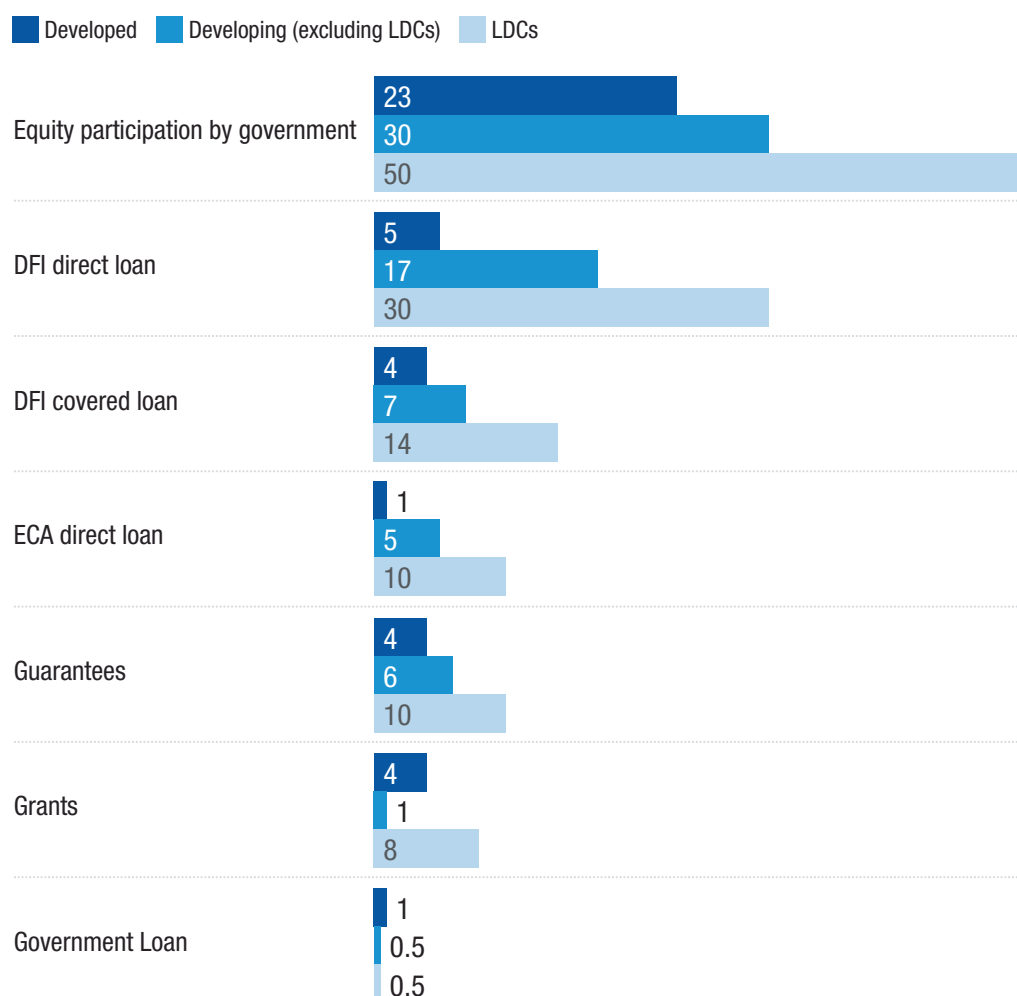
³ Common definitions of blended finance by the World Bank (2025) and OECD (2025) include a broad set of instruments including concessional finance, senior or subordinated loans, guarantees or risk-sharing facilities, equity and grants. Bilateral DFIs and ECAs often channel Official Development Assistance (ODA) into concessional loans and grants. For example, the Japanese International Cooperation Agency (JICA) offers ODA for transport and water infrastructure in the Philippines, Indonesia and India. Examples of ECAs channeling ODA include the Export–Import Bank of the Republic of Korea (KEXIM) extending a \$905 million loan in 2025 to support the Laguna Lakeshore Road Network Project in the Philippines. It should be noted that ECAs also provide guarantees or other financing instruments that are commercially priced, in which case they may fall outside the narrow definition of blended finance.





Figure 12.
Blended finance instruments are crucial for financing public-private partnerships in developing countries

Share of projects financed by selected institutions and types of instruments
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: The figures are calculated exclusively on financially closed international PPP projects. DFI development financial institutions, ECA export credit agencies. Guarantees include ECA's covered loans and other guarantees.

Similarly, the majority of syndicated loans co-financed by the Canadian Export Development agency were in favor of projects sponsored by Canadian companies.

These blended finance instruments commonly support projects in developing economies, where fewer than half of international PPPs are fully privately financed (figure 13). In approximately one-third of cases, DFIs co-finance fully privately financed projects by contributing a share of the total investment. Both DFIs and ECAs are more likely to participate in

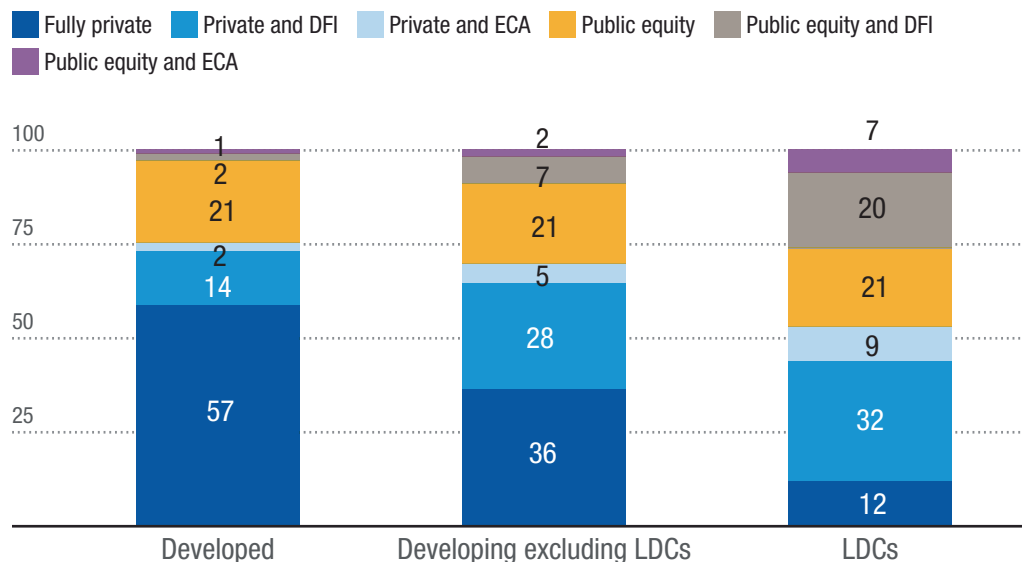
projects led by private sponsors. When the government already holds an equity stake, their involvement tends to be significant only in LDCs. Over the past 25 years, LDCs have seen an average of only one fully private infrastructure project per year. The largest among these include oil and gas infrastructure (pipeline) projects sponsored by major energy MNEs. The remainder are predominantly power generation projects backed by signed PPAs, or relatively small-scale telecommunications projects.





Figure 13.
In developing economies less than half of international projects are fully privately financed

Shares of projects by type of financing, 2000–2024
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: The figures are calculated exclusively on financially closed international PPP projects. DFI development financial institutions, ECA export credit agencies. Projects involving both ECAs and DFIs are included in the DFI category.

In the early 2000s, direct loans from multilateral agencies – typically long-term financing provided directly to project sponsors – played a far more prominent role in financing international PPPs than covered loans, which were virtually absent in most years (figure 14). Covered loans – syndicated loans arranged or guaranteed by DFIs – began to grow notably after 2015, coinciding with the G20’s call for MDBs to catalyze private sector investment in infrastructure (G20 Information Centre, 2015, McHugh, 2021). This likely contributed to a greater role for covered loans as a tool to crowd in private financing for large-scale PPP projects.

Since 2005, direct loans from DFIs to international PPPs in developing countries (excluding LDCs) have consistently exceeded covered loans, averaging between \$3 billion and \$4.5 billion annually. In LDCs, both instruments have remained marginal, with values below \$1 billion throughout the period. Direct loans peaked between 2005 and 2009, while covered loans only recently reached \$0.8 billion. The most notable trend is observed in developed countries, where regional MDBs – particularly the EBRD – have driven a sharp increase in covered loans, rising from near zero in the early 2000s to \$5.5 billion in 2020–2024, surpassing direct loans (figure 15).

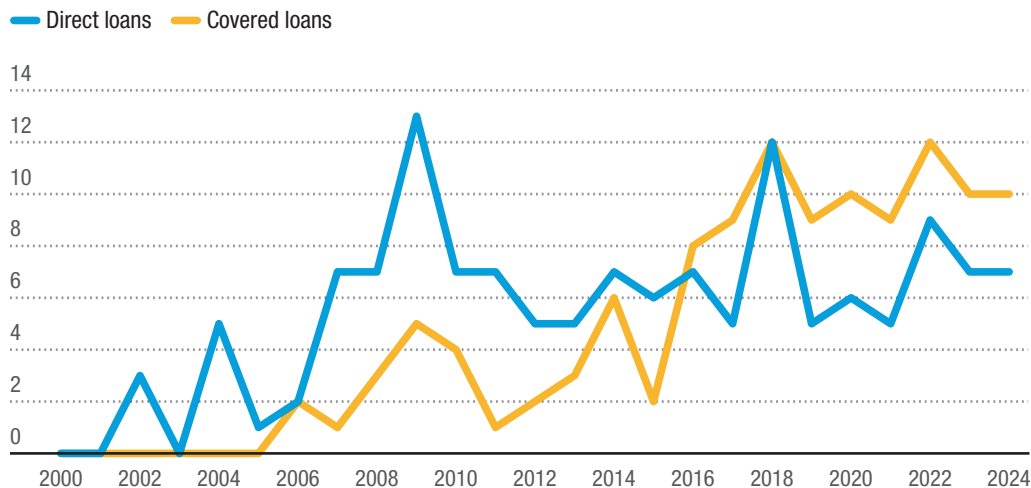


Figure 14.

Loans covered by development finance institutions increased after 2015

Total direct loans and covered loans from multilateral agencies to international PPPs, 2000-2024

(Billions of dollars)



Source: UNCTAD, based on information from LSEG Data & Analytics.

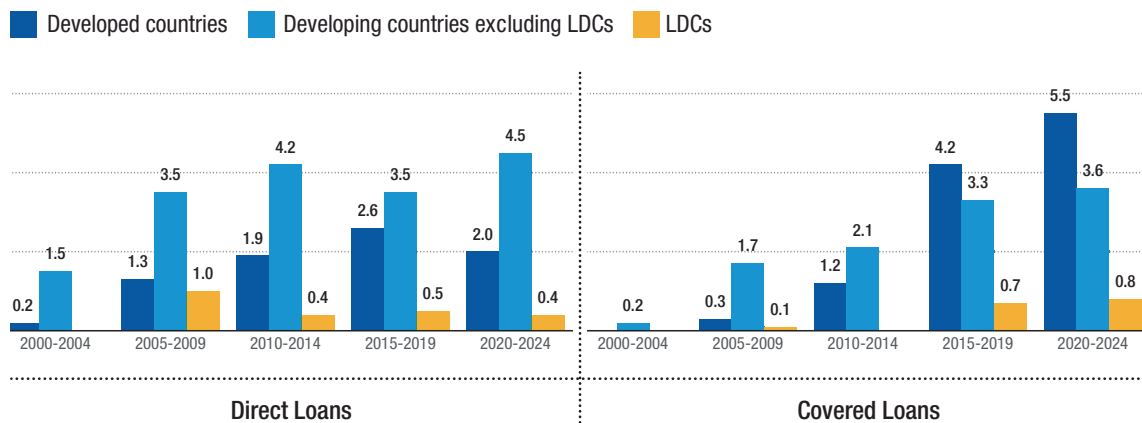
Note: The figures are calculated exclusively on financially closed international PPP projects. DFI development financial institutions, ECA export credit agencies. DFIs include both MDBs and other regional or bilateral development banks.

Figure 15.

Covered loans are routed to economies with more advanced financial markets

Total direct loans and covered loans from DFIs to international PPPs by income level, average, 2000-2024

(Billions of dollars)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: The figures are calculated exclusively on financially closed international PPP projects. DFI development financial institutions.

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From 2000 onward, financing from DFIs has accounted for a proportionally larger share of PPP activity in developing economies compared to developed ones. While direct loans have historically been the main instrument, their share has fluctuated, and since 2015 there has been a shift toward greater use of covered loans. When looking at the contribution of multilateral agencies to the total average cost of international PPPs, LDCs appear to have high proportion of total PPP costs. However, the absolute values reveal that this is due to the small overall PPP investment base, meaning even a few large projects can significantly inflate the share. In contrast, the more moderate shares in developing countries excluding LDCs reflect a larger investment base, despite consistently higher absolute values of financing from multilateral agencies. The trend still reflects the growing reliance on risk-mitigation tools to make projects bankable in higher-risk contexts, as already discussed in previous sections. In parallel,

innovative instruments such as green bonds are being used to complement traditional DFI financing and crowd in private investment for sustainable infrastructure (box 3).

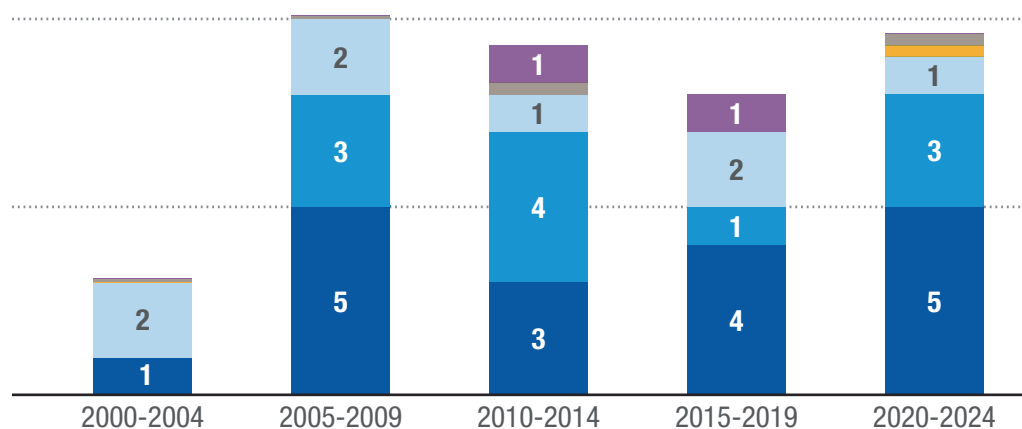
Considered together, covered loans and direct loans from DFIs associated with international PPPs in developing economies have been concentrated in two sectors: renewable energy and transportation (figure 16). Renewables saw early growth, peaking around 2007, followed by fluctuations and a moderate recovery from 2017 onwards. Transportation peaked in the 2010-2014 period, declined sharply in subsequent years, and showed a modest rebound after the pandemic. The power sector has seen modest activity, with small peaks, showing the role of multilateral support to PPPs in developing economies for energy generation and distribution. It has, however, been less relevant in other sectors, such as telecommunications, that relies greatly on private financing.



Figure 16.
Renewable energy accounts for the largest share of development finance institutions loans

Total loans (direct and covered) from multilateral agencies for international PPPs in developing economies, by sector, average, 2000-2024
(Billions of dollars)

■ Renewable energy ■ Transportation ■ Power ■ Industry ■ Telecommunications
■ Soft infrastructure



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: The figures are calculated exclusively on financially closed international PPP projects. DFI development financial institutions. The sector "Power" also contains "Oil and Gas pipelines".



Although modest in absolute terms, the relative contribution of DFIs to the total cost of international PPPs has been significant in some sectors. In soft infrastructure, their role was particularly pronounced before the COVID-19 pandemic, covering 32 per cent of project costs in 2010–2014 and 21 per cent in 2015–2019. In the telecommunications sector, DFIs have also contributed to the revival in the past five years, financing around 4 per cent of total project costs which is still well below their 18 per cent share in 2010–2014.

When it comes to ECA lending to international PPPs, the trend is highly volatile between 2000 and 2024 (figure 17). Covered loans display a more distinct upward trend after 2016, with record levels in 2020–2022, indicating an increasing role in risk mitigation for large PPP projects. This rise appears to align with the increased use of multilateral agencies loans, reflecting global policy efforts to mobilize private capital for infrastructure.



Box 3. **Green bond financing in sustainable infrastructure**

International infrastructure PPPs in developing countries are predominantly financed through loans, with less than 5 per cent relying on bond financing. Bond-financed projects are largely concentrated in developed economies and a few advanced developing countries, particularly in Latin America. Yet, bond financing offers important advantages, enabling borrowers to access capital directly from individuals and institutions at lower interest rates and with longer maturities.

A significant share of PPP projects can be classified as green – such as those in renewable energy, wastewater management, and public transport – or investing towards the SDGs and could be financed through thematic bonds including green, blue, social and sustainability. Such instruments can finance activities that are already aligned on environment and climate objectives (green and blue bonds) or investments intended to solve or mitigate specific social issues including by promoting affordable basic infrastructure and access to essential services. Thematic bonds have the potential to emerge as a significant and effective channel for mobilizing financing.

In particular, green bonds – the most established segment of sustainable finance – have been shown to lower the cost of capital, enhance resilience to financial shocks, and ensure that funds are ringfenced for green objectives (Caramichael and Rapp, 2024). While the broader literature examines green bonds in relation to the SDGs and the borrowing cost advantage in corporate finance, their specific role in PPP structuring and project finance remains underexplored.

In practice, sustainable finance instruments require projects to clearly demonstrate compliance with sustainability standards and regulations, such as those issued by the International Capital Market Association (ICMA). In the period 2011 to 2023, only 416 projects were financed with ICMA-certified green bonds. Access to green bond finance is highly uneven. Developed and advanced developing economies dominate issuance, while the poorest remain largely excluded. Only four PPPs in LDCs (all in Africa) were confirmed as linked to green bonds (box Figure 3.1).

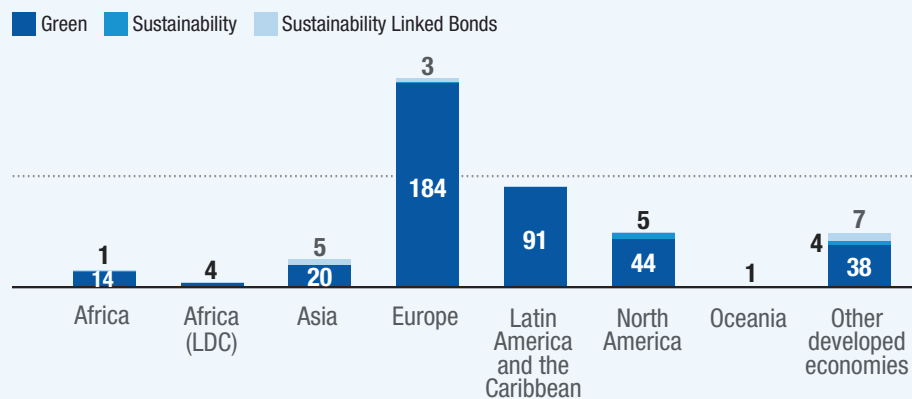
Green bonds in PPPs are an underutilised but scalable tool to accelerate sustainable infrastructure, provided stronger support is mobilised from multilateral development banks, concessional facilities, and blended finance mechanisms.





Box figure 3.1 Green bond-financed PPP projects are led by developed economies

Confirmed PPP projects with sponsor-issued green bonds, by region and country income level (2011 -2023)



Source: UNCTAD based Wang (2025). Analysis is based on ICMA disclosures, LSEG/Refinitiv Green Bond data and project-level verification.

Notes: A project can have multiple sponsors, each potentially issuing green bonds under different categories; counts reflect frequencies of individual PPP sponsors with confirmed green bond issuances.

ECAs have played a markedly different role in PPP financing compared to DFIs (figure 18). Their main target are international PPPs in developed countries, where ECA covered loans have surged sharply, from \$0.1 billion in 2000–2004 to \$8.1 billion in 2020–2024, a much steeper increase than that seen for multilateral covered loans. In developing countries excluding LDCs, ECA financing has also grown, with

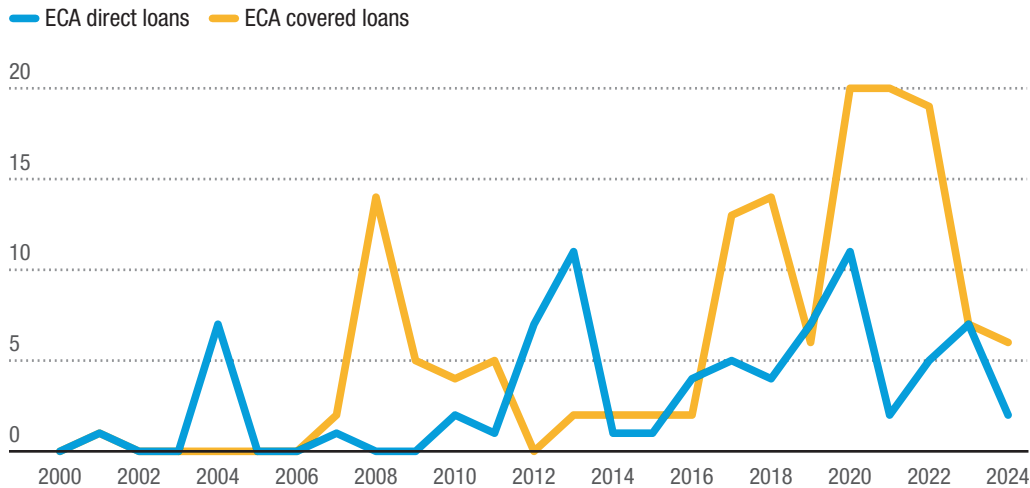
covered loans averaging \$5.8 billion recently, significantly above DFIs covered loans in the same group. LDCs, however, recorded low absolute levels of ECA lending, similar to the trend observed with multilateral financing. However, ECA direct loans reached a notable \$2.4 billion during 2015–2019 – exceeding the value of multilateral direct loans to LDCs in any other period.





Figure 17.
Export credit agencies lending to international public-private partnerships is highly volatile

Export credit agencies direct and covered loans to international PPPs, 2000-2024
(Billions of dollars)



Source: UNCTAD, based on information from LSEG Data & Analytics.

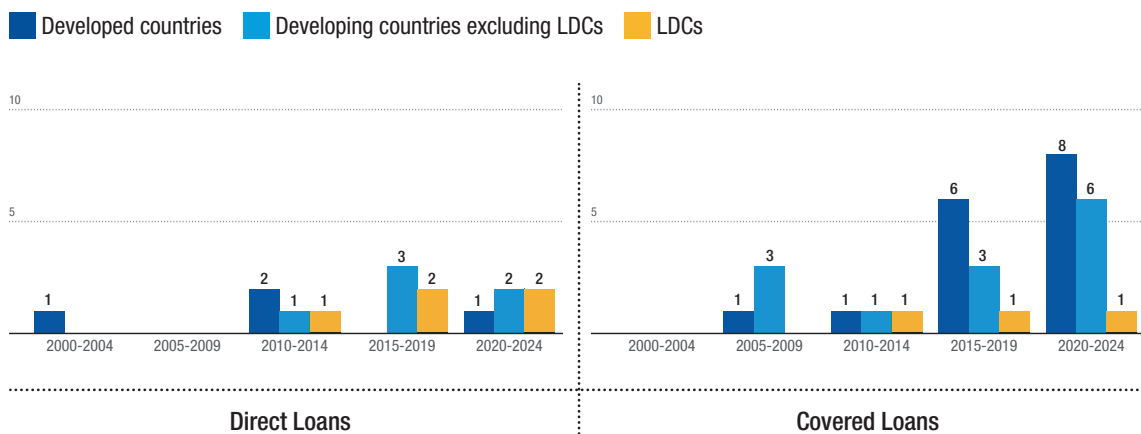
The corresponding contribution of ECA direct loans to the total cost of international PPP projects remains limited in both developed and developing countries (excluding LDCs), while in LDCs, their role shows significant volatility. They seem to be project-enabling, but are not

systemic, since they are related to individual projects, possibly tied to the creditor countries. Although the relative share in LDCs is high, in absolute value, most ECA financing goes to higher-income countries where PPP project costs are larger.



Figure 18.
Export credit agencies grant more covered loans compared to direct loans

Export credit agency- covered loans and direct loans for international PPPs, by income level, average
(Billions of dollars)



Source: UNCTAD, based on information from LSEG Data & Analytics.



While most guarantees to PPPs in LDCs are concentrated in the energy sector, there are also notable examples in the transportation sector. For the Awash-Weldiya railway project in Ethiopia, which will be constructed by the Turkish contractor Yapi Merkezi Insaat ve Sanayi, the Italian export credit agency SACE has committed to guaranteeing insurance coverage of \$120 million. This represents approximately 7 per cent of the estimated project cost, mainly related to contracts assigned to the Italian engineering company Tuxor, supplier of the project (SACE, 2018).

When compared, DFIs tend to have more balanced participation across income groups, whereas ECAs are more concentrated in specific high-value projects and countries with strategic links.

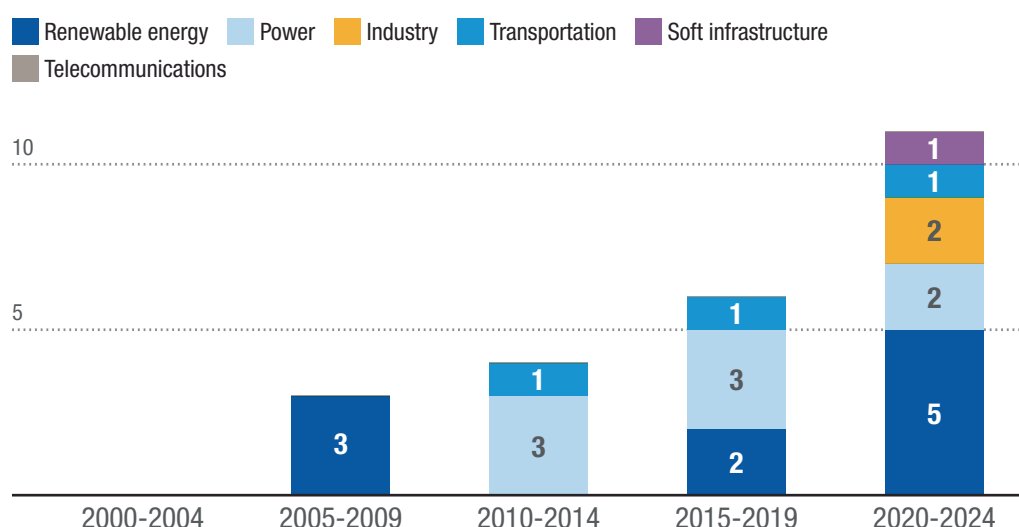
ECA financing for international PPPs in developing economies is also highly concentrated in renewable energy. The power sector ranks second, with a steady presence since 2010, though on a much smaller scale than renewables

(figure 19). Other sectors such as industry, transportation, and soft infrastructure only saw ECA support in recent years, and values remain modest. Telecommunications and other infrastructure have virtually no ECA loan activity, pointing to a very selective sectoral engagement.

While ECAs focus heavily on renewable energy and power, DFIs show a more diversified portfolio, including substantial activity in transportation and soft infrastructure. In renewable energy, both ECAs and multilaterals have increased financing in recent years, but the scale of multilateral engagement is much larger and more consistent over time. However, there are concerns about whether these renewable energy PPPs genuinely meet the energy needs of low-income countries. Also, there is a growing critique that certain projects may prioritize donor visibility or global climate targets over local development goals, potentially undermining their relevance and long-term impact.⁴

Figure 19.
Export credit agencies predominantly support the power generation sector

Total ECA loans (direct and covered) for international PPPs in developing economies, by sector, average, 2000-2024
(Billions of dollars)



Source: UNCTAD, based on information from LSEG Data & Analytics

Note: The sector "power" also includes "oil and gas pipelines".

⁴ For a critical perspective on renewable energy PPPs in Africa, see Kenny et al. (2025).

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When DFIs and ECAs are unable to arrange or cover syndicated loans, or when these instruments are complemented by other mechanisms, loans supporting international PPPs may still benefit from guarantees. Guarantees serve as risk-mitigation tools that enhance the credibility and bankability of projects by reducing perceived risks for financiers. These commitments can cover various obligations and actors. For example, debt service guarantees are typically provided by MDBs, while completion guarantees – covering cost overruns or delays – are often offered by

project sponsors. Governments and local authorities may also provide guarantees to support the obligations of state-owned enterprises or to ensure a minimum level of revenue from concessions. For macroeconomic and political risks, ECAs and specialized multilateral institutions such as the Multilateral Investment Guarantee Agency (MIGA) are the most common guarantors. These entities are particularly active in supporting international PPP project loans in developing countries, where guarantees are present in approximately 6 per cent of loans (figure 20).



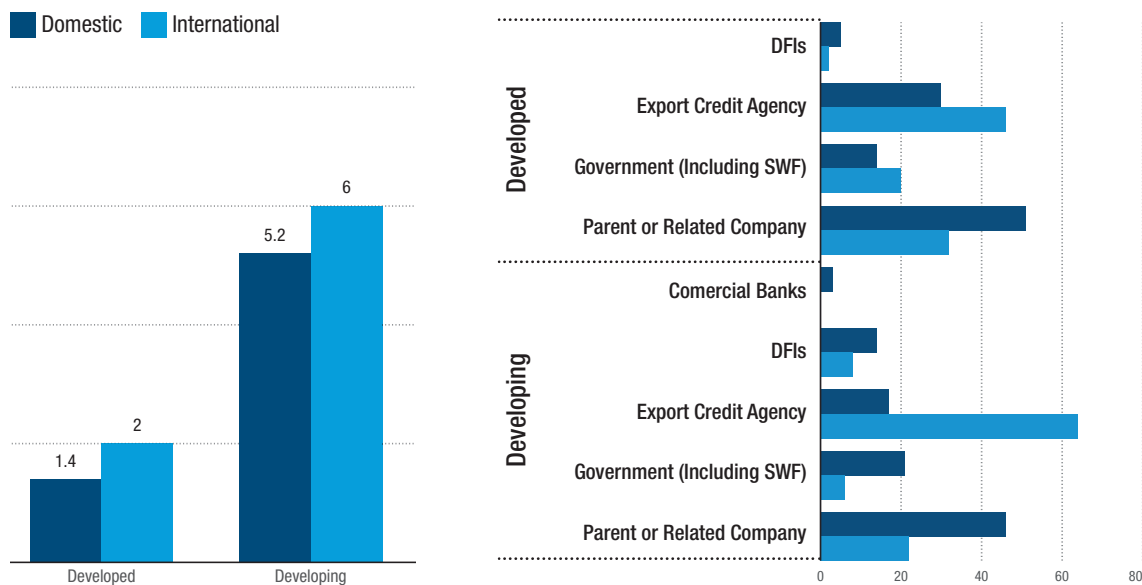
Figure 20.

Export credit agencies are the leading provider of international loan guarantees

Share of loans with guarantees and type of guarantor by country development status, 2000–2024

(Percentage)

Left: share of loans with guarantees; right: type of guarantor



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Data refers to the syndicated loans matched to PPP projects. In roughly one-quarter of cases, these guarantees apply to loans provided by ECAs (17.5 per cent) or by DFIs (8.4 per cent).

ECAs provide more than half of the guarantees on loans to international PPP projects in developing countries, and 46 per cent for those in developed countries.

Parent or related companies also serve as guarantors in developing countries, although their role is significantly less prominent compared to developed economies.





Part III. Challenges hindering the growth of international PPPs

1. The cost of capital

Securing financing for PPP projects remains a key challenge for developing countries, especially LDCs, limiting their ability to advance infrastructure and achieve SDGs. Loans from private banks are often associated with higher spreads and limited availability, making access to capital more difficult (UNCTAD, 2024c). In this context DFIs including national, bilateral and MDBs along with targeted government interventions such as equity contributions, grants, or concessional loans, can significantly reduce the cost of capital, especially in environments where interest rates are prohibitively high (see also UNCTAD, 2023). Additionally, public equity participation not only helps align the interests of private sponsors with those of the public sector, but also enhances the project's risk profile, thereby attracting financial investors. Sovereign institutional investors such as sovereign wealth funds (SWFs) and public pension funds (PPFs) can also play a critical role by providing long-term equity and co-investment capacity, helping to de-risk projects and crowd in private capital (UNCTAD, 2025e).

Importantly, blended finance structures enable the funding of projects that the private sector alone is often unwilling or unable to provide funding due to high borrower or country risk. A country's level of risk can be assessed through its sovereign credit rating. Leading credit rating agencies such as Moody's and Standard & Poor's assign these ratings to evaluate the ability and willingness of governments and, by extension, sub-sovereign entities, businesses, and individuals to meet their financial obligations. Sovereign ratings are a key indicator of a country's attractiveness to lenders and directly influence the cost of borrowing: projects in higher-risk economies typically face higher spreads when accessing credit (Cantor and Packer, 1996).

The spread refers to the additional interest rate (in percentage points) that borrowers must pay over the baseline interbank offered rate (e.g., formerly LIBOR, now SOFR). This spread is closely correlated with sovereign credit ratings, effectively capturing the perceived riskiness of different economies. For instance, syndicated loans composed solely of commercial banks are uncommon in countries with a sovereign credit rating below Ba1 (speculative grade),



International Investment in Sustainable Infrastructure: The Role of Public-Private Partnerships

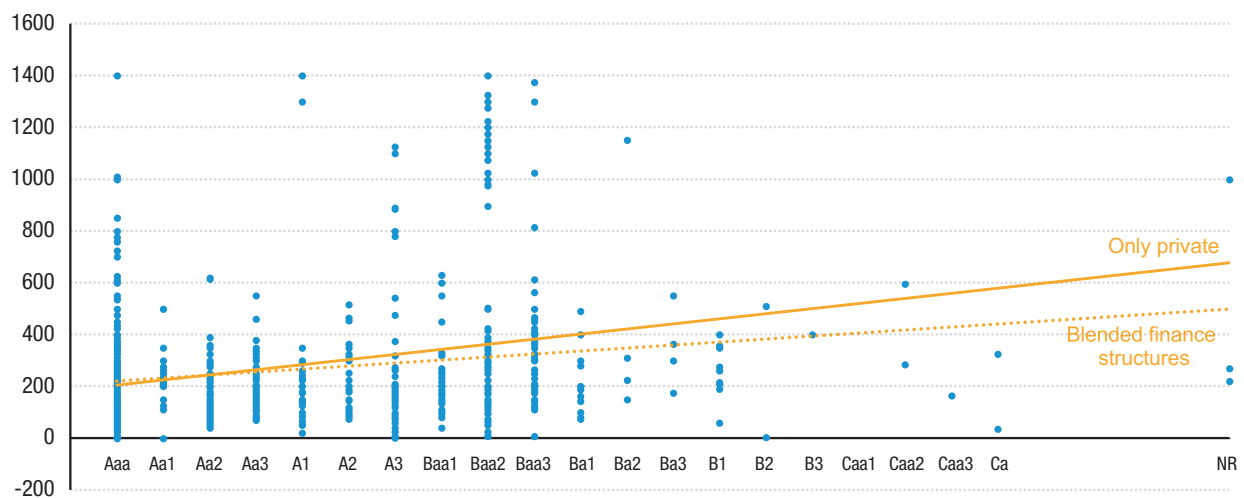
and virtually no fully private projects exist in high-risk (Caa1 or lower) or unrated countries. Moreover, spreads rise much more sharply across risk categories (figure 21a). In contrast, projects that include

some public capital from DFIs, ECAs, and/or the state remain feasible in riskier environments, with borrowing costs increasing at a slower pace (figure 21b).

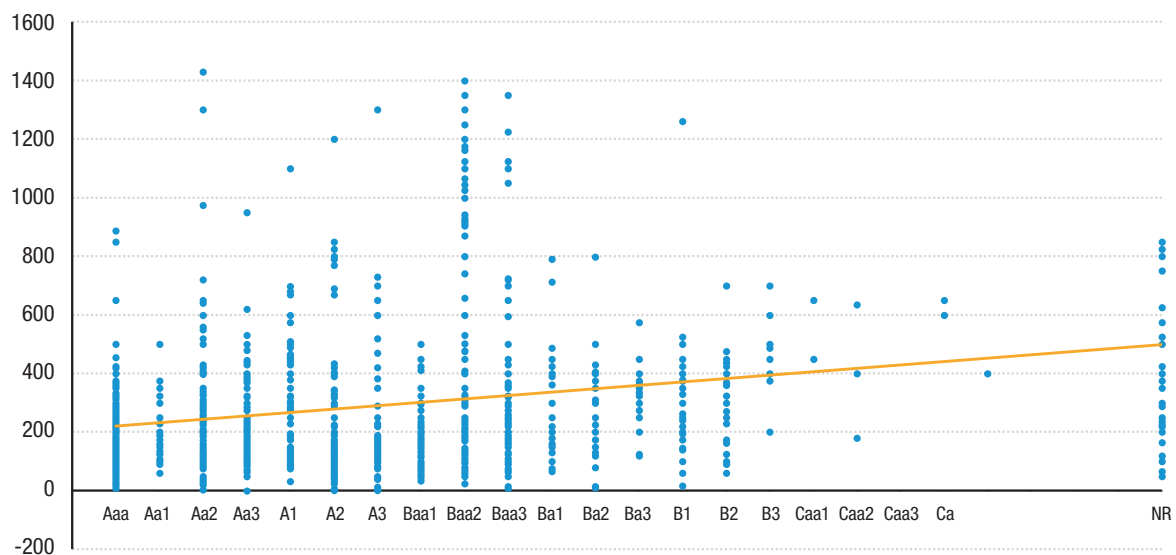
Figure 21.
Blended finance structures enable projects in high-risk countries

Distribution of spreads across credit ratings
(Basis points)

a. Only private



b. Blended finance structures



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Data refers to the syndicated loans matched to PPP projects. Sovereign credit rating in the host economy at the time the project was announced.

Among developing economies, syndicated loans involving only private banks – financing international PPP projects – were concentrated in countries with an average Moody's sovereign risk rating of Baa2 (investment grade). In contrast, syndicated loans involving at least one DFI were issued, on average, in countries with a Moody's sovereign risk rating of Ba1 – classified as speculative or non-investment grade. Notably, 38 per cent of DFI-supported syndicated loans are directed to countries rated as “below investment grade”. Loans to below-investment-grade economies account for only 28 per cent of total lending by private banks – with only 10 per cent being entirely financed by private entities, without any support from ECAs, government guarantees, or grants.

This reflects the greater risk exposure typically associated with DFI-backed financing and helps explain the higher spread observed in such loans (table 3), as well as the challenges in securing funding for infrastructure projects in these environments. Other notable characteristics of these loans are that they are, on average, 10 per cent larger than loans solely provided by private banks. These loans also tend to have longer maturities – 20 per cent longer, or 2 years. On average, it takes more time to arrange DFI-backed loans, and they often include a higher incidence of government equity participation: 40 per cent of projects versus 33 per cent without DFI involvement. There is also a greater prevalence of projects with guarantees in place, as well as a relatively higher share of projects involving ECAs, either as guarantors or as arrangers contributing financial resources to the loans.



Table 3.
Development financial institutions participate in riskier loan syndicates

Characteristics of loans to international public–private partnerships in developing countries by DFIs participation, 2000 – 2024
(Basis points, millions of dollars, years)

	Without DFI	With DFI
Spread (Basis Points)	218	307
Loan (USD million)	215	230
Maturity (Years)	12	14
Average project country risk	Baa2	Ba1

Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Data refers to the syndicated loans matched to PPP projects. LDCs are included in developing countries due to low number of observations.

However, the roles and impacts of different DFIs vary. For instance, among DFIs, MDBs tend to show a greater willingness to finance projects in such high-risk environments, often in countries with wider spreads and more complex development challenges (figure 22). This is an important channel

for mobilizing private sector participation in high-risk economies, where private lenders are unlikely to engage on their own. In contrast, bilateral development banks, while more risk-tolerant than private lenders, tend to refrain from engaging in the most vulnerable economies.



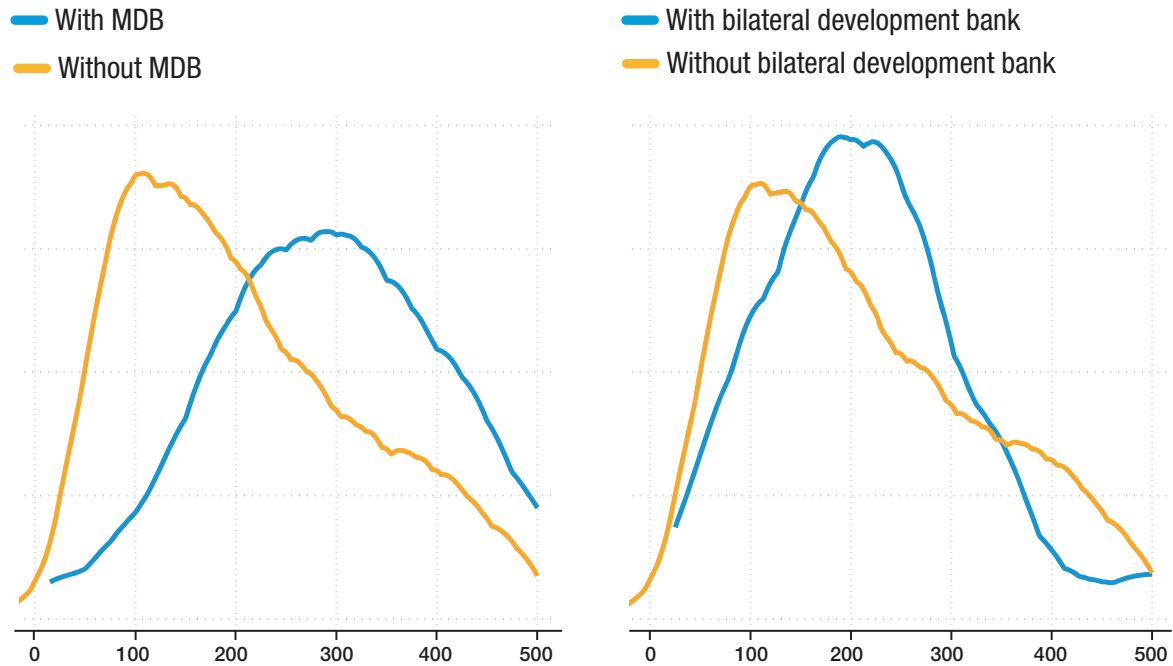


Figure 22.

Multilateral development banks have a key role in financing riskier loans

Distribution of loans to international public-private partnerships into developing economies with and without MDB and bilateral development bank participation, by project spread, 2000-2024

(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Data refers to the syndicated loans matched to PPP projects. Sovereign credit rating in the host economy at the time the project was announced. Excludes loans to public-private partnership with government equity participation.

MDBs mobilize private finance through two main channels. First, direct mobilization occurs when MDBs co-finance transactions alongside private lenders, reducing risk and encouraging participation. Second, indirect mobilization happens when prior MDB engagement in a country or sector signals credibility and future investment potential, prompting private financiers to invest independently in subsequent deals (Broccolini et al., 2021; Avellan et al., 2024). The analysis shows that MDB participation in syndicated loans has lasting effects on market confidence and lending conditions. In developing economies, MDB involvement improves terms for fully private loans: two years after MDB participation, spreads

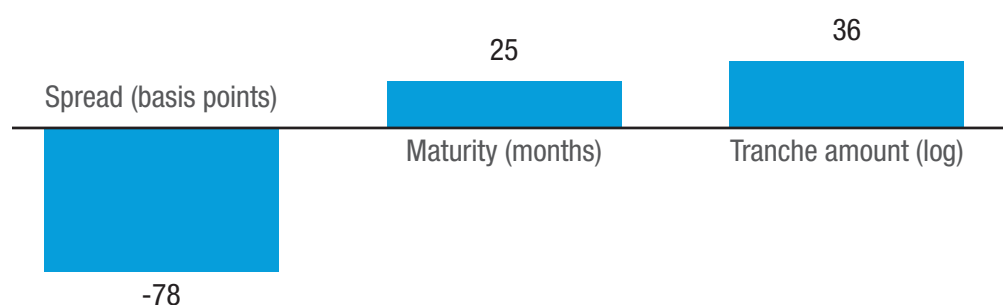
on subsequent private loans are over 100 basis points lower. When considering the cumulative effect over the current (in other deals) and following two years, spreads average 78 basis points lower, maturities are roughly 25 months longer, and tranche sizes are around 36 percent larger. These patterns suggest that MDB involvement tends to coincide with more favorable financing conditions for later fully private syndicated loans (figure 23). While this report finds that international PPPs often involve longer maturities, particularly when supported by multilateral institutions, the OECD – using a different dataset and scope – notes that blended finance structures are generally limited to maturities of up to 15 years.





Figure 23.
MDB participation in public-private partnership loans mobilizes private financing for future projects

Estimated effect of MDB operations on the terms of private syndicated loans in developing countries, 2001-2024
(Basis points, months, percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

Notes: This figure shows the combined (aggregate) effects of Multilateral Development Bank (MDB) participation on three key loan characteristics: spreads (in basis points), maturity (in months), and tranche amount (log scale). The coefficients represent the sum of the contemporaneous and two lagged MDB effects estimated using high-dimensional fixed effects (HDFFE) regressions. Each regression controls for country-year and industry fixed effects.

ECAs also play a relevant role in facilitating finance by providing guarantees and direct loans as shown in figures 13 and 14 above. However, since their involvement is generally aligned with the interests of the sponsor, the characteristics of the loans they support differ somewhat. Loans to PPP projects with ECA participation – whether through guarantees or direct lending – were

extended to countries with similar Moody's sovereign risk ratings as those without ECA involvement. In fact, for PPP projects in developing countries with international sponsors, the average rating was even one notch higher. This helps explain why the spreads on loans involving ECAs are comparable to, or slightly lower than, those without their participation (table 4).



Table 4.
Export credit agencies involvement is generally aligned with the interests of the sponsor

Characteristics of loans to international public private partnerships in developing countries, by ECAs participation, 2000 – 2024
(Basis points, millions of dollars, years)

	Without ECAs	With ECAs
Spread (Basis Points)	257	242
Loan (USD million)	218	243
Maturity (Years)	12	15
Average project country risk	Baa3	Baa2

Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Data refers to the syndicated loans matched to PPP projects. LDCs are included in developing countries due to the low number of observations.



Government equity participation helps align the interests of private sponsors with those of the public sector, contributing to a lower perceived risk. Government backing – whether through equity contributions, other concessions, or the participation of a national development bank in the syndicate – plays a crucial role in lowering the cost of capital. It reassures foreign investors about the stability of the economic and legal environment and often facilitates access to local-currency debt. PPP loans for projects in developing countries that included government equity participation consistently resulted in lower spreads, longer maturities, and larger loan sizes. Notably, there was no significant difference in the sovereign risk profiles of countries with or without such participation – partly because the economies where governments or public authorities can provide additional backing tend to have similar risk characteristics (table 5).

The reductions in borrowing costs stem not only from lower risk perceptions but also from mobilizing domestic resources. When governments take equity stakes, loan arrangers are more likely to be national – almost half of the cases compared with about 40 per cent without government involvement.⁵ This shift reduces spreads by an average of 14 per cent while the average tranche size is also reduced by 9 per cent.

The advantages that local banks have to support PPPs include: i) knowledge about local financial markets, financial instruments and credit-enhancing instruments; ii) established relationships with commercial banks and other financial institutions; and iii) privileged position to access local financial markets. They can also support the financing of projects with significant positive externalities but low returns, making them potentially less attractive to other financiers (IDB 2021, Ahiabor and James 2019).

Domestic arrangers also facilitate lending in local currencies, abating exchange rate and related repayment risks. Almost two thirds of international PPP loans arranged by national banks are denominated in local currency. Although spreads are not significantly lower than those on foreign-currency loans the tranche size of domestic denominated loans is almost half of them reflecting the limited capacity of domestic financial markets to finance larger projects. However, the benefits of local currency loans are considerable: reduced exchange-rate risk, enhanced financial stability, stronger investor confidence, and, importantly, support for the development of local capital markets (World Bank, 2024b).

⁵ These statistics refer only to projects without international DFI involvement. A loan arranger is a bank or financial institution that organizes and structures a large loan by acting as an intermediary between a borrower and a group of lenders, known as a syndicate. Key responsibilities include assessing the borrower's creditworthiness, negotiating the loan terms, coordinating with other banks to form the lending syndicate, and managing the legal documentation for the transaction.





Table 5.
Government equity stake in international public-private partnership projects lowers the costs of borrowing

Loan characteristics of international public-private partnership in developing economies, by government equity participation, 2000 – 2024
(Basis points, millions of dollars, years)

	Without government equity	With government equity
Spread (Basis Points)	268	243
Loan (USD million)	168	314
Maturity (Years)	12	13
Average project country risk	Baa3	Baa3

Source: UNCTAD, based on information from LSEG Data & Analytics.

Note: Data refers to the syndicated loans matched to PPP projects. LDCs are included in developing countries due to low number of observations.

On average, in developing countries, just over a third (35 per cent) of loans financing international PPP projects are denominated in local currency. The majority of these are emitted in a handful of advanced developing economies with Brazil (32 per cent), India (23 per cent), and South Africa (12 per cent) accounting for three quarters of these loans (figure 24). These economies can rely on deeper financial markets and national banks capable of arranging loans in domestic currencies to finance international PPPs. In contrast, virtually no loans are denominated in domestic currencies in LDCs, reflecting the high involvement of DFIs and their shallow financial markets.⁶ In these markets even for domestic projects (with domestic equity investors), the percentage of loans arranged by a national bank is still at 5 per cent and only less than 3 per cent of the loans are denominated in local currency.

For example, GuarantCo, the guarantees arm of the Private Infrastructure Development Group (PIDG), has contributed to strengthening local capital markets and expanding access to long-term finance in Africa and Asia. By deploying local currency guarantee instruments, it facilitates the issuance of domestic currency loans and bonds for infrastructure investment. These interventions help to mitigate exchange rate risk, extend debt maturities, and address structural constraints that limit the availability of long-term local financing in emerging markets (Njoroge, 2020).

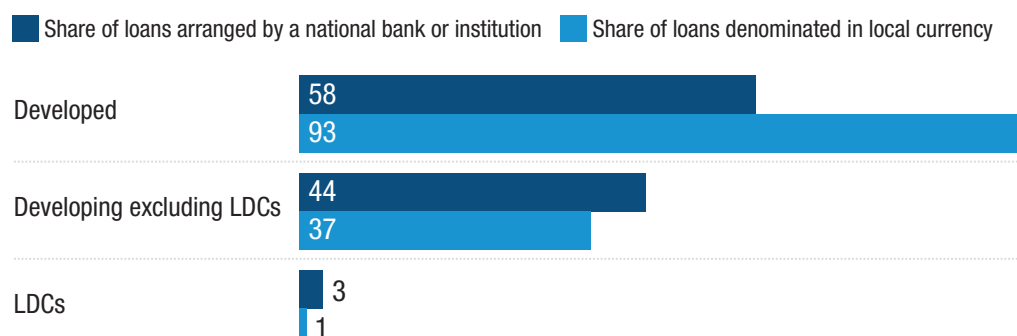
⁶ The corresponding statistics for domestic PPPs show higher rates in leading developing countries reaching almost 2 thirds of loans (65 per cent for having a national bank arranging the loan, and 58 per cent using local currencies).





Figure 24.
In developing economies most of the loans are denominated in foreign currencies

Share of syndicated loans arranged by national banks or institutions denominated in local currency, 2000-2024
(Percentage)



Source: UNCTAD.

Note: Data refers to the syndicated loans matched to PPP projects. Only international PPP projects.

This section has examined the complementary roles of DFIs, ECAs and government equity participation in infrastructure projects. DFIs, in particular MDBs, provide direct loans in most vulnerable economies and mobilize private capital both directly, by crowding in private investors within the same syndication, and indirectly, by facilitating investment in higher-risk environments. ECAs complement these efforts by offering targeted de-risking instruments such as guarantees and direct loans tied to cross-border projects. Together, these mechanisms help reduce both the perceived and actual risks that deter private sector participation, particularly in less creditworthy or high-risk economies. Government involvement also plays a critical role in de-risking by sharing projects ownership. In addition, through regulatory reforms, policy guarantees, and other concessions, governments can enhance the investment climate and improve the bankability of projects. In fragile or vulnerable economies, such interventions may be the decisive factor in determining whether projects attract private finance at all.

The combined deployment of these international actors like DFIs, ECAs, and national governments creates a more comprehensive risk-mitigation framework. When coordinated effectively, this ecosystem

of instruments can bridge financing gaps, mobilize larger volumes of private investment, and ensure that capital flows to sectors and regions most in need of development impact.

2. Operational and financing setbacks

Building on the earlier discussion of the potential benefits of PPPs in infrastructure development, this section considers the practical challenges that can arise in their implementation. While PPPs offer opportunities to mobilize private capital, enhance efficiency, and improve service delivery, their success is not guaranteed. Infrastructure development is inherently complex and high-risk. Projects may face disruptions such as delays, cost overruns, or renegotiations, often linked to underlying structural, financial, or institutional factors. For instance, cost overruns are a global phenomenon, with an average increase in the project cost of 28 per cent worldwide and significant variation across regions. In Latin America and the Caribbean, for example, cost overruns may exceed 48 per cent (Serebrinsky et al 2018).

The main reasons behind such setbacks are summarized in table 6.





Table 6.
Project setbacks: categories and description

Category	Sub-category	Description
Government interventions – legal issues	Government permit issues	Delays in securing clearances, permits or approvals from authorities at the start and during the operation of the project. For instance, delays in environmental impact assessments or securing licenses/clearance from government authorities
	Regulatory rejections	Include outright cancellation of permits, rejection of concessions, by designated authorities may lead to annulment of projects. Rarely do such projects revive after longer time spans though it depends on the political climate and public sentiments.
	Legal disputes	Delays caused by disputes arising from alleged contravention of local laws, public order or contractual matters that often lead to protracted litigation, possible unfavorable outcomes, stay on projects while the matter is sub-judice, or any other legal ramifications. They may be levelled against sponsors or PPP partners by a range of actors, including co-partners, host governments, civil society organizations, and advocacy groups
Financial issues		Setbacks are often linked to financial difficulties, delays in finalizing lenders, sponsors pulling out of the consortium midway, market conditions/shocks or cost escalations. This raises concerns about the overall viability of the project and may result in delays related to re-planning or achieving financial close.
Force majeure – external shocks		Setbacks arising from external shocks such as pandemics, natural calamities, disrupting supply chain and logistics of material and labor. They typically do not lead to disputes since such eventualities are protected by Force Majeure clause built in PPP contracts.
Planning issues		This category covers issues that usually involve re-planning, re-designing, or re-negotiating elements of the project elements. They may be triggered by sponsors, financiers or government, and often stem from financial issues, disputes, public opposition, lack of mandate, flawed risk assessment, legislative reviews, or policy reforms.
Political instability – social – security issues		Delays caused by social unrest, political instability or withdrawal of support/will for the project, public opposition, terrorist activities, armed conflict, or other disruptions that compromise the project's security or social acceptance.

Source: UNCTAD.

In this report, setbacks are defined as substantial disruptions that prevent infrastructure projects from proceeding according to their original plan. These can occur at various stages of the project cycle, from early-stage feasibility studies to financial closure or operational delivery. Setbacks are especially critical in capital-intensive infrastructure projects, where even minor disruptions can generate cascading impacts on costs, schedules, and stakeholder trust.

Compared to traditional project finance models, PPPs tend to exhibit a lower incidence of major setbacks. Only 1.4 per cent of PPP related projects have experienced major setbacks in contrast to

4.9 per cent of non-PPP projects (figure 25), suggesting that the risk-sharing frameworks, detailed due diligence, and performance linked contracts typically used in PPPs may offer a degree of resilience. However, international PPPs have a marginally higher incidence of setbacks compared to domestic PPPs, mostly due to greater institutional and regulatory complexity. Among international PPPs that face setbacks, 34 per cent are caused by government interventions, whereas in domestic PPPs, planning-related issues are the most common, accounting for 38 per cent of setbacks (figure 26). The analysis in the following sections focuses on setbacks in international PPPs only.

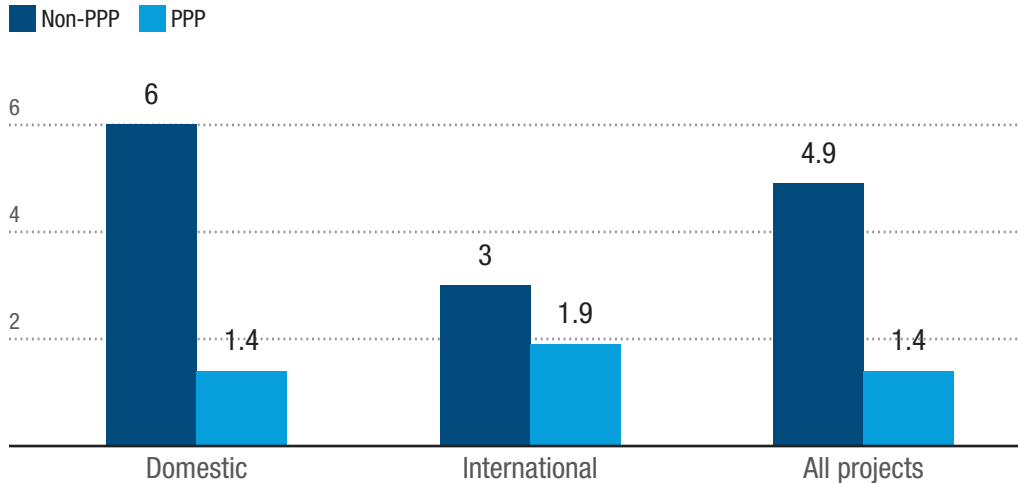




Figure 25.

International public-private partnerships are less likely to face setbacks

Projects that face setbacks as a share of the total, 2000-2023
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

The frequent setbacks experienced by international PPPs due to permitting delays and regulatory bottlenecks underscore the critical role of Investment Promotion Agencies (IPAs) in facilitating investment in sustainable infrastructure. By serving as intermediaries between governments and investors, IPAs can help bridge information gaps that often deter private participation in SDG-related projects. They can provide reliable, up-to-date information on the investment climate, sector-specific regulations, administrative procedures, and available incentives, thereby enhancing transparency and predictability. Moreover, IPAs can play a pivotal coordinating role across government entities to streamline approval processes, reduce bureaucratic inefficiencies, and strengthen project preparation and planning.

By working closely with dedicated PPP units, they can contribute to the strategic prioritization of projects that

align with national development goals and sustainability objectives. This coordination helps ensure that projects are technically sound, financially viable, and aligned with investor expectations. In doing so, IPAs not only enhance the efficiency and transparency of the investment process but also build investor confidence – ultimately making infrastructure projects more bankable and attractive to both domestic and foreign investors (UNCTAD, 2023b). Finally, the careful targeting and promotion of sustainable infrastructure projects to credible and experienced investors can help reduce cost overruns and implementation delays. By engaging investors with proven technical, financial, and managerial capacity – alongside institutional investors and financing partners – governments and IPAs can strengthen project execution and financing, enhance risk management, and ultimately improve overall project performance and sustainability outcomes (UNCTAD 2018b).





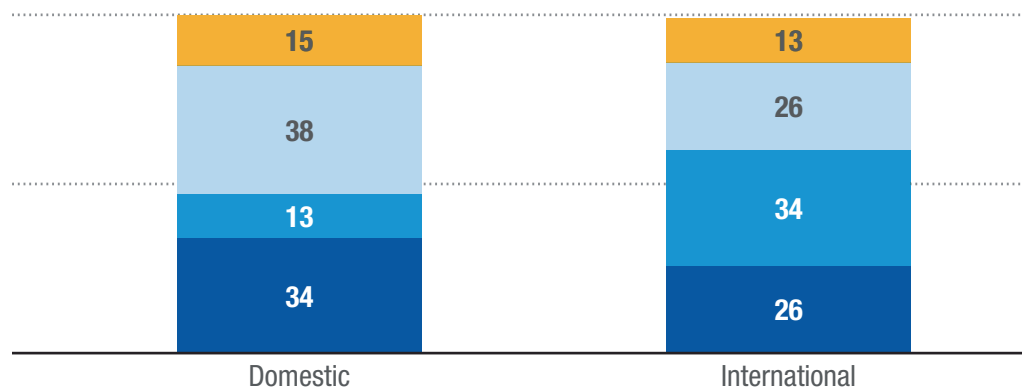
Figure 26.

Government intervention is the most common factor behind setbacks for international projects

Factors contributing to setbacks in public-private partnership projects, 2000-2023
(Percentage)

Source: UNCTAD, based on information from LSEG Data & Analytics.

■ Financial issues ■ Government intervention ■ Planning issues ■ Political and security issues



In international PPPs, setbacks typically take the form of project delays (44 per cent of cases) or outright cancellations (56 per cent). Delays can take various forms such as construction halts, permit refusals and prolonged inactivity within the project. These disruptions are rarely isolated. Instead, they usually stem from a combination of interlinked issues such as financing failures, weak project planning, inadequate stakeholder engagement, or sudden changes in the political or regulatory environment. A deeper challenge lies in the incomplete nature of many PPP contracts, particularly in infrastructure, health, and education sectors. These contracts often lack clear accountability mechanisms when projects fail to meet objectives, resulting in disproportionate risk transfer to governments while private actors retain returns. Lessons from past failures highlight the need for more robust and enforceable contractual frameworks.

Setbacks are most common under total public ownership PPP models, where 3 per cent of projects experience setbacks, compared to 2.6 per cent under shared ownership and 1.8 per cent under total

private ownership. The higher incidence of setbacks in total public ownership models is primarily driven by government interventions, which remain the leading cause of disruption, followed by planning deficiencies and financial challenges. These models may be more exposed to political influence, regulatory delays, or shifts in public priorities, all of which can destabilize project implementation and erode investor confidence.

Setbacks in international PPP projects are not uniformly distributed and are most prevalent in soft infrastructure and industry projects, with 3.7 per cent and 3.5 per cent of projects in these sectors experiencing significant disruptions. These often involve complex institutional arrangements and long-term service delivery commitments, which may make them more vulnerable to implementation challenges and policy fluctuations. By contrast, renewable energy projects have the lowest incidence of setbacks at just 1.2 per cent, possibly reflecting clearer revenue models and stronger private sector participation.



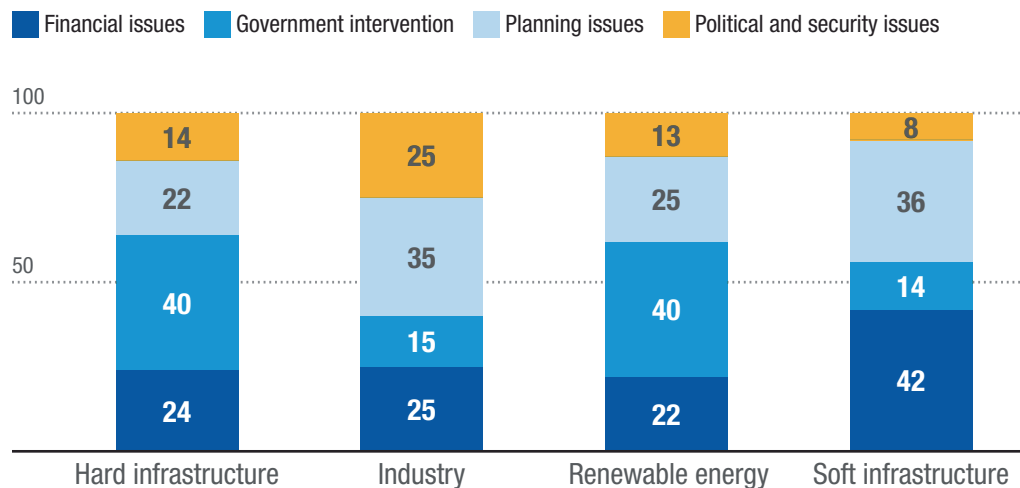
The reasons for setbacks also vary considerably across sectors (figure 27). In hard infrastructure and renewable energy, government intervention is the leading cause of disruption, accounting for 40 per cent of setbacks respectively. In industry and soft infrastructure, however, planning issues and financial constraints play a more prominent role. Planning failures account for 35 per cent and 36 per cent

of setbacks in both sectors, while financial issues contribute to 25 per cent and 42 per cent of setbacks in industry and soft infrastructure respectively. These findings highlight that while political risk is a key barrier in capital-intensive sectors like energy and transport, operational and structural readiness remains a major concern in social and industrial infrastructure.



Figure 27.
Government intervention is the primary cause of setbacks in renewable energy and hard infrastructure projects

Factors contributing to setbacks in international PPP projects, by sector, 2000-2023
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

The incidence of setbacks in international PPP projects varies notably by region. Setbacks are most common in Developing Asia and Oceania (2.7 per cent) and Africa (2.1 per cent), while Latin America and the Caribbean (1.3 per cent) and developed economies (1.7 per cent) report lower disruption rates (figure 27). The nature of setbacks also differs significantly across regions. In Africa and Developing Asia, financial issues are the leading cause of setbacks, accounting for 43 per cent and 33 per cent of disruptions, respectively (figure 28). These challenges typically stem from limited access to long-term

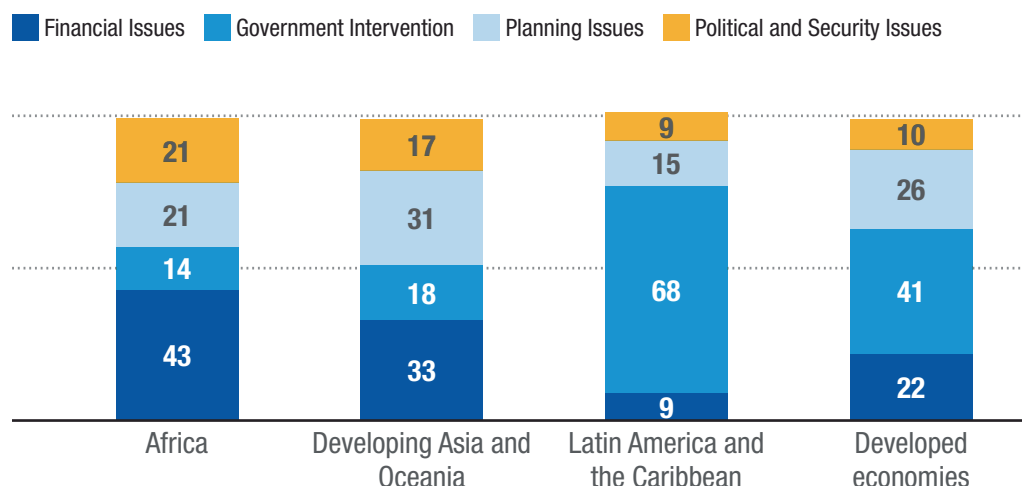
finance, investor risk aversion, and currency instability. In contrast, the results from Latin America and the Caribbean region show a strikingly different profile. Here, government interventions account for 68 per cent of PPP setbacks, far surpassing any other category. In developed economies, the distribution of causes is more balanced. While government intervention remains a major factor (41 per cent), financial issues (22 per cent) and planning issues (26 per cent) also play a significant role. This reflects the complexity of navigating multi-level governance, legal procedures, and public accountability in high-income contexts.





Figure 28.
Setbacks in Africa and Asia are mainly due to financial issues

Distribution of setback causes in international PPP projects, by region, 2000–2023
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.

These trends highlight the persistent weaknesses in capital- and time-intensive infrastructure projects particularly related to financing and planning. Poor project and unclear risk allocation often result in delays, renegotiations, or fundamental shifts in project scope (Engel et al., 2020). These challenges become more apparent in PPP structures given the strategic nature of partnership between private sponsors, financiers and government.

In the case of PPPs, setbacks usually stem from mismatched expectations around risk-sharing. Without clear agreement, especially on the division between endogenous risks (linked to performance) and exogenous risks (like demand shocks), projects are more likely to face disruptions (Engel et al., 2022). Financing issues such as investor withdrawal or difficulty in refinancing often reflect these deeper structural misalignments. For PPPs to succeed, contracts must do more than assign roles. They need to attract private capital, build flexibility, ensure proper risk allocation, and allow for active monitoring. PPPs have the potential to outperform conventional public financing only when they improve efficiency and align incentives (Engel et al., 2022).

Smaller-scale PPPs tend to experience fewer setbacks compared to larger ones, especially in domestic contexts (figure 29). In developing countries, projects that cost less than 20 million dollars, only 0.9 per cent of domestic projects face setbacks compared with 2 per cent of international projects. These projects are usually community-led and mostly locally financed and are extremely important in delivering real benefits in countries where infrastructure gaps are the widest (Box 4). It is important to note that international projects under \$20 million are relatively rare, so even though they perform well, they make up only a small share of total investment. As projects get larger, the difference between domestic and international setbacks becomes smaller. For projects between \$500 million and \$1 billion, domestic projects have a slightly higher setback rate than international ones, 3.7 per cent and 3 per cent, respectively. For projects over \$1 billion, both types face a high level of risk, with 5.2 per cent of domestic projects and 5.8 per cent of international ones experiencing setbacks. In developing countries, where capacity constraints and financing risks are already significant, very large projects



can be difficult to implement. Smaller, locally driven PPPs therefore represent a more reliable way to close infrastructure

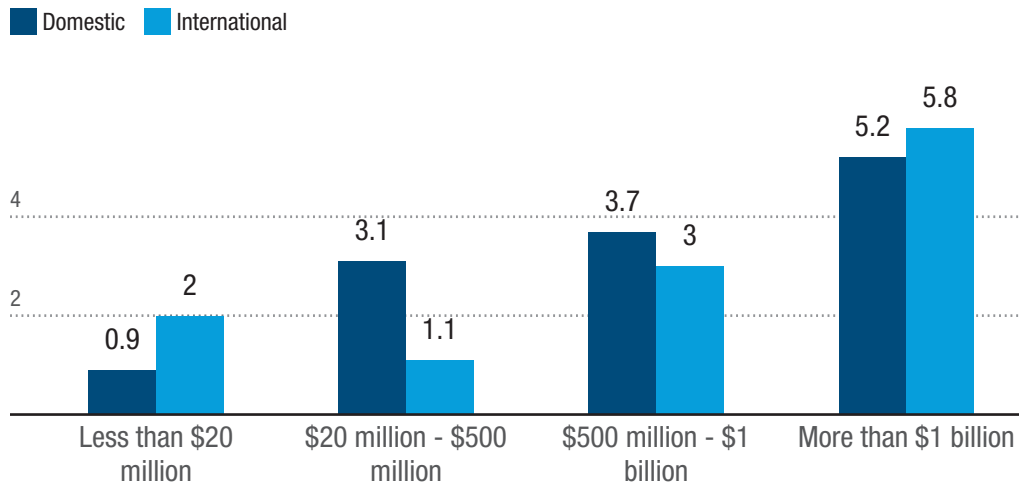
gaps in sectors like water, health, rural electrification and urban mobility where community involvement matters most.



Figure 29.

Small, domestic public-private partnerships experience the fewest setbacks

Incidence of setbacks in PPP projects in developing countries, by project size, 2000-2023
(Percentage)



Source: UNCTAD, based on information from LSEG Data & Analytics.



Box 4.

Small scale public-private partnerships: Enhancing local impact and inclusion

Small-Scale Public-Private Partnerships (SSPPPs) are emerging as a strategic tool for inclusive infrastructure development. These arrangements are typically community-led, locally financed, and implemented by domestic contractors and stakeholders, often in collaboration with subnational governments or municipal authorities. Their main focus is on delivering essential services to communities. While definitions vary by jurisdiction, small-scale PPPs generally involve projects with a capital value below 50 million dollars, with lower thresholds (20 million) often applied in low- and middle-income countries to reflect local fiscal capacities and infrastructure needs (World Bank, 2014; Bisbey et al, 2025).

SSPPPs are particularly relevant in LDCs and lower-middle-income countries (LMICs), where infrastructure is often lacking and local engagement is essential. Unlike large-scale PPPs that rely heavily on international sponsors and foreign capital, SSPPPs prioritize local currency financing, grassroots participation, and inclusive development outcomes. Evidence suggests that SSPPPs can yield higher GDP per capita and employment gains, particularly in underserved regions (UNCTAD, 2011 and 2023a; World Bank / UNECE, 2023).

These partnerships play a critical role in supporting the achievement of the SDGs, since they are well-suited for sectors such as water and sanitation, primary healthcare, education, rural electrification, and urban mobility, where community ownership and



responsiveness are critical. SSPPPs also offer opportunities to pilot innovative service delivery models, strengthen institutional capacity at the local level, and build trust between public authorities and citizens.

However, SSPPPs face distinct challenges. These include limited access to long-term finance, underdeveloped local capital markets, and the absence of tailored risk-sharing mechanisms. To unlock their full potential, policy frameworks must evolve to support local contractors, domestic lenders, and community-based sponsors. This includes enabling local currency solutions, simplifying procurement procedures, and offering technical assistance to subnational authorities.

Recognizing the strategic importance of SSPPPs, the World Association of PPP Units & Professionals (WAPPP) has developed dedicated guidelines to support their design and implementation. These guidelines offer a practical framework tailored to small-scale, community-led partnerships, particularly in developing countries and emerging economies (Bisbey et al, 2025). They emphasize simplified project cycles, inclusive governance, and scalable financing aligned with local realities.

The key elements of small-scale PPP guidelines are:

- Simplified processes: streamlined project identification, screening, and procurement suited to local capacities
- Inclusive governance: community engagement and SME participation with a bottom-up planning to enhance ownership and trust
- Local financing: emphasis on local currency solutions.
- Risk management: scalable risk-sharing tools including guarantees and blended finance.
- Capacity building: support for subnational authorities through technical assistance and standardized templates.
- SDG alignment: focus on soft infrastructure sectors like water, health, education, and local mobility with measurable development impact.

These guidelines fill a critical gap in conventional PPP frameworks by adapting international best practices to the unique constraints and opportunities of small-scale projects.

Source: UNCTAD based on WAPPP.

While project completion is often used as a benchmark for evaluating the success of international PPPs, this measure alone does not capture the full development impact of such projects. A more comprehensive assessment should consider broader economic and social outcomes. For instance, the macroeconomic implications

of international PPPs – such as their effects on foreign exchange reserves, balance of payments, and long-term fiscal sustainability – are particularly relevant in economies with constrained external financing.⁷ Equally important is the extent to which projects contribute to local value creation, including the use of domestic inputs, the development

⁷ See UNCTAD (2023a) for a comprehensive analysis of investment in the energy transition, mostly through international project finance.



of local capabilities, and the generation of employment and other multiplier effects. Cost efficiency is another critical dimension; for example, comparing the cost per unit of output (e.g. per kWh in energy projects) across financing modalities – such as international PPPs, domestic public investment, FDI, or DFI-backed projects – can help determine whether PPPs offer value for money. This is especially relevant in sectors like solar energy, where PPPs may involve higher costs due to risk premiums or complex contractual arrangements. Incorporating these dimensions into project appraisal and monitoring frameworks would help ensure that PPPs are aligned with national development priorities and deliver sustainable, inclusive outcomes.

These considerations are especially relevant in contexts where weak domestic resource mobilization and high reliance on external borrowing, particularly from private creditors, have increased fiscal vulnerability. In such settings, the sustainability of PPPs must be assessed not only in terms of delivery but also in terms of long-term affordability and alignment with national financing strategies. A narrow focus on external capital, without strengthening domestic financial ecosystems, may exacerbate debt risks and undermine the developmental effectiveness of infrastructure investment (UNCTAD, 2025d). Those issues, albeit important, remain beyond the focus of this study and demand further research and attention.

Host governments have a crucial role in this process by providing institutional capacity, a stable policy environment, and clear coordination to maintain investor confidence (Fay et al., 2021). Increasing incidence of government interventions in causing project delays is again an outcome of lack of many of these elements.

Intriguingly, the nature of project setbacks varies across income levels, planning issues dominate in high-income contexts, while security and political instability increasingly cause delays in low-income countries.

3. Legal and international dispute settlement risks

While PPPs present significant opportunities, they also carry legal and financial risks. Setbacks – beyond delays and cancellations – can escalate into disputes involving the use of dispute settlement options in PPP contracts, referral to domestic courts or arbitration. While disputes can arise between the parties to PPP contracts, they can also occur at the shareholder level and potentially extend to indirect shareholders within the ownership chain. PPPs can expose host States to claims brought based on investor–State dispute settlement (ISDS) provisions under international investment agreements (IIAs).⁸ IIAs are treaties concluded between States, covering investors and investments from one State party in the other State party. ISDS cases under such treaties take the form of international arbitration proceedings initiated by foreign-incorporated investors against host States. The number of treaty-based ISDS cases involving PPPs has risen,⁹ especially in infrastructure sectors like energy, transport, and construction. In the electricity sector, 90 per cent of ISDS cases involve PPPs, with similarly high shares in water, sanitation, and transport. The disputes underlying these investor–State arbitration cases often emerge during the operational phase and are frequently triggered by policy reforms, particularly those related to the energy transition (UNCTAD, 2018).

Project success is measured not just by completion, but by its lasting economic, social, and fiscal impact

⁸ IIAs include bilateral investment treaties (BITs) and other treaties with investment provisions signed between State parties. BITs include investment promotion and protection agreements. Other treaties with investment provisions encompass a variety of international agreements with investment protection, promotion, facilitation and/or cooperation provisions.

⁹ Investor–State arbitration cases can also arise under i) contracts, subject to the dispute resolution options and conditions included in the specific contract, ii) national investment laws where included. The analysis in this report covers only ISDS cases using IIAs (investment treaties) as the legal basis. It does not cover cases which are exclusively based on contracts or domestic investment laws.



The complexity of PPP structures and the growing financialization of infrastructure investment elevate the risk of investor–State disputes

Many of these cases are based on old-generation IIAs, often dating back to the 1980s and 1990s, that contain broad substantive protections for covered investors and investments, and lack safeguards and exceptions included in more recent IIAs. Substantive treatment provisions such as fair and equitable treatment and indirect expropriation are formulated in an open-ended way, which may place high expectations of regulatory stability on host States and limit governments' ability to adapt policies in the public interest (UNCTAD, 2018a and 2024c). Most old-generation IIAs provide access to international arbitration for investor claims against States. Foreign investors covered by IIAs can make use of the ISDS mechanism, even when the underlying PPP contract or domestic investment law (where applicable), do not include access to international arbitration at the investor's choice.

The complexity of PPP structures and the financialization of infrastructure investment further increase the risk of disputes (UNCTAD, 2018a; Guven and Johnson, 2018). Treaty-based investor–State disputes in the context of PPPs often stem from a range of contractual and regulatory issues. The breaches alleged by investors, as claimants in ISDS proceedings, include the unjustified termination or suspension of concession agreements, breaches of contractual obligations, and disagreements over the interpretation of contract terms. Typically, investors claim that actions or inactions attributable to the State could cause significant financial losses and/or have an effect equivalent to expropriation.

Policy measures such as legislative changes can also give rise to ISDS cases when adversely affecting the profitability or viability of investment projects, particularly in capital-intensive sectors like energy and infrastructure. The renewable energy sector, for instance, has seen a surge in investor claims following the reduction or modification of incentive schemes in several countries (e.g. feed-in tariffs in Spain).

The factors that trigger ISDS disputes under IIAs offer important insights into challenges that may hinder broader adoption of the PPP model. Analyzing these underlying factors can inform the design of more coherent and effective policies to enhance the implementation of PPPs (UNCITRAL, 2019). ISDS cases linked to PPPs have increased since 2010, with a notable surge in the renewable energy sector since 2015 (figure 30). Roughly 15 per cent of claimants in ISDS cases are from developing countries, while the remainder are primarily from developed countries, which account for most of the initiated cases. Between 2015 and 2019, renewable energy projects became the main source of PPP-related ISDS cases. This is reflective of the global expansion of renewables, often underpinned by PPP models. While ISDS cases can arise out of State conduct specifically related to an individual PPP project (e.g. contract termination), renewable-energy ISDS cases show how broader legislative measures can affect groups of investors and give rise to numerous international arbitration proceedings, with significant budgetary implications for the defendant States.



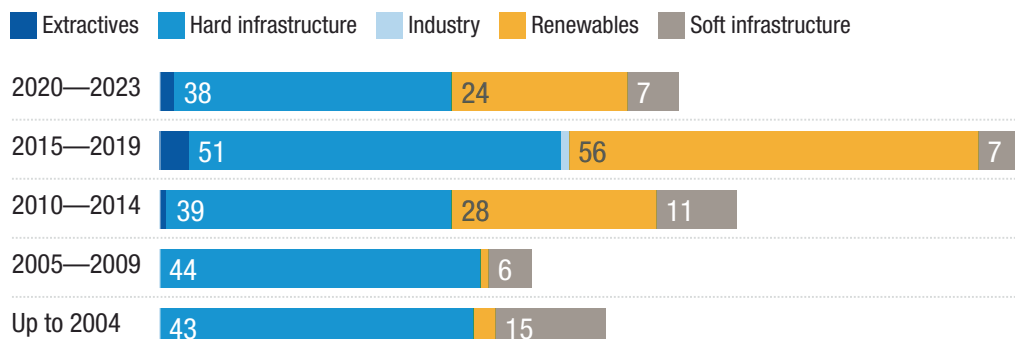


Figure 30.

ISDS cases in the renewable energy sector accelerated post-2015

International PPP-related ISDS cases based on IIAs, 2000–2023

(Number of cases)



Source: UNCTAD, ISDS Navigator database, accessed on 15 May 2024.

Overall, member States of the European Union have faced the highest number of ISDS cases as defendants, particularly between 2010 and 2019, where three-quarters of renewable energy cases were against Spain (46 cases). Other main respondents include Italy (9 cases) followed by the Czech Republic (7 cases). This period coincides with the rapid expansion of renewable energy PPPs in Europe, supported by public subsidy schemes. Many of these schemes were later revised or withdrawn during fiscal adjustments and regulatory reforms, prompting a wave of ISDS cases against Spain, Italy and several other countries (UNCTAD, 2022). These ISDS cases highlight the importance for both governments and investors of strengthening ex-ante project design, stakeholder alignment, and risk-sharing mechanisms, particularly in infrastructure sectors such as renewable energy (CCSI, 2022). At the international policy level, reforming investment treaties and ISDS mechanisms can help manage potential exposure of States to treaty claims on grounds of PPPs and preserve governments' regulatory flexibility in pursuit of sustainable development.

Foreign investment risk mitigation through Bilateral Investment Treaties (BITs) and supranational guarantees has long been debated. BITs offer foreign investors access to international arbitration, while supranational organizations like the World Bank's MIGA and regional development banks provide political risk insurance and loan guarantees (UNCTAD, 2025b). Empirical evidence shows that BITs covering foreign lenders in syndicated loans can be associated with a lower cost of debt, larger loan sizes, broader syndicate participation, reduced collateral requirements, and fewer covenants (Fotak et al. 2019). While investment treaties can help reduce the cost of capital, their use must be balanced against the risk of triggering investor–State dispute settlement mechanisms.



Concluding remarks

This report provides a comprehensive analysis of international PPPs as a mechanism to mobilize private investment for sustainable infrastructure across developing countries. It examines the legal, financial, and institutional factors shaping PPP outcomes and offers policy recommendations to enhance their developmental impact.

The findings reveal a persistent gap between the potential of public-private partnerships and their actual contribution to sustainable infrastructure and closing the SDG financing gap. While activity has expanded in sectors such as renewable energy and telecommunications, overall investment remains insufficient and heavily concentrated. A small number of countries and sectors dominate, while many developing economies – particularly LDCs and SIDS – struggle to attract international PPP investment. Social infrastructure sectors vital to achieving the SDGs, including health and education, are notably underrepresented. Moreover, investment in transportation – central to inclusive and sustainable development – has stagnated over the past decade and declined in recent years.

Although the report provides insights into international PPP financial structures and institutional dynamics, questions persist about their effectiveness in advancing the SDGs – especially in low-income countries. Evidence is mixed, and concerns remain about alignment with local development priorities versus donor-driven agendas.

International PPPs should not be equated one-to-one with direct foreign investment. Their structure often involves limited private equity participation, especially in lower-income countries. In many developing economies, including LDCs and SIDS, PPPs are primarily structured around concessions and contractor-led models. Without support from MDBs institutional

investment remains rare. Policy frameworks should reflect this reality and prioritize enabling environments that support risk-sharing, blended finance, and transparent fiscal management, rather than assuming large-scale private capital mobilization.

Even where interest and institutional structures exist, establishing effective partnerships remains challenging. This is particularly true in vulnerable economies such as SIDS, where limited capacity, small market size, and elevated fiscal risks constrain the feasibility of PPPs. These issues warrant further study and tailored support to ensure that PPP models are appropriately adapted and do not exacerbate financial vulnerabilities.

Structural constraints limit the effectiveness of international PPPs. Financing conditions remain a major obstacle: high perceived risks, elevated borrowing costs, and short loan maturities deter private investors, especially in high-risk environments. Blended finance and DFI involvement are critical to mobilizing private capital, yet their reach remains limited relative to the scale of investment needs. Institutional readiness is equally important – countries with strong PPP legal frameworks and dedicated agencies attract more international projects, but legal adoption alone is insufficient.

PPP contract design is also pivotal. Balanced risk-sharing mechanisms – such as long-term offtake agreements, minimum revenue guarantees, viability gap funding, and other mitigation tools – enhance bankability, particularly in energy and transport. Extending these mechanisms to other sectors could improve project viability and attract diverse investment. In their absence, projects face greater risks of delays, renegotiations, and cancellations. Setbacks are common in soft infrastructure and industry, where planning and financial challenges are more acute. Government interventions often



contribute to these disruptions, highlighting the need for policy stability, institutional coordination, and sound governance.

The growing incidence of investor–State dispute settlement (ISDS) cases linked to PPPs, especially in renewable energy, signals the need for careful treaty drafting. Without reforming old-generation IIAs, the risk of costly disputes may constrain the regulatory flexibility required to pursue development and legitimate public policy objectives.

Closing the gap between the potential and actual contribution of international PPPs to sustainable development requires a comprehensive policy response at both national and international levels. The analytical findings of this report reinforce existing recommendations from UNCTAD and other organizations on promoting investment in sustainable infrastructure and underscore their relevance in today's context. By identifying structural, financial and institutional barriers, the report calls for coordinated actions to unlock the full potential of PPPs for sustainable development.

To address these challenges, the report outlines several key policy priorities.

First, *it is essential to broaden the sectoral and geographical scope of international PPPs*. While international PPP activity in developing economies has been concentrated in renewable energy, this trend underscores the urgency of diversifying investment toward other critical sectors. Scaling up projects in transport, digital infrastructure, water and sanitation, while preserving accessibility and safeguarding local communities and environments, is essential to achieve balanced and inclusive development outcomes. To broaden the investor base, countries should strengthen the role of Investment Promotion Agencies (IPAs) in preparing and promoting sustainable infrastructure projects. At the same time, targeted support for LDCs and SIDS remains a priority, particularly through concessional finance, guarantee schemes and regional project preparation facilities.

Second, *enhancing project bankability requires effective risk mitigation and innovative financing solutions*. Expanding blended finance mechanisms and strategically deploying concessional resources from DFIs can help de-risk investments and attract private capital. Achieving the right balance between public and private participation depends on tailoring interventions to the specific risk–return profiles of countries and projects. Excessive public involvement may deter private investors, while insufficient support risks leaving viable opportunities untapped. Different public actors play complementary roles: multilateral MDBs are well-positioned to catalyse investment in vulnerable economies; ECAs provide essential international guarantees; and host governments can enhance creditworthiness, signal commitment, and facilitate access to local-currency financing. Innovative contractual instruments – such as purchase agreements and PVR contracts – should be promoted to ensure revenue certainty and mitigate demand risk.

Third, *continue improving domestic frameworks and institutional capacity*. Countries need to move beyond the adoption of PPP laws to ensure their effective implementation. UNCTAD has long emphasized, as part of its investment policy advisory work, the importance of establishing dedicated PPP units with the technical expertise required for project preparation, procurement and contract management. Transparent procurement processes and the disclosure of PPP contracts further enhance accountability and foster public trust – both which are critical for attracting and sustaining private investment. UNCTAD works closely with the United Nations Economic Commission for Europe (UNECE) to advance sustainable investment and public-private partnerships (PPPs) as part of its broader mandate to promote inclusive and resilient development. As a practical example of institutional support, the UNECE PPP community, convened under the Working Party on PPPs (WP PPP), functions as an extended global network of PPP experts



that is open to all, both public and private, where members are asked to share their expertise, experience, and time in advancing PPP practices worldwide. This collaboration strengthens efforts to mobilize investment for sustainable infrastructure, climate adaptation, and other priority areas aligned with the Sustainable Development Goals. Another example is the establishment of a network of experienced PPP professionals to support newly created PPP units in developing countries proposed by the World Association of PPP Units and Professionals (WAPPP). This proposal emerged as a key outcome of the dedicated track on PPPs held during UNCTAD's World Investment Forum in 2023 and reflects ongoing efforts to address capacity gaps and promote effective implementation of PPP frameworks. UNCTAD provides tailored technical assistance to help countries strengthen capacity and develop and implement PPPs frameworks for sustainable transport and logistics, including support on project identification, financial structuring, risk allocation, governance, and institutional preparedness.¹⁰

Fourth, in addition to large-scale international PPPs, *policy frameworks should increasingly recognize the strategic role of small-scale PPPs*. These locally anchored arrangements can deliver high-impact infrastructure and services in underserved regions. Small scale PPPs have demonstrated strong potential to enhance GDP per capita and employment outcomes, particularly when aligned with inclusive governance and local development priorities. Supporting small-scale PPPs tailored policies, appropriate financing tools and mechanisms, and capacity-building for subnational authorities. Moreover, they serve as a valuable learning platform for vulnerable economies – building capacity in planning, operating, managing, and financing PPPs – while also helping to deepen local capital markets and strengthen international investor confidence.

Fifth, UNCTAD has consistently underscored, through its investment policy framework and advisory work, the need for *an enabling global environment that balances investor*

protection with the right to regulate for sustainable development. Reforming international investment agreements (IIAs) to reduce exposure to ISDS claims, while safeguarding regulatory flexibility, is a key priority. Incorporating dispute-prevention mechanisms and mediation clauses can help avoid costly litigation and strengthen investor confidence. UNCTAD's long-standing work on IIA reform provides a roadmap for countries seeking to align their treaty networks with sustainable development objectives. In parallel, greater coordination among MDBs, other development finance institutions, and ECAs is essential to harmonize standards, pool resources and avoid duplication in project preparation and financing – areas where UNCTAD's policy analysis and convening role can support global efforts to scale up investment in sustainable infrastructure.

This agenda aligns with the *Geneva Consensus* adopted at UNCTAD16, which calls for investment-facilitation measures, lower capital costs, and ecosystem support to scale up sustainable and inclusive investment, particularly in infrastructure. It also reflects the priorities of the Compromiso de Sevilla, which reaffirm the need to close financing gaps and mobilize resources for sustainable development.

Looking ahead, UNCTAD will continue to play a leading role in shaping the global policy agenda on PPPs and sustainable infrastructure investment, including through its work in major international fora, such as the G20 and the United Nations system. Building on its long-standing mandate and expertise in investment policy, UNCTAD will also leverage its convening power to foster dialogue among governments, investors, and development partners.

Future editions of the World Investment Forum will provide a key platform to advance this agenda, offering opportunities to translate the recommendations of this report into concrete actions and partnerships.

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¹⁰ See for example (UNCTAD, 2016).



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Annex

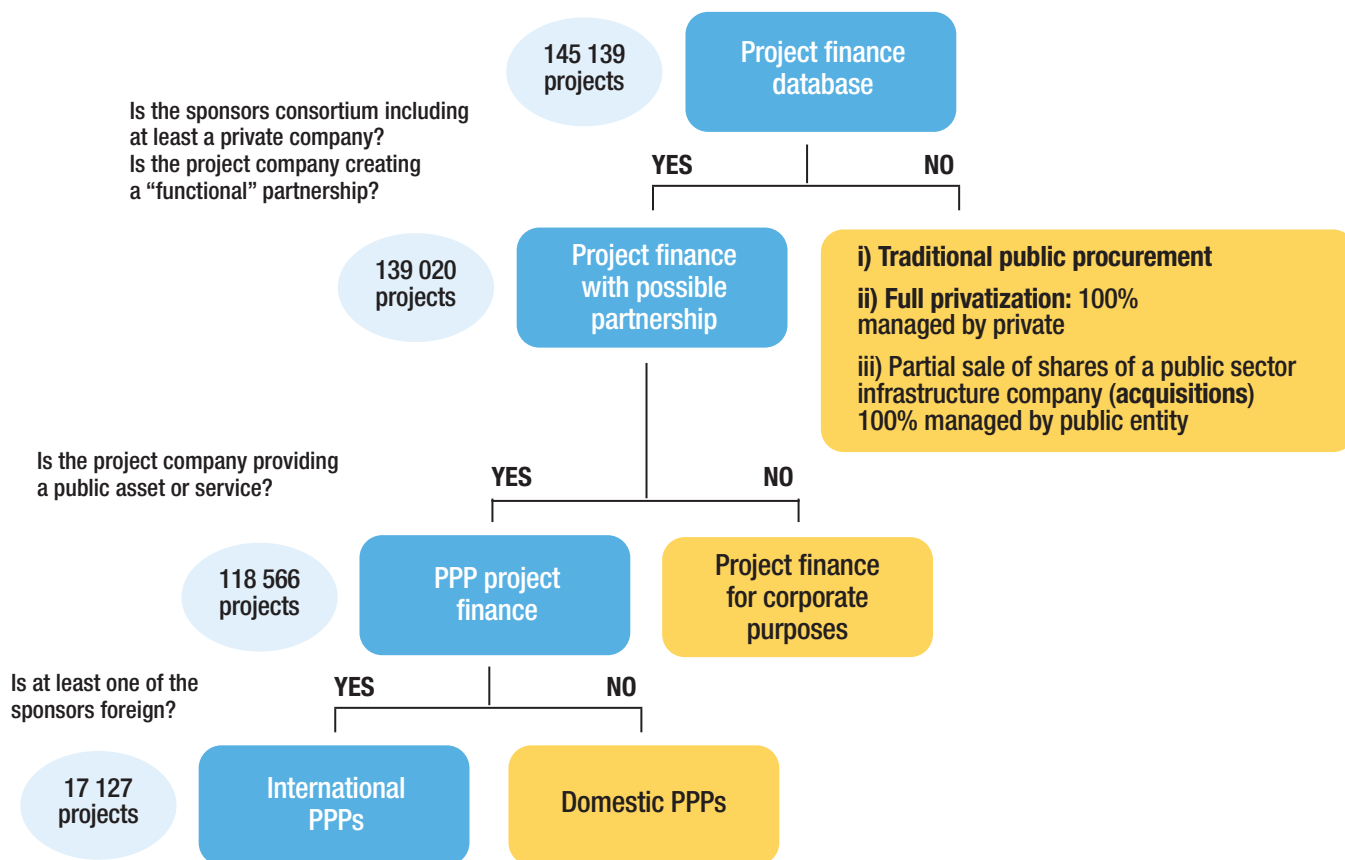
The report uses a large-scale empirical approach, relying primarily on the LSEG Data & Analytics project finance database, which contains information on approximately 150,000 projects between 2000 and 2024 (annex figure 1). The database provides comprehensive and granular information on project finance deals backing large projects, including information on the sponsors and financiers of the deal, involvement of the Government and of MDBs and other DFIs. Despite some limitations, it provides a rich source of information on PPPs and more in general on SDG investments – complementing greenfield projects data (see for example UNCTAD’s SDG Trends Monitor and the World Investment Report series). The LSEG project finance database offers detailed insights into project finance deals covering financial structures, sponsors, and syndicate arrangements across both private and PPP infrastructure projects worldwide. Project finance is considered the main method to fund infrastructure projects especially in developing countries (World Bank and PPIAF 2025). In contrast, other well-known databases such as the World Bank’s Private Participation in Infrastructure (PPI) database focus primarily on government-supported infrastructure initiatives that involve private sector participation in developing economies. For the purposes of this report, the LSEG database was selected due to its broader coverage of project finance transactions and its ability to capture detailed financial structuring across both public and private infrastructure investments, domestic and international.

The project finance database includes both purely private project finance structures and PPP projects. As defined in this report, the identification of relevant projects is based on specific characteristics. The primary criterion is the nature of the underlying contract, and the types of functions shared with the private partner. The database provides limited detail on the contractual structures underpinning PPP agreements, with the majority categorized under the fully private model. However, when a public entity is listed as a sponsor or is reported to contribute equity to the project, the project is classified under “shared ownership.” In a very limited number of cases, projects clearly specify the functions transferred to the private party while excluding permanent private ownership – these are categorized as “full public ownership” PPPs.

Projects that are entirely private or public, without arrangements for risk-sharing or joint management, are not considered PPPs. For instance, privatizations are excluded as they typically terminate the partnership by transferring full control to the private sector.. Similarly, acquisitions of public infrastructure – so called secondary market transactions – are excluded as these typically represent a transfer of ownership of an existing asset rather than a partnership aimed at building new infrastructure or delivering a public service. Other types of contracts generally not considered PPPs include management contracts, franchises, turnkey contracts, financial leases, and private initiatives to develop or exploit public assets – such as in the mining, extractive, or tourism sectors. These arrangements typically lack core PPP features due to limited risk-sharing, short-term commitments, or the absence of private financing.



Annex Figure 1.
International PPPs



Source: UNCTAD.

PPPs encompass projects aimed at developing economic infrastructure – such as transportation systems, power generation (both renewable and conventional), and telecommunications – as well as social infrastructure including schools, hospitals, and water pipelines. They also extend to public service facilities like police stations, prisons, and museums. In some cases, PPPs may involve commercial projects where the government maintains shared ownership, especially in strategic sectors such as fertilizers, agriculture, hydrogen, or in the development of Special Economic Zones (SEZs). PPPs may also be used in projects that support vulnerable populations, such as affordable housing initiatives, or in commercial ventures that involve the construction of public infrastructure. For example, hospitality developments that include the building of roads, water systems, or renewable energy facilities may qualify as PPPs under this broader interpretation.

The resulting broad sectors are as follows:

- Hard or economic infrastructure, which includes power, transportation, telecommunications, and waste and recycling.
- Renewables, encompassing solar, wind, hydroelectric, geothermal, biomass, and green hydrogen energy sources.
- Soft or social infrastructure, covering sectors such as health, education, water and sewage, and selected public services, including police forces and museums.
- Industry, comprising commercially oriented projects that either operate under a PPP contract or involve the provision of public assets or services.

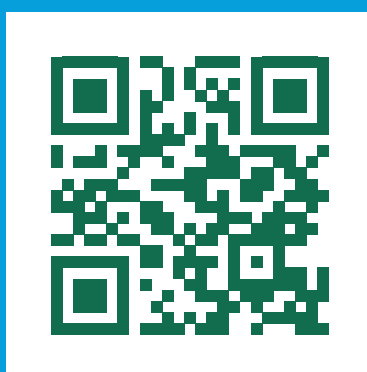
International Investment in Sustainable Infrastructure: The Role of Public–Private Partnerships

While PPPs are typically domestic projects aimed at addressing local or national development priorities – such as building roads, hospitals, schools, or water systems – they are primarily intended to serve the national population.¹¹ The growing prominence of international PPPs reflects the increasing relevance of global development frameworks – such as the SDGs and the Paris Agreement – and underscores the growing role of development finance in bridging infrastructure gaps. An international PPP implies that at least one sponsor (owner of the project's equity) in the project finance deal is a foreign resident. The equity investors in the project company are typically denominated sponsors and can include engineering or construction companies, utilities companies or financial services companies (UNCTAD, 2025a). The resulting sample of international PPPs comprises about 17,800 projects.

While the inclusion criteria focus on the nature and purpose of the projects – particularly their public service or infrastructure components – financing remains a critical factor in determining whether projects advance beyond the planning stage. As a result, there is often a significant time lag between a project's announcement and the securing of its financing. Arranging international loans for large-scale projects can be particularly challenging, especially in developing economies. The analysis of PPP financing structures includes only those projects that have secured funding. The subsample of financed deals consists of about 7,200 projects. To assess the underlying financing conditions (cost of capital in syndicated loans underpinning PPP projects), the project database has been merged with a syndicated loans database, which provides detailed information on borrowing costs, the amount of financing obtained, and the main financiers involved. The syndicated loans database comprises information on 16,400 loans financing PPP deals, of which about 10,600 are international.

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¹¹ PPPs have also been instrumental in accelerating vaccine delivery in developing countries, as demonstrated by initiatives like PneumoADIP (Levine et al., 2004), and more recently through Covid-19 responses such as COVAX and Operation Warp Speed, which relied heavily on public-private collaboration to scale vaccine production and distribution (Savoy and Méndez Leal, 2021).





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